

Impact of the Presence of Embassies on Trade: Evidence from Turkey

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Abstract

This paper analyzes the impact of the presence of foreign missions on trade using Turkey's unique expansion in its foreign embassy network (37 new embassies in 8 years) as the source of variation in a panel data setting. A majority of the existing empirical studies use cross-sectional bilateral trade data due to lack of variation overtime (Rose, 2007; Bergeijk and Moons, 2013). Employing a panel data analysis, this paper is able to address the endogeneity issues that are associated with a standard cross-sectional analysis. The dependent variable in the paper is the trade between Turkey and 190 countries from 2006 to 2016. The results indicate that presence of an embassy increases export value by 26% and this increase comes mainly from the volume effect. Categorizing goods by the Rauch (1999) classification shows that the increase in differentiated goods exports explains almost all of the change in the total export value. Furthermore, number of exporting firms increase by about 9%. There is no statistically significant impact on the exports of homogeneous goods. Replication of the analysis for imports suggests no impact on imports, at all.

Introduction

Growth in global import demand from developed countries has declined in recent years. The share of the EU-28 countries in the global imports of goods declined from 18.1% to 14.6% between 2004 and 2014, similarly share of the United States declined from 21.6% to 15.8% during the same period (European Commission, EU trade in the world). Such a significant decline in the relative share of the high income countries has encouraged exporting countries to discover new markets. However, uncertainty arising from the information asymmetry is one of the major trade barriers in new destinations most of which are developing countries. Language barrier, bureaucratic procedures, security concerns all contribute to the sunk cost a firm has to take into account when entering into a new market. Thanks to the improvements in information and transportation technologies, those asymmetries across trade partners have declined over time. Nevertheless, countries still continue to increase the number of their highly costly foreign missions (embassies, consulates, export promotion agencies etc.) mainly to support economic relations with those countries as well as to maintain the consular affairs or political interests (Rose, 2007).

There exists only a handful of studies that directly examine the causal relationship between the costly foreign missions and bilateral trade across countries. Among those, Rose (2007) is one of the most relevant to the research question in this study. He carries out a cross-sectional analysis of the annual average bilateral trade from 22 large source countries to 200 destination countries over the period of 2002-2003 to investigate if there is a causal relationship between the presence of an embassy and trade. Since the cross-sectional analysis does not control for the country-pair fixed effects, he uses a wide range of control variables. He also tries to address the reverse causality by instrumenting the presence of foreign missions with several variables including oil reserve capacity and desirability index of destination country. Even though the validity of these

instruments is a question, as those instruments are very likely to be correlated with trade volume, Rose still finds positive and statistically significant embassy effect on exports (6-10%).

Segura-Cayuela and Vilarrubia (2008b) also investigate the trade impact of foreign missions through a cross-sectional bilateral trade analysis and following a similar method to Rose (2007). However, authors focus on the source of impact by considering the extensive and intensive margins of the causal effect. They find that presence of a foreign service increases exports around 11 to 18% and this increase is originating from the extensive margin channel.

Afman and Maurel (2010) perform a panel data analysis by using the new foreign mission openings in the Eastern Europe after the dissolution of Soviet Block. They specifically focus on the pair wise trade between 26 OECD countries and 30 transition countries in three observation periods 1995, 2000, and 2005, excluding the within group trade. The resulting impact is positive and high in magnitude (around 40%); however, its statistical significance disappears when controlled for the pair and time fixed effects. Extracting causal interpretations from this analysis is not trivial since there are many other factors that may directly impact the trade volume of those transition countries during the observation period.

Head and Ries (2009) carry out a single country analysis by investigating the impact of the Canadian trade missions on the exports of Canada. Having a panel of before and after treatment periods, authors run regressions for various treatment time spans (1-4 years). They handle the reverse causality by controlling unobserved characteristics with fixed effects and including the lag of the dependent variable among the control variables. The study finds no statistically significant effect on Canadian exports.

Another single country analysis by Creusen and Lejour (2011) looks at the determinants of the entry decision of new exporter firms using the international trade transactions of Dutch firms

between 2002 and 2008. They find a stronger effect such that the presence of foreign missions stimulates both the entry decision and volume of trade by 5-20%. Adjustment process revealed by the data confirms that some firms exit after the first trial as a result of the realized sink costs. Those who find to stay profitable in the new market increase their trade volume overtime.

Finally, a meta-analysis by Bergeijk and Moons (2013) compares the 29 empirical studies on trade and investment impact of economic diplomacy, which contains embassies, consulates and other diplomatic facilities, investment and export promotion offices, trade and state visits. They conclude that primary studies conducted on a single country basis will in general show a lower significance of the coefficient and studies tend to generate more significant results when the dependent variable is export rather than imports or foreign direct investment.

