

[DOI: 10.20472/IAC.2015.016.019](https://doi.org/10.20472/IAC.2015.016.019)

**SAVAŞ ÇEVİK**

Selcuk University, Faculty of Economics and Administrative Sciences, Department of Economics, Turkey

**MEHMET OKAN TAŞAR**

Selcuk University, Faculty of Economics and Administrative Sciences, Department of Economics, Turkey

## **THE IMPACT OF DOUBLE TAX TREATIES ON FOREIGN DIRECT INVESTMENTS: EVIDENCE FROM TURKEY'S OUTWARD FDIS**

### **Abstract:**

Double tax treaties (DTT) are mainly signed to overcome the problem of international double taxation and to coordinate national tax systems in bilateral or multilateral economic interactions. However, one more reason to engage in DTTs is to facilitate international economic flows for capital especially and to attract foreign capital. To increase foreign direct investment (FDI) is a desirable policy goal for both developing and developed countries. In order to examine whether DTTs have significant impact on FDI, this paper analyzes Turkey's outward FDI stocks to 71 host countries over the period of 2001-2012.

In analyses, we use Turkey's FDI stock toward the host countries as dependent variable. In addition a number of control variables, we analyze the impact of a dummy of presence of DTTs and the age of treaty. As the estimation technique, we mainly use fixed effect estimators and regressions with panel-corrected standard errors (PCSE) to handle heteroskedasticity and autocorrelation, in addition to some other specifications for robustness aims. After controlling for various determinants of bilateral FDI stocks, the study's results show that DTTs are indeed positively associated with foreign investment toward the host country from Turkey. This finding supports policy considerations on the impact of DTTs on FDI. The results hold for various of specifications.

### **Keywords:**

double tax treaties, foreign direct investments, international double taxation

**JEL Classification:** H87, F21, H25

## 1. Introduction

Foreign direct investments are not only seen to play vital role in economic performance of developing countries especially but also become increasingly more important in word economy. It is widely accepted by policy-makers and scholars that tax treatment of both host and home country to investments and their returns may have influence on FDI activities. In order to attract foreign investments and to facilitate cross-border activities, countries sign bilateral double tax treaties (DTT). Today the world is covered by a network of bilateral tax treaties consist of a few thousands. DTTs are considered to overcome two important problems of international taxation: 'double taxation' conventionally and fiscal evasion recently. If DTTs eliminate double taxation and uncertainty in interactions between national tax systems, one expects that introducing a DTT would have positive effect the economic activities between treaty partners. This paper focuses on the impact of DTTs on FDI activities.

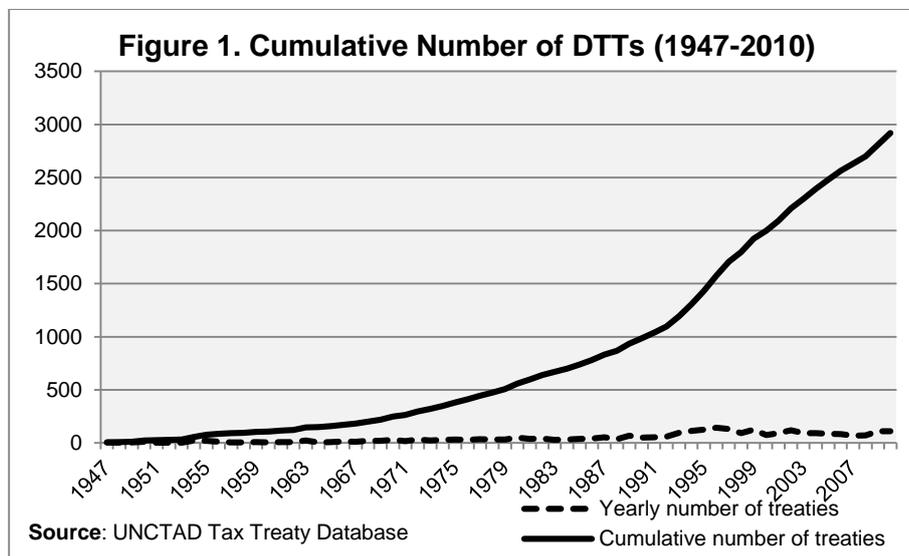
It is widely accepted that since a DTT reduces tax barriers to capital flows, it can expect that FDI activity would rise after a treaty is enforced. In spite of the general consensus of the view that tax treaties would increase FDI activity between their signatories, there are some legal and economic arguments against that. On the other hand, the empirical findings on the impact of DTTs do not present consistent results. Some studies report negative and/or statistically insignificant impact, some other publish positive coefficient on the DTT variables. Furthermore, studies are based on mostly developed countries. We seek to contribute to literature by examining Turkey's DTT and outward FDI. To our knowledge, this is the first time the relationship between Turkey's DTTs and FDI activity is analyzed. For this purpose, we employ a panel data of 71 host countries over 2001-2012, based on Turkish FDI abroad. At various specifications, we find positive impact of DTTs on FDI outward stocks.

The paper is organized as following. In next section, we review the DTTs' developments and functions. Later on, we present an overview of Turkey's DTT network and FDI activities to show the study's motivation. Section 4 reviews the literature on the impact on DTTs on foreign direct investments. After we introduce data, variables and estimation technique employed in empirical analyses in Section 5, it is presented the results in Section 6. Final section concludes.

## 2. Double Tax Treaties: An Overview

The cross-border economic activities poses two important problems on traditional national power to tax: overlapping national claims to tax that cause double taxation and possibilities of tax evasion. These two problems require international cooperation between national authorities (Rixen, 2008, p. 1). International cooperation on tax issues has governed by bilateral tax agreements which generally follow model conventions developed by OECD and United Nations (UN). Multilateral cooperation on international tax issues has quite limited.

Initial and main function of double tax treaties, broadly stated, has been to eliminate the problem of double taxation and thus, to facilitate cross-border capital and trade movements (Arnold and McIntyre, 2002, p. 105), although in the last quarter of twentieth century, the issue of international tax evasion has become more urgent in international tax agenda. Bilateral DTTs are considered to contribute worldwide efficiency in allocating the capital by eliminating double taxation with respect to allocate taxing rights between two jurisdictions (actually between residence country and source country). Thus, there are two operational objectives of tax treaties as eliminating double taxation and combating fiscal evasion, and thereby functioning to facilitate investment and trade worldwide. Aside from these objectives, some ancillary objectives such as eliminating of discrimination against foreign nationals and non-residents, the exchange of information<sup>1</sup> between contracting states, and providing a mechanism for resolving disputes arising from the interactions of tax systems of contracting states (Arnold and McIntyre, 2002, p. 106) by regulating *the mutual agreement procedure*.

