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Trade integration and export survival: Evidence from Turkish machinery products

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Abstract

This paper uses survival analysis to investigate the effects of economic integration agreements on export duration using highly disaggregated machinery exports data from Turkey for the 1998-2013 period. Results obtained from the descriptive statistical analysis suggest that the duration of Turkey's machinery exports is remarkably short with a median duration of merely one year. In addition, we find that the mean and median duration of exports vary substantially across different types of trade agreements. Based on discrete-time duration models, we show that an economic integration agreement has a dual effect on the stability of export relationships: it increases the survival of export relationships which had already started before the agreement took place but reduces the survival of those that start afterwards. Finally, we also report that the effects differ depending on the type of trade agreements.

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1. Introduction

Empirical literature examining survival of exports shows that the duration of trade is short and has a large variation depending on the nature of products traded (Besedes and Prusa, 2006a and 2006b; Nitsch, 2009; Obashi, 2010; Corcoles et al., 2014; Türkcan, 2016). The debate has recently been focused on the determinants of export survival. Economic Integration Agreements (EIAs) have become one of the central phenomenon in explaining the sustainability of trade (Kamuganga, 2012; Besedes et al. 2015; Recalde et al. 2016).

Florensa et. al. (2015), Recalde et al. (2016), Türkcan and Pişkin (2016) note that findings may not be homogeneous across the countries with different trade linkages and the quality of trade agreements. This paper examines the extent to which EIA accounts for the survival of Turkish machinery and transport equipment (MP) exports. MP is one of the significant sectors of Turkish economy by constituting about 27.3 percent of the total merchandise exports in 2015 (OECD, 2016). In addition, OECD-WTO Trade in Value Added (TiVA) database reports an increasing trend in foreign value added content of gross exports from about 20 percent to 37 percent in 2011, indicating a high degree of global production integration in the sector. EIA can play a significant role in the rise and duration of trade linkages and export flows in the sector.

The focus of the paper is on the impact of different kinds of EIAs on the survival rate of exports. Findings confirm the literature: EIAs increase the likelihood of the survival of active trade relationship but increase the hazard of those starting afterwards. In addition, we find that the impacts vary depending on the types of agreements. Existing EIAs increase the probability of survival of trade. Although existing non-reciprocal preferential trade agreements have no significant impact on trade ceasing, they decrease the hazard of active trade relationship the most and have the largest impact on increasing the hazard of those that start afterward. As the duration of customs union increase, the likelihood of trade ceasing increases the most.

2. Data

We examine Turkish MP primarily for three reasons. First, the share of MP in total exports increased from 15 percent in 1998 to above 30 percent in 2007 and since then has been fluctuating around 27 percent (OECD, 2016). It is currently one of the top sectors in total exports. Second, the sector's share in manufacturing value added exhibited a parallel trend and increased from 15 percent in 1998 to 20 percent in 2005-2008 and then fall to 18 percent in the rest of the analysis period (OECD, 2016). Third, the increase largely realized with the foreign participants in the production of MP for exports. In other words, it is one of the sectors displaying high trade in value added.

Product-level data on Turkish MP are taken from BACI, an international trade database developed by CEPII. Our database contains bilateral trade values of exports and imports (in thousands of US dollars at current prices) at the 6 digit level of HS (Revision 1996) for more than 200 trade partners from 1998 to 2013. In this product classification, there are more than 5,000 product lines covering all articles in trade (HS chapters 1-92). Following Kimura and Obashi (2010) and Obashi (2010), we identify product lines included in any of the headings of chapters 84-92 as MP (general machinery HS 84, electric machinery HS 85, transport equipment HS 86-89, and precision machinery HS 90-92). Accordingly, 1,124 HS 6-digit product lines were used to define trade in the sector. We examine exports of each product to 188 countries, which account for more than 90 percent of Turkish machinery sector exports.

Export duration is measured by the length of spells, the number of years in which the product-country pair export relationship is active. An export relationship may stop and start several times over the study period, resulting in multiple spells within one export relationship. The greater the number of spells, the shorter the duration of export spells. Thus, the number of export spells may exceed the number of export relationships during the study period. The maximum number of spells possible for each importing country and product pair during the 1998-2013 span (16 years) is eight.