The majority of above mentioned empirical studies in the literature use cross-sectional bilateral trade data due to lack of variation overtime. However, cross-sectional analysis is subject to simultaneity bias because of the reverse causality between the size of trade and presence of foreign missions unless a valid instrument is employed, which is not easy. The case of Turkey, in this sense, is unique as it allows for a panel data analysis thanks to the significant variation in its foreign embassy network in a relatively short time period. Furthermore, a literature research indicates that there is no study that investigates the impact of foreign missions from an emerging country perspective. As a transition country from being a developing country to a developed country, example of Turkey may provide an insight for other developing countries that need to allocate their already limited sources efficiently across various policy options.

Turkey has experienced a significant change in its foreign policy objectives since the beginning of the 21th century. The main goal of this change was to develop a multi-dimensional and more proactive foreign policy which in part led to the expansion of relations with long-time

neglected Sub-Saharan Africa, Latin America and Asia-Pacific regions. As a result of this expansion policy, Turkey opened 37 new foreign embassies in the aforementioned regions between 2006 and 2014. Table 1 shows the list of those countries and Figure 1 represents the change in the total number of Turkish embassies over time. Such an aggressive expansion in the number of foreign missions in a relatively short time period is very unique as it requires a substantial increase in human capital and monetary expenses. Figure 2 illustrates the total expenses of the Turkish Foreign Ministry in the last decade. In parallel to the establishment of new foreign embassies, the expenses increase substantially, which correspond to approximately annual 250 million dollars additional cost (about %30 increase).

There may be other factors that are contributing to this jump; however, it is obvious that the increase in the number of new embassies has a key role. The government motivates and rationalizes this increase in expenditures by emphasizing the expected returns from the larger export opportunities in addition to the advanced relations with the countries in which a new embassy opened.

The purpose of this paper is to estimate if Turkey's new embassies have impacted trade positively by answering the following questions: Does existence of an embassy impact exports to (imports from) that country? Does this effect vary across differentiated vs non-differentiated products? If there is an impact on exports (imports), what are the roles of the extensive margin (variety effect) and intensive margin (volume effect)? And finally, does number of exporting firms increase?

The estimation is performed following a panel difference-in-differences strategy by introducing the presence of an embassy as an additional control variable to the standard gravity equation. The country specific time trend is also added as an additional control variable in order

to deal with the possible pre-existing export (import) growth trends. Estimation results suggest that presence of an embassy increases exports to that country by 26% while having no considerable impact on imports. The increase in exports is mainly driven by the exports of differentiated goods and explained by the volume effect (intensive margin) in large. Finally, the number of exporting firms rises by almost 9%. The results are found to be robust to the various specifications and adjustments in the sample size. Even though there exists a statistically significant improvement in trade due to opening of new embassies, a simple cost-benefit analysis indicates that short run export returns by itself may not be enough to compensate the expenditure needed to maintain those foreign missions.

Empirical strategy

I followed a panel data estimation method by augmenting the standard gravity model by including embassy dummy as an additional control variable. Following is the estimating equation for the embassy impact:

$$\ln Y_{it} = \alpha E_{it} + \delta \ln Y_{it-1} + \beta W_{it} + \rho_i T + \gamma_t + \mu_i + \varepsilon_{it} \quad (1)$$

where $\ln Y_{it}$ is the natural logarithm of export (import) value or the number of export varieties from Turkey to country i at time t , E_{it} is the indicator of the presence of a Turkish embassy in the partner country i at time t , W_{it} is a vector of constant term and time variant explanatory variables including log GDP, presence of a free trade agreement (FTA) with country i , and presence of a Turkish development agency. ρ_i provides the effect of country specific time trend (T), γ_t and μ_i are time and country-specific fixed effects, and ε_{it} is the unobserved error term.

The key parameter in this equation is α and represents the percentage change in the outcome variable due to presence of an embassy. Though most of the variation occurs between

2009 and 2014, the observation period is extended back to 2007 to have enough pretreatment observations. Aim of doing so is to control for the pre-existing trend in outcome variable. Inclusion of the country specific time trends as regressors is expected to address a possible simultaneity between the growth rate of the exports and the embassy opening decision.

Data and summary statistics

The confidential export and import data at firm, product (6 digit), and country level is obtained from the Turkish Statistical Institute (Turkstat) where as the number of exporting firms by country is retrieved from the Entrepreneurship Information System of the Ministry of Science, Industry, and Technology. The trade value and variety data is further categorized as homogenous goods and differentiated goods using the 2007 version of Rauch (1999) classification of goods. Annual GDP values are obtained from the UNstats database. Historical data for the timeline of the presence of embassies and consulates and information on the regulatory process are confidentially obtained from the Prime Minister's Office in Turkey. Information on the other types of foreign missions is gathered by making use of the historical annual reports of the related organizations.

Table 2 represents the mean or total values of various outcome variables and control variables before and after the treatment period for the treatment and control countries. The treatment countries are the ones in which a new Turkish embassy is opened between 2008 and 2014. The remaining countries are taken as the control group but represented in two sub-groups; the first group of control countries are those that never had a Turkish embassy and the second group of control countries are the ones that already had an embassy before 2008.