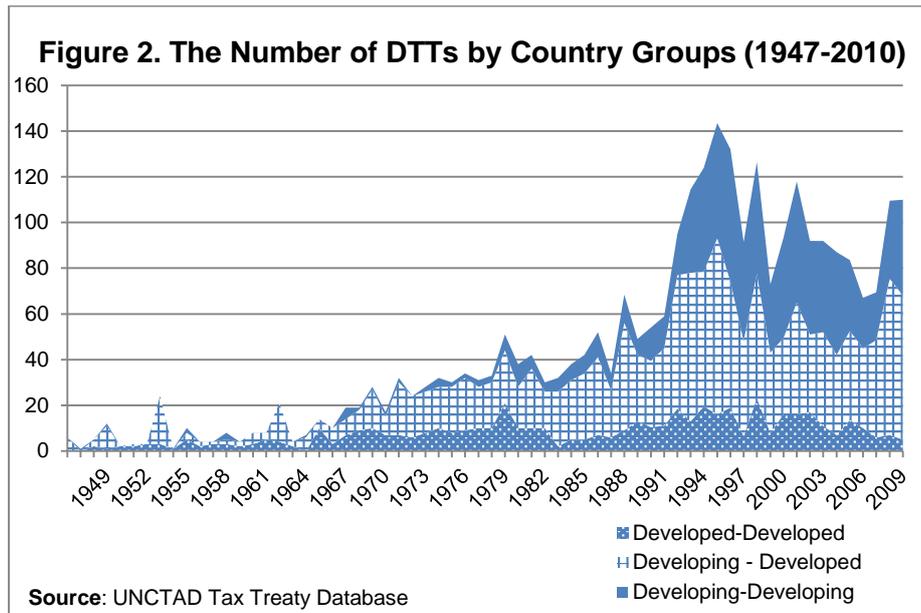


Today, the network of bilateral tax treaties constitutes the institutional framework of interactions among national tax systems. Currently, more than 3,500 of tax treaties are in force, and there is almost no a country which not a party to a tax treaty at least. The development of this network of tax treaties can be seen to largely be related to the developments in world economy and national tax systems. As Figure 1 shows, the network of DTTs has grown steadily since the Second World War<sup>2</sup>. In fact, initiatives around the

<sup>1</sup> However, a developing bilateral mechanism of the exchange of information is Tax Information Exchange Agreements (TIEAs) fostered OECD Global Forum instituted after OECD initiatives of 2000 and 2001 on harmful tax practices (OECD, 2000; OECD 2001), while a multilateral initiative on administrative assistance among the states is The Convention on Mutual Administrative Assistance in Tax Matters. Both are spreading and becoming more effective to combat tax evasion and avoidance.

<sup>2</sup> Even if the first DTTs has emerged in the late 19th century and early 20th century, the number of such agreements did not exceed a few until after to the First World War. Tax agreements during 1920-30 were

League of Nations after First World War in which they culminated in model conventions in 1943 and 1946 have important role in expansion of the treaty network (Arnold and McIntyre, 2002, p. 107). In consequence of two world wars and Great Depression of 1929, it has not been a significant movement in the international capital and financial movements until the end of The Second World War. After the War, international capital flows and the activities of multinational corporations increased quite rapidly despite of temporary slowdown the oil crisis of the mid-1970s. Beginning the 1960s and particularly 1980, by another wave of globalization, while capital controls were liberalized, the network of DTTs has also continued to expand (Rixen, 2008, p. 108).



Other accelerators of expanding of treaty network have been the independency of colonies of developed European countries and advancements in communication and transportation technologies. While initial agreements were naturally among developed countries, after the Second World War, both the rising of new and independent developing countries, increasing in capital and trade movements have facilitated international interactions on tax issues around the League of Nations and thereafter United Nations and OECD (Cevik, 2013, p.111). Thus, as seen from Figure 2, tax treaties between developed and developing countries have expanded from the period concerned.

Another factor which fosters efforts to make agreements between developed and developing countries is the participation of transition economies in international economic and political network after the collapse of Soviet Union in 1990s. As Figure 2 displays, in this period, the treaties between not only developed and developing countries but also among developing countries has greatly increased.

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mainly a regional phenomenon and were limited to the taxation of a few matters such as railways, inheritance and traveling salesmen (McIntyre, 2005, p. 1; UNCTAD 2000, p. 22; Seligman 1928, 37-47).

### 3. The Treaty Network and FDI Profile of Turkey

Since initiatives around UN, Turkey has actively joined in the process of international tax governance in a manner of representing the perspective of developing countries. However, the first double tax treaty was signed at 1970 with Austria. Thenceforth, Turkey's network of DTT has expanded and currently, Turkey is one of the developing countries which signed the most agreements with 80 DTTs (for full list, see Appendix B). As seen from Figure 3 that presents yearly number of DTTs signed by Turkey, Turkey has actually participated in worldwide treaty network after 1980s when is Turkey's liberalization period. Also, after 1990s, Turkey has signed a series agreement with transition economies of Central/East Europe and Central Asia.