The data on the different types of EIAs – our key explanatory variable – are mainly taken from Baier and Bergstrand's website[1] and are supplemented by the data from the WTO's Regional Trade Agreements Information System (RTA-IS).[2] The database records the economic integration of bilateral country pairings for 195 countries annually from 1950 through 2012 and identifies six types of trade agreements by their level of economic integration, ranging in depth from non-reciprocal preferential trade arrangements (NR-PTA) to more extensive agreements such as preferential trade arrangements (PTA), free trade areas (FTA), customs unions (CU), common markets (CM) and economic unions (EU). Our analysis focuses on the 1998-2013 period and considers only the first four types since the last two types are not present throughout this period in Turkey.

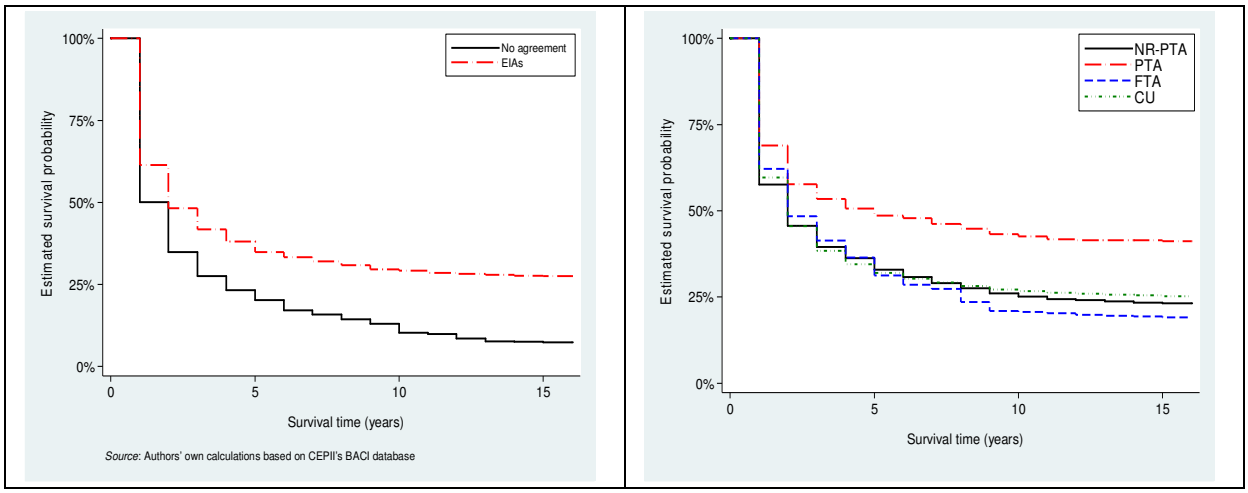
There is a total of 560,862 trade observations on export flows during the analysis period. Out of that, about 53% (296,016) are accomplished by the aforementioned four types of EIA (Table I). CU, by accounting about 26 % of all observed trade is the most common type of EIA, followed by FTA (15 %) and PTA (7 %). EIA increases the mean of the observed spell length in years. Mean and median spell lengths are the highest when EIA is CU type. The Kaplan-Meier survival curves in Figure 1 show that probability of export survival increases with EIA and the rate is noticeably higher when trade agreement is PTA type (Fig. 1).

Table I: Number of observations and duration of MP exports by agreement type

Type of agreement	Observations		Duration of exports in years	
	Number of obs.	Fraction of obs.	Mean	Median
No agreement	264,846	47.22	3.21	1
EIA	296,016	52.78	3.30	1
NR-PTA	25,876	4.61	2.97	1
PTA	41,650	7.43	2.66	1
FTA	83,062	14.81	3.30	1
CU	145,428	25.93	3.54	2
Total	**560,862**	**100.00**	**3.25**	**1**

[1] This dataset is available at Jeffrey Bergstrand's website www.nd.edu/jbergstr.
[2] The database is available on the World Bank website at http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx.

Figure 1: Export survival by type of agreement



A large share of export relationships in MP has very short duration. About 53% of all spells are observed for just a year and about 90% observed for 9 or fewer years (Table II). EIA increases the spell length and the increase is relatively higher when EIA is CU type, followed by FTA. With EIA, the share of spells observed for a single year falls to 51%, and if EIA is CU type the share goes further down to 49%. On the other hand, if EIAs are NR-PTA or PTA types share of spells observed for a single year increase. In fact, 90% of the observed spells die within 5 years when EIA is PTA type.

3. Estimation methodology and results

To explore the relationship between EIA and export duration we employ discrete-time duration model, which allows for baseline hazard to be different across product-country-year pairs (Hess and Person, 2011). Discrete-time hazard models can be specified in terms of the conditional probabilities of termination of a particular trade relation in a given time interval. The hazard probability is the probability of terminating a trade relation within a specified time interval $[t_k, t_{k+1}), k = 1,2, \dots, k^{max}$ and $t_{1=0}$, given that failure has not occurred prior to the starting time of the interval and the explanatory variables are added to the regression model. The conditional probability can be expressed as a discrete-time hazard rate:

$$h_{ik} = P(T_i < t_{k+1} | T_i \geq t_k, x_{ik}) = F\left(x_{ik}^{'}\beta + \gamma_k\right) \quad (1)$$

Where T_i is a continuous, non-negative random variable measuring the survival time of a particular trade relation, x_{ik} is a vector of time-varying covariates that are assumed to affect the hazard rate, β is a vector of coefficients to be estimated. A positive (negative) sign of coefficients means a higher (lower) likelihood of terminating an export relationship and consequently lower (higher) probability of surviving in the export market. γ_k is a function of (interval) time that allows the hazard rate to vary across periods and included in the regression model as a set of dummy variables marking the length of each spell. $F(.)$ is an appropriate distribution function ensuring that $0 \leq h_{ik} \leq 1$ for all i and k. In this study, i denotes separate export spells for any given importer-product combination.

The discrete-time proportional hazards model can be estimated by maximizing the following log-likelihood function:

$$ln\, \mathcal{L} = \sum_{i=1}^{n} \sum_{k=1}^{k_i} [y_{ik} ln(h_{ik}) + (1 - y_{ik}) ln(1 - h_{ik})] \quad (2)$$

where k_i refers to the terminal time period, the subscript i indicates that it may vary with the spell. y_{ik} is a binary variable and takes the value of one if spell i is observed to cease during the kth time interval, and zero otherwise. Hence, any standard model for binary dependent variables (such as logit, probit or cloglog) can be applied to estimate discrete-time hazard models. We estimate equation (2) using the discrete-time probit model with random effects. However, the results remain qualitatively unchanged when using logit or cloglog model instead. Before starting the regression process the underlying export database is changed in the following way to be in line with the model specification. If the spell of the ith subject is completed, then the binary dependent variable assumes the unit value for the last time point (T_i) while it is zero for the rest of time points $(1,2, \ldots T_i - 1)$ of the time interval. For example, consider that Turkey exports a given product to a particular destination country from 2000 to 2004. Such an export relationship is regarded as having a spell length of four years. With this information about the spell length, the binary dependent variable takes the value of zero from 2000 to 2003 and one for the fourth year. All left-censoring spells are omitted at the beginning of the analysis, reflecting common practice for handling left-censoring data.

The regression analysis as a standard procedure also controls for country and product-specific variables obtained from CEPII. Distance, border, common language and importers' GDP are included as country-specific variables. Product-specific variables are represented by the logarithm of initial export value and lagged duration. An export relationship with a larger initial transaction size reflects the existence of ex-ante trust between trading partners and expected to reduce the hazard of exporting. The lagged duration is included to assess the impact of export experience on the hazard rate.

Besedes et al. (2015) note that thinking about the effect of EIAs requires being cautious on the timing of the agreement as it relates to spells of trade. Accordingly, to account for the timing of agreements three dummy variables are defined with respect to the starting points of agreements and identify if spells start before, after or during an EIA has been signed. The first dummy, "EIA exists" defines all pairs of countries which have ever had an agreement. The second dummy, "EIA in effect" classifies the years during which an agreement is in charge. The third dummy, "Spell starts after EIA" identifies those spells that started after the agreement is signed. Finally, the variable "duration of EIA" measures how long an agreement is active. While Besedes et al. (2015) pooled different EIA types together, for our analysis we construct these four variables not only for the pooled EIA, but also for each of a number of specific EIAS, namely NR-PTA, PTA, FTA, and CU. Table III in the Appendix provides more information on the explanatory variables and the sources of the data.