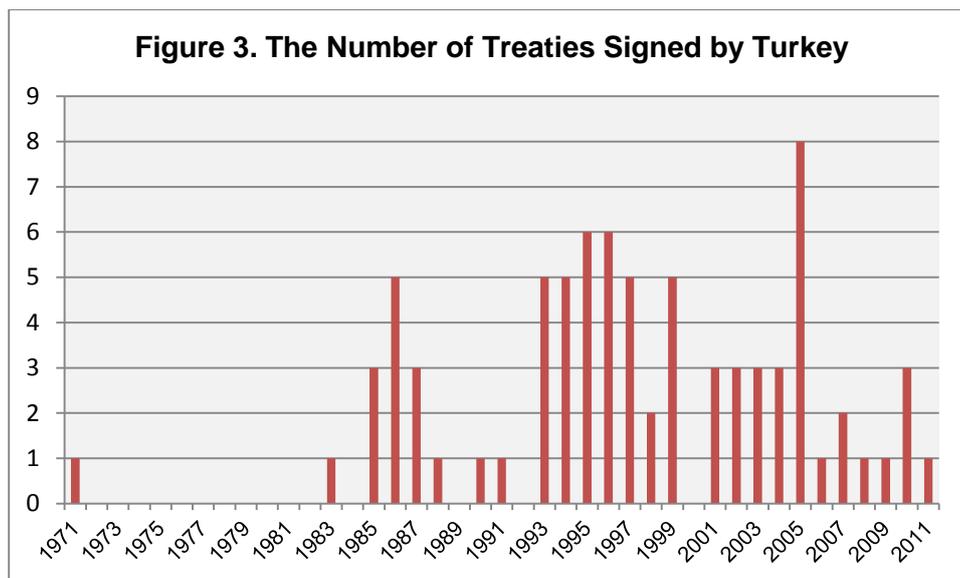
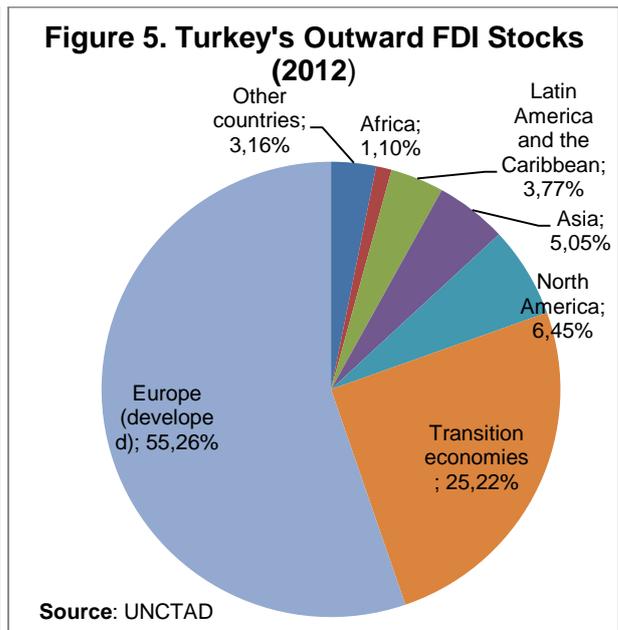
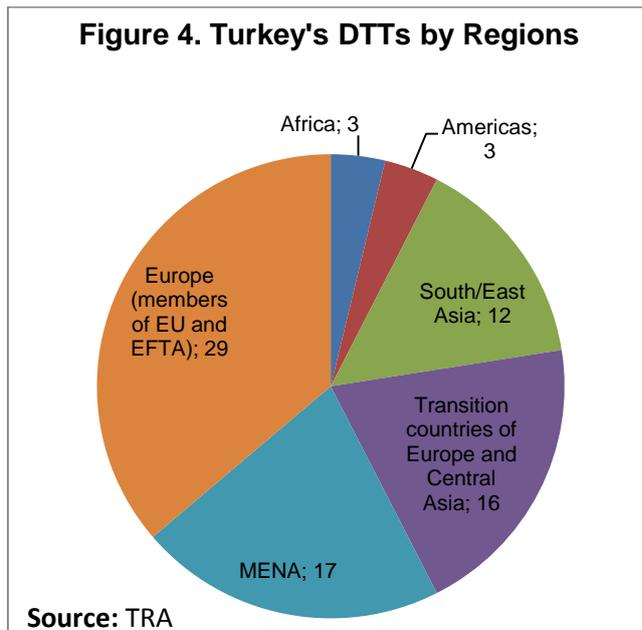


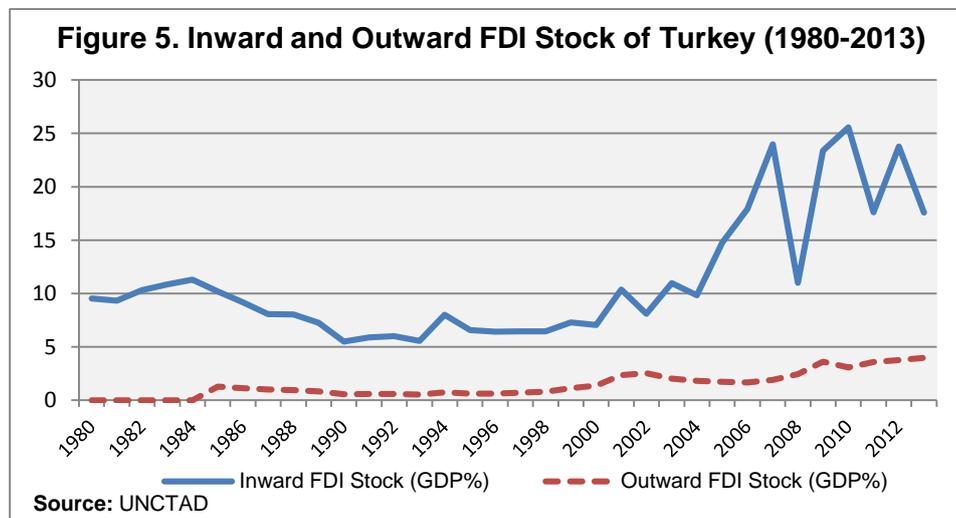
Figure 4 displays country groups which are tax treaty partner of Turkey. The most important partners of Turkey are European countries, transition economies and countries from the Middle East-North Africa (MENA). Turkey has a DTT with almost all of EU and EFTA members, with a few exceptions. Although MENA countries that is Turkey's near neighbors do not have an important share in Turkey's outward FDI stock, almost all of them have a DTT with Turkey.

Considering together Figure 4 and Figure 5, it can be seen that a tendency of making a tax agreement is closely linked to Turkish FDI stocks toward partner country. Turkey's outward FDI stocks partners are mostly European countries and transition economies of Central Asia - East Europe, even though the over half of total FDI stocks intensify in a few countries such as Netherland, Azerbaijan, Malta and Germany.

Actually, until 1990s, the abroad investments of Turkish firms have been quite limited to a few sectors such as banking, construction and travel-tourism agencies, and a few firms (the number of firms who invest abroad is only 80 in 1988 and some of them was public enterprises).



By liberalizing of foreign exchange regime and developing of incentive measures in 1989 and collapsing of Soviet Union in same period, Turkish outflows of FDI has started to increase in volume and to diversify with respect to country, the number of firms (more than 3000) and sector such as energy, telecommunication, services and manufacturing (Yavan, 2012). Eventually, during 2000s, the increasing was doubled in terms of FDI stocks as seen from Figure 5, despite of declining in the period of global crisis.



Today, according to World Investment Report of UNCTAD (2014), in 2013, Turkey ranked 45th with 32.782 million \$ in the world in terms of FDI outward stocks and 33th with 145.467 million \$ in terms of FDI inward stocks. In terms of the percentage of gross domestic product, outward FDI of Turkey as is 4%, while inward FDI is 17.6%.

Despite of the importance increasing of Turkey's FDI movements toward foreign markets, the issue was rarely exclusively examined. Among these, Erdilek (2003), Culpan and

Akcaoglu (2003), Akcaoglu (2005), Apan (2006), Kayam and Hisarciklilar (2009), Anil et al. (2011) and Yavan (2012) can be mentioned. Of the limited number of studies is one of the major motivations of this study to contribute both to examine Turkey's FDI to foreign markets and to understand the impact of tax treaties on FDI behaviors.

#### **4. Literature Review on DTTs and FDIs**

It is generally accepted that tax treaties are indispensable and effective tools for eliminating distortionary impacts of the conflict among national tax systems. Tax treaties help to alleviate distortionary effect of taxation by coordinating tax systems of treaty partners. Thus, while it reduces tax barriers to capital flows, it can expect that FDI activity would rise after a treaty is enforced. Therefore policymakers assume that everyone who involved in tax treaties benefits from treaties (Murthy and Bhasin, 2003, p.5; Dagan, 2000: 939). In spite of the general consensus of the view that tax treaties would increase FDI activity between their signatories, there are some legal and economic arguments against that.

Dagan (2000) argues that this conventional view of treaties' function is highly overrated and misguided, although treaties have benefits other than eliminating double taxation, such as politic, administrative and social gains. In order to prevent double taxation, treaties are not only workable solutions compared to unilateral mechanisms such as tax credits and exemptions. In the case of presence of unilateral reliefs of tax credits and exemption, Whalley (2001) argues that tax treaties and withholding taxes provided by them would have rather a revenue transfer effects between national governments which are partners of the treaty, if tax rates are similar in host and home countries as in the situation of OECD. Similarly, Avi-Yonah and Halabi (2012) draw attention on other functions of tax treaties and argue that jurisdictional conflicts could be solved even in the case of the absence of a tax treaty, since countries already have unilateral measures for double taxation.

Empirical literature provides controversial findings. From the data of OECD countries over the period of 1982-1992, Blonigen and Davies (2004a) separate old and renegotiated treaties, thus, find a positive and significant coefficient on old treaties and negative and insignificant one on new treaties, while pooling old and new ones produces positive coefficient. From data on U.S. inward and outward FDI over the period 1980-1999, Blonigen and Davies (2004b) analyze the effect of old and new treaties and could not find significant effect of DTTs on inbound and outbound FDI activities. Based on similar sample, Millimet and Kumas (2008) find by applying a quantile treatment effects approach that although there is a slight positive effect when FDI levels are initially small, coefficients are significantly negative in the upper quantiles of the FDI distribution. Davies (2003) also examines the effect of treaty revisions on the data of U.S. inward and outward FDI, and finds the revisions to be insignificant with negative coefficients. Another paper that finds negative coefficient is that Egger et al. (2006) find a negative impact of DTTs on FDI from the data of OECD source countries over the period of 1985-2000 by using two-step selection model to overcome the problem of endogeneity.

Di Giovanni (2005) examines cross-border activities of mergers and acquisitions (M&A) and finds positive relationship between DTT and M&A by the aggregated data of 193 countries. As an example of single-country analysis, Ohno (2010) examines the relationship between Japan treaties and FDI abroad and concludes newly concluded treaties have a significant long-run positive effect, while tax treaties revised has no significant effect on Japan's FDI outbound. Barthel et al. (2010) find that DTTs lead to higher FDI stocks from the data 30 source countries and 105 host countries over the period of 1978-2004, after controlling standard determinants of FDI. Recently, Baker (2014) finds no significant effect on the flows of FDI from the data of 30 OECD countries and 206 non-OECD countries over the period of 1991-2006 by using the difference-in-difference estimator, while Lejour (2014) finds bilateral and multilateral treaties to be have significant positive effect on FDI of OECD countries.

Davies et al. (2009) use micro level data on Swedish-owned multinationals from 1965-1998 unlike other studies. They find that although the presence of tax treaty has no significant effect on the level of affiliate sales, treaty formation increases the probability of the existence of a subsidiary in the host country. Thus, they conclude that *“even if a treaty does not affect the desired size of investment, it can affect the attractiveness of one host country over another. This might be the case if MNEs are assured by the tax certainty that a treaty creates, for even if this does not affect the marginal decisions of a firm after entering, it reduces the overall risk of entry.”*

As can be seen, the empirical literature is mostly on the developed countries, exclusively U.S. There are limited numbers of studies concentrated on exclusively developing countries' FDI activities and DTTs. Neumayer (2007) analyzes the effect of DTTs on FDI stocks from U.S. to developing countries in addition to total inward FDI stocks and inflows of developing countries. He finds that developing countries which have a DTT with the US receive more FDI from the US. Countries with a higher number of DTTs have higher FDI inward stocks and inflows. Another result of Neumayer (2007), when the sample split into categories of middle and low income countries, the positive effect is only found for the middle income countries. Coupe et al. (2009) examines the effect of DTTs and BITs on FDI flows toward transition economies from OECD countries and cannot be find consistent results related to the influence of treaties. Murthy and Bhasin (2013) analyze the impact of DTTs on Indian FDI flows, and find treaty dummy and the age of treaty to be have small but positive and significant effect on FDI inflows of India.

Controversial findings and failing to find a positive impact of DTTs on FDI could be resulted by a few sources. One limitation is that sample size of studies is mostly small and non-representative as pointed out by Barthel et al. (2010). Another one is that the results are obviously sensitive to estimation technique employed. Finally, as pointed out by Baker (2014), eliminating double taxation is not only aspect of tax treaties. DTTs are also intended to fiscal evasion, and thereby, they can be expected to have negative effect on FDI activity in some cases at least.

## 5. Data and Econometric Procedure

This study seeks to contribute into the literature by providing evidence not only from a different sample that is of a developing country's FDI activities but also on Turkey's outward FDI activity which is relatively little examined. We aim to analyze the influence of DTTs signed by Turkey on Turkish outward FDI activity by controlling standard estimators of determinants of FDI suggested by literature on FDI.

We use Turkey's outward FDI stocks at its nominal level (US\$) as dependent variable, while studies from literature use either FDI stocks or flows and either absolute values or as a share of a country's GDP. In order to reduce skewness in the data, we took natural log of the dependent variable as well as most of the explanatory variables. Using natural logs also makes easy interpretation of coefficients as elasticities. The data on FDI stocks were obtained from Republic of Turkey Central Bank (RTCB).

Our sample covers the data of 71 countries over the period of 12 years from 2001 to 2012. Appendix A presents the lists of countries covered in analyses.

In order to consider the role of tax treaties in promoting foreign direct investments which is our main purpose in the study, we use a dummy of the existing of double tax treaty between Turkey and partner country as main explanatory variable. However, in some models we employ age of treaty. The data on treaty variables was obtained from Turkish Revenue Administration.

One issue to create a dummy variable which takes the value of "0" for the year without DTT and "1" for the year when the DTT is present is which date will use to represent the presence of treaty. As usual, double tax treaty initially signed by treaty partners on conclusion of the negotiations, then, a process under the domestic law starts to ratify the treaty by parliaments or head of the states. Thus, the signature dates differ from ratification date. After the ratification, DTTs can entry into force. However, neither the ratification of the treaty or the date of entry into force does not mean the treaty provisions become effective with respect to taxes. Typically, the DTT's provisions are applicable in taxable events in beginning of the year following the ratification. While some studies take signature date (e.g., Neumayer, 2007) or ratification date period (e.g., Coupe, Orlova, and Skiba, 2009), we use the year in which the treaty provisions become effective with respect to tax issues, as Barthel, Busse and Neumayer (2010). It is reasonable to assume that investors take into account a DTT by its effectiveness date in investment decisions. Appendix B presents Turkey's tax treaties and their dates concerned.

Another treaty variable which is used in some equations is the life of treaty. This variable takes value "1" for the year of effectiveness of the treaty, thereon, increase continuously by subsequent years as long as the treaty is in effect. We can expect that the lifetime of the treaty has positive impact on FDI stocks toward a country.