The impacts of EIA and different types of EIA are examined individually. In line with the literature, all standard variables have expected signs and the magnitudes are similar to those in the literature (Table IV). Results for the standard variables do not significantly vary across the different types of EIA, but in general, the size of the coefficients is relatively higher in the case of CU. Hence, hazard rates decrease in border, importers' GDP, initial exports, and duration but increase in distance. Accordingly, being a large country and building a long and credible relationship increases the duration of exports in MP.

The coefficients of "EIA exists" are negative and significant when we include all types of EIA in the regression analysis (EIA column in Table IV). Thereby, the existence of an EIA decreases the hazard of trade ceasing, which implies countries that have signed an EIA in any point of the sample period have a lower risk. These findings are in line with both Besedes et. al. (2015) and Recalde et al (2016). In addition, we find that impacts of the existing EIAs may vary across the EIA types. Existing NR-PTA does not have any significant impact on the

hazard of exporting. Existing PTA and FTA significantly increases the survival rate, as the impact of FTA is larger. Effect of existing CU depends on the inclusion of other EIA related dummies. When all dummies are included existing CU becomes a significant hazard reducing factor.

The sign and the size of the coefficients of "EIA in effect" depend on the inclusion of other two dummies ("Spell starts after EIA" and "Duration of EIA") when we conduct the analysis for NR-PTA and CU. Since we have significant results for the latter two dummies in the analysis with EIA, we continue to interpret the results containing all EIA related dummies, our third and preferred specification (column 3 of each part). When all EIA related dummies are included, consistent with the findings in Besedes et. al. (2015), the coefficients of "EIA in effect" are negative and significant no matter the type of EIA is, suggesting that agreements on already active spells reduce the likelihood of export ceasing. This conclusion slightly diverges from Recalde et. al. (2016) who find that the EIA in effect has significantly hazard reducing effect only when the EIA is deep enough. Our results suggest a higher coefficient value for NR-PTA, followed with PTA and FTA.

In addition, if spells begin after the agreement is in place or the duration of EIA gets longer the probability of ceasing the export relationship increases (EIA column 3). However, hazard rate may not be affected significantly if spells begin after the PTA or FTA. The probability of hazard is significantly high if a spell begins after the NR-PTA. The probability of hazard increases with the duration of EIA and the impact is larger when EAI is CU type followed by FTA.