Apart from these two variables, we include a set of control variables which are used as standard covariates of FDI in both general FDI literature and the literature on relation between tax treaties and FDIs. We mainly reviewed Blonigen and Piger (2011) in the selection of control variables. Blonigen and Piger (2011) present a comprehensive review of variables included and specifications employed in empirical studies on bilateral FDI. Control variables used in the econometric specifications of the study and their summary statistics are presented in Appendix C.

We use the log of host-country GDP (current, US\$) and the log of host GDP per capita (constant, 2005 US\$) as gravity measures. Both were taken from World Bank, World Development Indicators. It is assumed that these two variables are to control market size and purchasing power of domestic consumers of the host country, and to have positive impact on FDI flows and stocks.

However, we use two more variable GDP-related in some specifications to see if similarities or differences between Turkey and host country have influence on FDI behavior. The variable *In GDP similarity* measures similarity of host and Turkey GDP [*Similarity index*=(*Host GDP/Sum of Host and Turkey's GDP*)\*(*Home GDP/Sum of Host and Turkey's GDP*)], while the variable *In sq. GDP p.c. difference* measures squared differences between GDP per capita of both country. Taken into account the technologic level of Turkey's industry, we expect that similarities can have positive impact on FDIs stocks.

Other macroeconomic determinants employed are *the log of inflation* (average consumer prices, index) to control macroeconomic distortions and economic stability, *In FDI openness* (sum of Inward and outward FDI stock as a share of GDP) to be a proxy the openness, attitude toward globalization and general attractiveness of the country, *manufact* (as a percentage of merchandise exports (standardized values by converting into a four point scale, where: the low values indicates the high level of manufacturing exports) to control reliance on primary or manufactured commodities in export and for foreign exchange.

As geography measures, we use the number of neighboring states (*nborder*) sharing a border with the identified state as a proxy trade opportunities in the region, and the log of distance (*In distance*) between the capital cities of countries (miles) as a proxy for transport costs. We expect negative sign on *In distance* and positive sign on *nborder*.

We also consider political and social stability as determinant of FDI through interstate political violence (*intviol*, the magnitude score of international violence and warfare) and civil political violence (*civviol*, the magnitude score civil violence and warfare)

Finally, we use two more estimators to consider the cooperation between host country and Turkey in international agreement network. One of them is a dummy which takes the value "1" if two countries have signed a bilateral investment agreement (*BIT*), and the other is a dummy which takes the value "1" if two countries share a free trade agreement or a custom

union (*FTA*). We expect positive sign on both variables, since these agreements encourage investment and trade relationships, and reduce uncertainty of possible disputes.

As estimation technique, we firstly consider fixed-effects estimator because we are mainly interested in analyzing the impact of tax treaties over the time within a country. We applied Hausman specification test as the way of choosing fixed and random effects (see Table 1). Since cross-sectional dependency, heteroskedasticity and serial correlation are potential and common problems in panel data, we test each equation through the Breusch-Pagan test and the Pesaran's test against cross sectional independence, the modified Wald test against group-wise heteroskedasticity in the residuals, and the Wooldridge test against autocorrelation. The tests indicate the data is heavily heteroscedastic and in some case autocorrelated. Therefore, the rest of the analyses, we use linear regression heteroskedasticity-corrected standard errors (PCSE) and Prais-Winsten regression in the case of first order autocorrelation and heteroskedasticity (see Table 2). Finally, to test if the results are robust toward additional variables and different samples, we add categorical variables that represent country groups by income and region, and restrict the sample to Europe and transition countries which are the most important country groups in Turkey's FDI and international trade profile, and to middle-income countries subsequently (see Table 3).

## 6. Results

Table 1 reports results for fixed-effects estimations. We first estimate a baseline model which contains treaty variables and GDP related two variables in Column (1) and (2). In these estimations we found significant coefficient on *DTT dummy* although age of treaty does not have statistically significant impact on *In FDI*. Latter, in Column (3) and (4), we expanded the estimation to full model. In this case, again *DTT dummy* has a positive and statistically significant coefficient, although the magnitude of the coefficient has slightly decreased. However, in both cases, *DTT dummy* considerably magnitude coefficients. After the coefficient on dummy variable in log-level equations was made necessary correction following Goldstein (1992), we found that having a *DTT* increases FDI stock by 495% for Column (1) and by 201% for Column (2). Yet, it should be taken into account that the static models might tend to overestimate the impact considered. Since we have relatively short time span in data, dynamic models could not produce consistent results, therefore, we do not use dynamic models.

When we look at control variables, we found and statistically and economically significant positive coefficient on *FTA* and *BIT*. On the other hand, except of *In GDP* and *In FDI openness*, we cannot found statistically significant coefficients on the other variables. Moreover, we would like to emphasize that none of estimations in other specifications produced statistically significant coefficient on *In inflation*.

**Table 1**  
**Estimation Results for Fixed Effects**

	(1) Baseline Model	(2) Baseline Model	(3) Expanded Model	(4) Expanded Model
DTT (dummy)	2.077*** (0.765)		1.449* (0.833)	
Age of treaty		0.102 (0.093)		0.075 (0.106)
FTA (dummy)	3.375*** (1.207)	3.877*** (1.194)	2.808** (1.280)	3.174** (1.269)
BIT (dummy)	2.818*** (0.801)	3.218*** (0.791)	2.693*** (0.863)	2.953*** (0.850)
ln GDP (Host)	0.960 (0.745)	0.949 (0.860)	-0.422 (0.931)	-0.458 (1.017)
ln GDP per capita (Host)	4.113** (2.063)	3.715* (2.065)	6.995*** (2.394)	6.649*** (2.402)
ln inflation			-0.310 (0.264)	-0.280 (0.266)
ln FDI openness			2.006*** (0.666)	1.915*** (0.706)
manufact			-0.224 (0.819)	-0.338 (0.817)
nborder			-0.337 (0.944)	-0.355 (0.948)
ln distance	<i>Omitted because of collinearity</i>			
intviol			-1.320 (1.263)	-1.343 (1.265)
civviol			-0.521 (0.369)	-0.511 (0.369)
constant	-53.105*** (11.309)	-49.094*** (15.399)	-48.967*** (13.486)	-44.362** (18.564)
Number of Obs.	961	961	800	800
R2	0.118	0.112	0.132	0.129
Hausman Test	$\chi^2(5)=21$ ***	$\chi^2(5)=18.9$ ***	$\chi^2(5)=28.7$ ***	$\chi^2(5)=30.1$ ***

standard errors in parentheses; \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 2 presents estimation results for regressions with panel-corrected standard errors to take account of heteroskedasticity and autocorrelation. Column (1) and (2) which presents estimations for only heteroskedasticity corrections shows that both DTT dummy and age of treaty have significant and positive effect on FDI. Column (3) and (4) consider AR(1) autocorrelation process and heteroskedasticity, and in this case, we just found significant coefficient on DTT dummy, not on the age of treaty. In these estimations and indeed all estimations in Table 2 and Table 3, we find positive coefficient *ln GDP* as a proxy of market size, and negative coefficient on *ln GDP per capita* as a proxy of purchasing power of consumers in the country. Negative coefficient on *ln GDP per capita* can be explained by technological structure of Turkish manufacturing. As point out by Kayam and Hisarciklilar (2009) who find similar results, Turkish FDI firms generally produce the low quality products and increases in income of host country might not positively affect Turkish outward FDIs.

In Column (5) and (6), we employed similarity and difference measures of GDP-related variables in which both have positive coefficients, instead of *ln GDP* and *ln GDP per capita*. Even in these cases, treaty variables have found positively associated with FDI.

**Table 2.**  
**Estimation Results for Linear Regressions with Panel-Corrected Standard Errors (PCSE)**

	(1)	(2)	(3)	(4)	(5)	(6)
DTT (dummy)	1.607** (-0.66)		1.693* (-0.91)		2.240*** (-0.67)	
Age of treaty		0.103*** (-0.03)		0.088 (-0.06)		0.161*** (-0.04)
FTA (dummy)	1.758*** (-0.66)	1.746*** (-0.65)	2.073* (-1.14)	2.064* (-1.13)	1.993*** (-0.65)	1.853*** (-0.64)
BIT (dummy)	0.232 (-0.55)	0.235 (-0.54)	0.506 (-0.74)	0.565 (-0.74)	0.918 (-0.56)	0.89 (-0.55)
ln GDP (Host)	2.119*** (-0.21)	2.023*** (-0.21)	1.898*** (-0.35)	1.857*** (-0.37)		
ln GDP per capita (Host)	-1.940*** (-0.3)	-1.932*** (-0.31)	-1.696*** (-0.49)	-1.711*** (-0.49)		
ln GDP similarity					2.255*** (-0.79)	1.788** (-0.81)
ln sq. GDP p.c. difference					0.257** (-0.12)	0.178 (-0.12)
ln inflation	0.035 (-0.28)	0.064 (-0.28)	-0.078 (-0.23)	-0.072 (-0.23)	0.206 (-0.29)	0.272 (-0.29)
ln FDI openness	1.980*** (-0.32)	1.872*** (-0.32)	1.829*** (-0.47)	1.764*** (-0.47)	0.818*** (-0.3)	0.765** (-0.3)
manufact	1.374*** (-0.25)	1.344*** (-0.25)	1.089*** (-0.42)	1.076** (-0.42)	0.807*** (-0.27)	0.833*** (-0.27)
nborder	0.357*** (-0.08)	0.376*** (-0.08)	0.369** (-0.15)	0.375*** (-0.14)	0.906*** (-0.07)	0.886*** (-0.07)
ln distance	-2.993*** (-0.46)	-2.936*** (-0.45)	-2.296*** (-0.85)	-2.330*** (-0.86)	-0.462 (-0.4)	-0.541 (-0.39)
intviol	1.849*** (-0.64)	2.124*** (-0.65)	0.753 (-0.67)	0.84 (-0.68)	3.448*** (-0.79)	3.702*** (-0.8)
civviol	-0.817*** (-0.21)	-0.842*** (-0.2)	-0.570* (-0.3)	-0.575** (-0.29)	(-0.351* (-0.2)	-0.404** (-0.19)
constant	-14.155*** (-3.78)	-11.526*** (-3.75)	-15.481** (-6.87)	-13.339* (-6.88)	-120.868*** (-41.68)	-93.144** (-43.15)
Number of obs.	800	800	800	800	800	800
R2	0.27	0.271	0.12	0.118	0.207	0.213

Heteroskedasticity-corrected standard errors in parentheses; \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

On the other hand, estimations in Table 2 have produced more significant coefficients for control variables. Except of *BIT* and *ln inflation*, all coefficients are statistically significant in most of the equations.

**Table 3.**  
**Estimation Results for Linear Regressions with Panel-Corrected Standard Errors**  
**(PCSE)**

	(1)	(2)	(3)	(4)	(5)	(6)
DTT dummy		1.908*** (0.643)		1.958*** (0.698)		
Age of treaty	0.097*** (0.033)		0.130*** (0.034)		0.095** (0.048)	0.155*** (0.059)
FTA	2.246*** (0.663)	2.239*** (0.673)	1.678** (0.652)	1.732*** (0.667)	2.670** (1.249)	3.914*** (0.785)
BIT	-0.042 (0.526)	-0.127 (0.534)	0.270 (0.547)	0.377 (0.552)	-1.451** (0.716)	1.197* (0.713)
ln GDP	1.848*** (0.220)	1.904*** (0.215)	1.831*** (0.218)	1.946*** (0.220)	1.835*** (0.292)	1.800*** (0.292)
ln GDP p.c.	-0.514 (0.471)	-0.324 (0.471)	-2.451*** (0.319)	-2.409*** (0.323)	-3.320*** (0.564)	-2.545*** (0.507)
ln inflation	0.047 (0.281)	-0.000 (0.279)	0.119 (0.288)	0.074 (0.286)	-0.010 (0.382)	0.369 (0.376)
ln FDI open.	2.018*** (0.293)	2.097*** (0.284)	2.033*** (0.339)	2.180*** (0.332)	4.295*** (0.524)	2.557*** (0.490)
manufact	1.485*** (0.245)	1.525*** (0.245)	1.249*** (0.297)	1.284*** (0.299)	2.409*** (0.524)	2.140*** (0.300)
nborder	0.526*** (0.094)	0.519*** (0.096)	0.457*** (0.093)	0.434*** (0.095)	0.419** (0.168)	0.174 (0.118)
ln distance	-2.670*** (0.477)	-2.682*** (0.478)	-0.617 (0.663)	-1.015 (0.660)	-1.865** (0.900)	-1.529** (0.602)
intviol	-0.057 (0.620)	-0.484 (0.628)	1.501** (0.697)	1.335* (0.716)	3.839*** (0.905)	2.657*** (0.785)
civviol	-0.987*** (0.205)	-0.943*** (0.209)	-0.638*** (0.202)	-0.620*** (0.209)	-1.128** (0.570)	-0.939*** (0.216)
Low Income	0.801 (2.381)	1.857 (2.340)				
Lower Mid. Inc.	7.460*** (1.329)	7.954*** (1.339)				
Upper Mid. Inc.	3.801*** (0.784)	4.288*** (0.778)				
Eur. - Cent. Asia			4.987*** (1.279)	4.409*** (1.286)		
Latin Am. Carb.			1.643 (1.273)	2.268* (1.320)		
MENA			4.697*** (1.339)	4.317*** (1.351)		
North America			7.393*** (1.267)	7.298*** (1.249)		
Sub-Saharan Af.			-4.198* (2.337)	-4.009* (2.385)		
constant	-25.149*** (4.451)	-29.269*** (4.514)	-24.136*** (5.626)	-25.056*** (5.695)	-10.903** (5.523)	-14.491*** (5.214)