Table IV: Effects of EIAs on the hazard of export ceasing for MP

Variables	EIA			NR-PTA			PTA			FTA			CU		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Log distance	0.0863	0.0909	0.0964	0.0776	0.0752	0.0745	0.0853	0.0855	0.0855	0.0636	0.0647	0.0665	0.1029	0.1035	0.1033
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common language	-0.0558	-0.0319	-0.0053	-0.0577	-0.0626	-0.0640	-0.0569	-0.0573	-0.0580	-0.1001	-0.0994	-0.0967	-0.1003	-0.0642	-0.0270
	(0.102)	(0.352)	(0.877)	(0.095)	(0.070)	(0.064)	(0.099)	(0.096)	(0.092)	(0.004)	(0.005)	(0.006)	(0.004)	(0.066)	(0.442)
Common border	-0.1349	-0.1335	-0.1332	-0.1397	-0.1424	-0.1433	-0.1144	-0.1161	-0.1212	-0.1476	-0.1458	-0.1386	-0.1198	-0.1164	-0.1162
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log GDP (importer)	-0.0351	-0.0403	-0.0490	-0.0309	-0.0313	-0.0314	-0.0317	-0.0320	-0.0324	-0.0310	-0.0315	-0.0325	-0.0409	-0.0424	-0.0440
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log initial export value	-0.0693	-0.0692	-0.0687	-0.0700	-0.0700	-0.0700	-0.0698	-0.0698	-0.0697	-0.0703	-0.0702	-0.0700	-0.0697	-0.0698	-0.0700
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged duration	-0.0400	-0.0395	-0.0430	-0.0375	-0.0375	-0.0375	-0.0371	-0.0370	-0.0376	-0.0380	-0.0379	-0.0390	-0.0393	-0.0394	-0.0405
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EIA exists	-0.0509	-0.0658	-0.1075	-0.0011	-0.0227	-0.0274	-0.0647	-0.0678	-0.0712	-0.0774	-0.0806	-0.0865	-0.0086	-0.0333	-0.0642
	(0.000)	(0.000)	(0.000)	(0.970)	(0.431)	(0.345)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.638)	(0.072)	(0.001)
EIA in effect	0.0835	-0.0672	-0.0670	0.0323	-0.2200	-0.2280	-0.0437	-0.0796	-0.0976	0.0299	-0.0481	-0.0868	0.1414	-0.0278	-0.0757
	(0.000)	(0.000)	(0.000)	(0.304)	(0.001)	(0.001)	(0.007)	(0.001)	(0.000)	(0.008)	(0.022)	(0.000)	(0.000)	(0.332)	(0.009)
Spell starts after EIA		0.1915	0.0513		0.2943	0.2536		0.0520	0.0203		0.0990	0.0231		0.2094	0.1164
		(0.000)	(0.004)		(0.000)	(0.000)		(0.058)	(0.486)		(0.000)	(0.334)		(0.000)	(0.000)
Duration of EIA			0.0244			0.0059			0.0095			0.0192			0.0209
			(0.000)			(0.052)			(0.002)			(0.000)			(0.000)
Duration dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spell no. dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ρ	0.2619	0.2635	0.2615	0.2695	0.2697	0.2699	0.2688	0.2690	0.2677	0.2681	0.2684	0.2664	0.2637	0.2639	0.2663
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621	410,621
Spells	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056	152,056
Export relations	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598	80,598
Log likelihood	-192,026	-191,955	-191,736	-192,063	-192,054	-192,052	-192,028	-192,026	-192,021	-192,036	-192,026	-191,985	-191,958	-191,928	-191,843

Note: All regressions include random effects on the importer-product level. P-values are in parentheses. ρ is the fraction of error variance that is explained by variation in the unobserved individual factors. An export relation is defined as importer-product combination. The number of observations is computed based on the total number of years with positive export flows for all machinery products. All left-censored observations are excluded from the data used in the estimations.

4. Conclusion

This paper utilizes survival analysis by using highly disaggregated machinery exports data from Turkey to examine the impacts of EIAs on export duration. We show that likelihood of the hazard of overall machinery trade ceasing decreases with economic integration unless the agreement is signed after spells started or duration of EIA increases. Thus, agreements have a dual effect on the stability of export relationships: it increases the survival of export relationships which had already started when the agreement takes place but reduces the survival of those that start afterwards. In addition, we find that the impact of the EIA related variables may vary across types of EIA. As the depth of the agreement increase, the survival rate of the already started (start afterwards) export relationship increases (falls).

The outcomes of the analysis underline the importance of trade agreements to increase the probability of export survival. The probability increases with the depth of the agreements. The depth of the agreements depends on the bargaining power of a country in foreign trade. Thus, developing countries need to design policies to enhance the competitiveness of firms and facilitate their participation in global production networks. Bargaining power of a country may further be supported by an increase in the attractiveness of the country for domestic and foreign traders by improving infrastructure, quality of human capital, enhancing technological capabilities, easing doing business conditions and building strong institutional capacity, as well as reducing possible economic, political and financial risks.

The results in this paper leave several issues for future research. A parallel development to the rapid rise in the number of EIAs in recent years is the emergence of global production networks as production processes become increasingly fragmented geographically. EIAs can foster the international fragmentation of production across countries by removing nonproduction costs such as costs of transportation, customs clearance, and other related charges. These features of EIAs may have different impacts on the survival probabilities of trade in different kinds of goods, i.e. final, processed and intermediate goods.

Also, the trade data used in this paper provides information only on the trade values of a given product at country-product-level. It is difficult to track parts and components once they are imported with the currently available trade data. The exported parts and components could be used primarily for the production of final goods by local companies other than by firms operating in a global production network. Therefore, it may be worthwhile to investigate this link in more detail using firm-level data.