Number of Obs.	800	800	800	800	424	377
R2	0.320	0.322	0.305	0.302	0.321	0.349
Heteroskedasticity-corrected standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01						

Finally, we make some changes in specifications for testing robustness. In Table 3, we add a factor variable for income levels in Column (1) and (2), and a factor variable for geographic regions in Column (3) and (4). Column (1) and (2) indicates that middle income countries has significant and positive association with *In FDI* (base level is high-income), while tax treaty variables are still significant and important. Column (3) and (4) shows that all coefficient on regions are statistically significant except of Latin America in Column (3) (base level is South/East Asia). Again, coefficients on tax treaty variables are significant. As a final point, we consider the sample restricted to Europe-Transition countries (Column 5) and to middle-income countries (Column 6). In both cases, the age of treaty was included in the equations, because almost all countries have already a tax treaty for almost all years of sample period. The lifetime of treaty is positively associated with FDI stocks toward the countries sampled.

## 7. Concluding Remarks

The main purpose of this study is to analyze the impact of bilateral DTTs on FDI in the case of Turkish outbound FDI stocks. The study's results can be summarized as following:

Descriptive analysis shows that Turkey's behavior of signing the DTT is linked to the process of its participation in globalization through liberalization of capital flows and exchange regime, and the rise of states that is newly independent or in the period of transition to market economy that the most of them are connected to Turkey culturally or geographically. Turkey signed treaty with its developed trade partners e.g. Austria, Germany, Norway, Netherland, France in 1970s. During 1990s, Turkey signed tax treaties with transition countries of Central Asia and East-Central Europe besides some developed countries and East-South Asia. In 2000s, in addition a number of countries, most of MENA countries have become treaty partner of Turkey. Currently Turkey is one of the developing countries which have the most number of treaties, while its DTTs are largely of the regions of European, Central Asian and MENA. On the other hand, by globalization and liberalization, Turkish investors started to globally operate. Thus, after 1990s and especially 2000s, Turkish residents and companies increased their FDI activity toward foreign countries, as well as FDIs into Turkey increases. The paper studies the relationship between having a DTT and investing abroad in the case of Turkey.

Empirical literature does not show consistent result on this effect. Most of the studies find statistically insignificant effect or even negative effect as well as positive relationship between DTTs and FDIs. Both negative of positive association can be confirmed by theoretical insight. Since DTTs have two main functions of eliminating international double

taxation and tax evasion/avoidance, negative coefficients on DTT variables could be explained the latter function.

Our econometric estimations which is based on a panel data of 71 of Turkey's outward FDI partners in the period of 2001-2012 indicates that DTTs are positively associated with Turkey's outward FDI stocks. In all specifications, we find positive and significant in statistical and economic terms on DTT dummy. Also, the most of estimations produce the positive coefficient on the variable which represents the age of DTT. Results are robust to changing in the sample and the specification. From policy perspective, it can be said that engaging in a treaty have influence Turkey's FDI activity, at least, with respect to outward FDI stocks.

It should be noted that since the results are sensitive the sample analyzed and the specification method, the study's limitation should be taken into account at interpreting findings of the study. First of all, the endogeneity which would lead to bias and spurious associations in coefficients is an important problem. Turkey may be seeking treaties with only the countries for which there are already large amount of FDI activity. However, at least considering MENA countries which do not have important share in Turkey's outward FDIs (inbound FDIs or political/cultural issues may have effect to make agreements with these countries) and other reasons for signing treaty, we can assume the treaty variables are independent from our dependent variable. Even so, future researches may use some instruments to control the endogeneity. Instead of using a dummy on treaty, using firm-level data, comparing the withholding tax rates provided by treaties and tax rates in the absence of a treaty and considering treaties' provisions on allocate taxing rights between residence and source countries would be useful for our understanding of the impact of treaties in the future researches. Also, Turkey's DTTs should be analyzed with its impact on inbound FDI and by dyadic data of mutual FDI activities of treaty partners.

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## Appendix A. List of Countries

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### ***Whole Sample of Countries (71)***

Albania, Algeria, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Bosnia, Brazil, Bulgaria, Canada, China, Croatia, Czech R., Denmark, Egypt, Finland, France, Georgia, Germany, Greece, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Jordan, Kazakhstan, Korea, Kuwait, Kyrgyzstan, Latvia, Liberia, Libya, Lithuanian, Luxembourg, Macedonia, Malaysia, Mexico, Moldova, Montenegro, Morocco, Netherlands, Oman, Pakistan, Panama, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, South Africa, Spain, Sweden, Switzerland, Syria, Thailand, Tunisia, UAE, USA, Ukraine, United Kingdom.

### ***Europe and Transition Countries (37)***

Albania, Austria, Azerbaijan, Belarus, Belgium, Bosnia, Bulgaria, Croatia, Czech R., Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuanian, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Ukraine, United Kingdom.

### ***Middle Income Countries (34)***

Albania, Algeria, Argentina, Azerbaijan, Belarus, Bosnia, Brazil, Bulgaria, China, Egypt, Georgia, Hungary, India, Indonesia, Iran, Jordan, Kazakhstan, Kyrgyzstan, Libya, Macedonia, Malaysia, Mexico, Moldova, Montenegro, Morocco, Pakistan, Panama, Romania, Serbia, South Africa, Syria, Thailand, Tunisia, Ukraine.

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**Appendix B. Turkey's Double Tax Treaties**


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	<b>Contracting State</b>	<b>The date of signature</b>	<b>The year of effectiveness of treaty provisions</b>		<b>Contracting State</b>	<b>The date of signature</b>	<b>The year of effectiveness of treaty provisions</b>
1	Austria (*)	03.11.1970	01.01.1974	41	Russia	15.12.1997	01.01.2000
2	Norway (*)	16.12.1971	01.01.1977	42	Indonesia	25.02.1997	01.01.2001
3	Korea	24.12.1983	01.01.1987	43	Lithuanian	24.11.1998	01.01.2001
4	Jordan	06.06.1985	01.01.1987	44	Croatia	22.09.1997	01.01.2001
5	Tunisia	02.10.1986	01.01.1988	45	Moldova	25.06.1998	01.01.2001
6	Romania	01.07.1986	01.01.1989	46	Singapore	09.07.1999	01.01.2002
7	Netherland	27.03.1986	01.01.1989	47	Kyrgyzstan	01.07.1999	01.01.2002
8	Pakistan	14.11.1985	01.01.1989	48	Tajikistan	06.05.1996	01.01.2002
9	United Kingdom	19.02.1986	01.01.1989	49	Czech Republic	12.11.1999	01.01.2004
10	Finland (*)	09.05.1986	01.01.1989	50	Spain	05.07.2002	01.01.2004
11	Northern Cyprus	22.12.1987	01.01.1989	51	Bangladesh	31.10.1999	01.01.2004
12	France	18.02.1987	01.01.1990	52	Latvia	03.06.1999	01.01.2004
13	Germany (*)	16.04.1985	01.01.1990	53	Slovenia	19.04.2001	01.01.2004
14	Sweden	21.01.1988	01.01.1991	54	Greece	02.12.2003	01.01.2005
15	Belgium	02.06.1987	01.01.1992	55	Syria	06.01.2004	01.01.2005
16	Denmark	30.05.1991	01.01.1991	56	Thailand	11.04.2002	01.01.2006
17	Italy	27.07.1990	01.01.1994	57	Sudan	26.08.2001	01.01.2006
18	Japan	08.03.1993	01.01.1995	58	Luxembourg	09.06.2003	01.01.2006
19	UAE	29.01.1993	01.01.1995	59	Estonia	25.08.2003	01.01.2006
20	Hungary	10.03.1993	01.01.1993	60	Iran	17.06.2002	01.01.2006
21	Kazakhstan	15.08.1995	01.01.1997	61	Morocco	07.04.2004	01.01.2007
22	Macedonia	16.06.1995	01.01.1997	62	Lebanon	12.05.2004	01.01.2007
23	Albania	04.04.1994	01.01.1997	63	South Africa	03.03.2005	01.01.2007
24	Algeria	02.08.1994	01.01.1997	64	Portugal	11.05.2005	01.01.2007
25	Mongolia	12.09.1995	01.01.1997	65	Serbia-Mont.	12.10.2005	01.01.2008
26	India	31.01.1995	01.01.1994	66	Ethiopia	02.03.2005	01.01.2008
27	Malaysia	27.09.1994	01.01.1997	67	Bahrain	14.11.2005	01.01.2008
28	Egypt	25.12.1993	01.01.1997	68	Qatar	25.12.2001	01.01.2009
29	China	23.05.1995	01.01.1998	69	Bosnia	16.02.2005	01.01.2009
30	Poland	03.11.1993	01.01.1998	70	Saudi Arabia	09.11.2007	01.01.2010
31	Turkmenistan	17.08.1995	01.01.1998	71	Georgia	21.11.2007	01.01.2011
32	Azerbaijan	09.02.1994	01.01.1998	72	Oman	31.05.2006	01.01.2011
33	Bulgaria	07.07.1994	01.01.1998	73	Yemen	26.10.2005	01.01.2011
34	Uzbekistan	08.05.1996	01.01.1997	74	Ireland	24.10.2008	01.01.2011
35	USA	28.03.1996	01.01.1998	75	New Zeal.	22.04.2010	01.01.2012
36	Belarus	24.07.1996	01.01.1999	76	Canada	14.07.2009	01.01.2012
37	Ukraine	27.11.1996	01.01.1999	77	Switzerland	18.06.2010	01.01.2013
38	Israel	14.03.1996	01.01.1999	78	Brazil	14.03.2005	01.01.2013
39	Slovakia	02.04.1997	01.01.2000	79	Australia	28.04.2010	01.01.2014
40	Kuwait	06.10.1997	01.01.1997	80	Malta	14.07.2011	01.01.2014

(\*) These treaties has revised by 2008 for Austria, 2010 for Norway, 2009 for Finland, and 2011 for Germany

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### Appendix C. Variables and Descriptive Statistics

Variable	Mean (Std. Dev)	Min. (Max.)	Description	Source
ln FDI	12.485 (7.735)	0 (22.954)	FDI stock (current, US\$)	Republic of Turkey Central Bank ( <a href="http://www.tcmb.gov.tr">www.tcmb.gov.tr</a> )
DTT (dummy)	0.738 (0.440)	0 (1)	Double tax treaties (dummy)	Turkish Revenue Administration ( <a href="http://www.gib.gov.tr">www.gib.gov.tr</a> )
Age of treaty	8.194 (7.725)	0 (39)	Age of double tax treaties (years)	Authors' calculation
FTA	0.470 (0.499)	0 (1)	Regional/Free trade agreements (dummy, included free trade agreements and custom unions)	World Trade Organization ( <a href="http://www.wto.org">www.wto.org</a> )
BIT	0.651 (0.477)	0 (1)	Bilateral investment treaties (dummy)	Republic of Turkey, Ministry of Economy ( <a href="http://www.economy.gov.tr">www.economy.gov.tr</a> )
ln GDP (Host)	25.593 (1.909)	19.829 (30.414)	GDP (current, US\$)	World Bank, World Development Indicators ( <a href="http://www.worldbank.org">www.worldbank.org</a> )
ln GDP per capita (Host)	8.951 (1.415)	5.046 (11.364)	GDP per capita (constant, 2005 US\$)	World Bank, World Development Indicators ( <a href="http://www.worldbank.org">www.worldbank.org</a> )
ln GDP similarity	53.856 (0.337)	53.244 (54.331)	GDP similarity index [(Host GDP/Sum of Host and Turkey's GDP)*(Home GDP/Sum of Host and Turkey's GDP)]	Authors' calculation
ln sq. GDP per capita difference	17.771 (2.492)	2.303 (22.538)	Squared differences between per capita GDPs (per capita GDP of host country – per capita GDP of Turkey) <sup>2</sup>	Authors' calculation
ln inflation	1.228 (0.945)	-5.116 (4.113)	Inflation (average consumer prices, index)	IMF World Economic Outlook ( <a href="http://www.imf.org">www.imf.org</a> )
ln FDI openness	3.793 (1.010)	0.876 (7.167)	FDI openness (Inward and outward FDI stock as a share of GDP)	United Nations Conference on Trade and Development ( <a href="http://unctadstat.unctad.org">http://unctadstat.unctad.org</a> )
nborder	4.075 (2.709)	0 (14)	Number of neighboring states sharing a border with the identified state.	Database on Major Episodes of Political Violence and Conflict Regions ( <a href="http://www.systemicpeace.org">www.systemicpeace.org</a> )
ln distance	7.383 (0.767)	6.144 (9.106)	Distance between the capital cities of countries (miles)	www.timeanddate.com
manufact	0.662 (1.115)	0 (3)	Manufacturing as a Percentage of Merchandise Exports (standardized values by converting into a four point scale, where: the low values indicates the high level of manufacturing exports)	State Fragility Index ( <a href="http://www.systemicpeace.org">www.systemicpeace.org</a> )
intviol	0.034 (0.283)	0 (3)	Interstate political violence (international violence and warfare)	Database on Major Episodes of Political Violence and Conflict Regions ( <a href="http://www.systemicpeace.org">www.systemicpeace.org</a> )
civviol	0.330 (1.229)	0 (9)	Civil political violence (civil violence and warfare)	Database on Major Episodes of Political Violence and Conflict Regions ( <a href="http://www.systemicpeace.org">www.systemicpeace.org</a> )