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Appendix:

Table II: Distribution of spell lengths (in years) by type of agreement for MP

Spell length	Total		No agreement		EIA		NR-PTA		PTA		FTA		CU	
	Number of spells	Fraction of spells	Number of spells	Fraction of spells	Number of spells	Fraction of spells	Number of spells	Fraction of spells	Number of spells	Fraction of spells	Number of spells	Fraction of spells	Number of spells	Fraction of spells
1	91,197	52.83	53,949	54.17	37,248	51.00	4,219	54.97	4,920	53.27	10,432	51.20	17,677	49.45
2	27,240	15.78	15,202	15.27	12,038	16.48	1,193	15.54	1,689	18.29	3,316	16.28	5,840	16.34
3	13,046	7.56	7,028	7.06	6,018	8.24	597	7.78	856	9.27	1,687	8.28	2,878	8.05
4	7,459	4.32	4,107	4.12	3,352	4.59	380	4.95	445	4.82	833	4.09	1,694	4.74
5	4,612	2.67	2,506	2.52	2,106	2.88	197	2.57	329	3.56	557	2.73	1,023	2.86
6	3,471	2.01	1,851	1.86	1,620	2.22	144	1.88	286	3.10	478	2.35	712	1.99
7	3,061	1.77	1,747	1.75	1,314	1.80	134	1.75	76	0.82	417	2.05	687	1.92
8	2,604	1.51	1,580	1.59	1,024	1.40	97	1.26	48	0.52	320	1.57	559	1.56
9	2,509	1.45	1,622	1.63	887	1.21	97	1.26	56	0.61	206	1.01	528	1.48
10	2,154	1.25	1,305	1.31	849	1.16	69	0.90	44	0.48	213	1.05	523	1.46
11	2,393	1.39	1,588	1.59	805	1.10	88	1.15	78	0.84	280	1.37	359	1.00
12	1,999	1.16	1,200	1.20	799	1.09	60	0.78	77	0.83	330	1.62	332	0.93
13	1,554	0.90	863	0.87	691	0.95	51	0.66	73	0.79	282	1.38	285	0.80
14	1,324	0.77	769	0.77	555	0.76	59	0.77	65	0.70	161	0.79	270	0.76
15	1,088	0.63	588	0.59	500	0.68	51	0.66	39	0.42	169	0.83	241	0.67
16	6,911	4.00	3,682	3.70	3,229	4.42	239	3.11	155	1.68	693	3.40	2,142	5.99
Total	**172,622**	**100.00**	**99,587**	**100.00**	**73,035**	**100.00**	**7,675**	**100.00**	**9,236**	**100.00**	**20,374**	**100.00**	**35,750**	**100.00**

Table III: Variable definitions and data sources

Variable	Definition	Data source
Log distance	Log of the distance in kilometers between Turkey's capital and its trading partner's capital	CEPII's GeoDist database: http://www.cepii.fr
Common language	Takes the value one if Turkey and its trading partner share a common language, zero otherwise	CEPII's GeoDist database: http://www.cepii.fr
Common border	Takes the value one if Turkey and its trading partner share a common border, zero otherwise	CEPII's GeoDist database: http://www.cepii.fr
Log GDP (importer)	Log of importer's GDP, measured in nominal US dollars	World Bank's World Development Indicators (WDI)
Log initial export value	Log of the value of exports at the start of the spell, measured in US dollars	CEPII's BACI database: http://www.cepii.fr
Lagged duration	Number of years that the previous spell of the same export relationship lasted	CEPII's BACI database: http://www.cepii.fr
EIA exists	Takes the value one if Turkey and its partners have an agreement at some point, and zero otherwise.	Baier and Bergstrand's website:www.nd.edu/jbergstr and WTO's RTA-IS database.
EIA in effect	Takes the value one if Turkey and its partners have an agreement in the given calendar year, zero otherwise.	Baier and Bergstrand's website:www.nd.edu/jbergstr and WTO's RTA-IS database.
Spell starts after EIA	Takes the value one if an export spell starts after the agreement is signed, and zero otherwise	BACI database, Baier and Bergstrand's website:www.nd.edu/jbergstr and WTO's RTA-IS database.
Duration of EIA	Measures how long an agreement is in place (in years)	Baier and Bergstrand's website:www.nd.edu/jbergstr and WTO's RTA-IS database.