Evidence from the simple log mean comparison suggests that exports to the treatment countries perform better than the exports to the control countries, especially than those never had an embassy. Differential increase seems to be larger in the exports of differentiated goods, which

are expected to be more responsive to a reduction in information asymmetry. Furthermore, the differential change is mainly arising from the increase in the number of varieties, which is another sign for the positive impact of embassies in introducing new exporters to those markets. However, descriptive evidence also shows a differential increase in the GDPs of the treatment countries relative to the other countries. Thus, a causal relationship between the increase in exports to the treatment countries and the presence of embassies can only be explained by a further analysis that takes in account the those factors as well.

Among other time variant factors, changes in the presence of development agencies,¹ and presence of a free trade agreement are also included as additional control variables. As shown on the summary table, there was significant increase in the number of development agencies and direct flight availability during the observation period.

Results

Export results

Table 3 represents the regression results of various specifications when the natural logarithm of exports from Turkey to partner countries is run on the embassy indicator and other control variables. The preferred specification is the column (5), which controls for the time and country fixed effects as well as the country specific time trend. This specification is preferred because controlling for the country specific time trend can take care of the possible simultaneity bias due to the pre-existing export growth trend that might have led to the opening of an embassy. The increase in the R-square (almost doubles) with inclusion of country specific time trends and significant decline in the magnitude of the embassy coefficient confirms the validity of these

¹ These agencies provide direct assistance to some developing countries and manages aid projects by the Turkish government.

concerns. Column (6) is included to check if the presence of other foreign policy networks has an impact on the outcome but the result does not change at all.

The coefficient on the key variable, embassy, is statistically significant at five percent level and positive in all specifications. The preferred specification in column (5) suggests that the presence of an embassy in the partner country increases exports to that country by almost 26%.

First three columns of the Table 4 presents the regression results when exports are categorized as differentiated versus homogenous goods according to the Rauch (1999) classification based on the preferred specification in Table 3, column (5). The first row shows the results from the entire exports and the second and third rows show the results from the differentiated and homogenous goods exports respectively. Theoretically, we expect a greater impact on the differentiated goods export since it is more subject to information asymmetry. Indeed, the regression results show that differentiated goods exports significantly increase with a similar magnitude (29%) to the overall increase in total exports whereas the increase in the homogenous goods exports is not statistically significant.

Next, I carried out a simple decomposition exercise to investigate if the change in exports is arising from the variety effect (extensive margin) or volume effect (intensive margin).² Rows 4 through 6 in Table 4 show the results of regressions when the dependent variable is replaced with the total number of export industries at HS2002 classification at 6-digit level, which will give the share of the extensive margin in the overall export rise. The results indicate that the presence of an embassy has statistically significant impact on the overall number of export varieties as well as the

² Let $X = \sum_{i=1}^n v_i$, where X is the total export value and v_i is the export value (price*quantity) of variety i . We can rewrite the export equation as: $X = \bar{v}n$. Taking the natural logarithms of both side we get: $\log(X) = \log(\bar{v}) + \log(n)$. Differentiating both side and assuming no change in export prices we finally obtain: $\frac{\Delta X}{X} = \frac{\Delta \bar{v}}{\bar{v}} + \frac{\Delta n}{n}$. Hence, the change in total export value will be the sum of the change in average export volume and total number of export variety.

variety of differentiated goods however the magnitude is small suggesting that intensive margin has a larger role relative to the extensive margin in explaining the overall export surge.

Finally, row (7) shows the estimated coefficient when the same set of controls are regressed on the number of exporting firms. The estimate implies that presence of an embassy in the partner country increases the number of exporting firms to that country by 9%.

Robustness checks

Table 5 represent the results of various robustness checks when the observation period and sample of countries are reorganized. The goal in doing this exercise is to check if the result are driven from an observation of particular year or group of country. The first row is the original model. The second and third rows show estimates when the observation period is extended and shortened. Rows (4) through (7) represents results when the high income countries, countries with very small population, countries that had an embassy prior to 2008, and countries that never had an embassy as of 2014 are dropped from the original sample by order. In all specifications the results are pretty robust to the original model in terms of the sign and significance level but the magnitude changes slightly especially when the sample is limited to those countries that had no embassy before 2008 or to those have an embassy as of 2014. This is not surprising as the sample size significantly changes when doing these exercises.

Import results

New Turkish embassies in the partner country help to reduce the information asymmetry not only for Turkish exporters but also for importers and exporters from the partner country. Moreover, most of the countries did also open their embassies in Turkey simultaneously or in the following years. Table 6 represents the results for the imports based on the preferred specification

in export estimation. Surprisingly the sign of the coefficient is positive but there exists no statistically significant impact on imports at all.

Cost-benefit Analysis

The results indicate an improvement in trade as a result of the opening of new embassies. However, in order to have an idea about the overall economic impact, we need to account for the expected total changes in the export value due to the presence of embassies. In 2008, the year right before the treatment, total export value to 37 treatment countries was about 2.2 billion dollars. Taking 2008 as the base year, a 26% increase in exports corresponds to approximately 550 million dollars increase in annual exports as a result of the embassy impact. Considering more than 200 million dollars increase in annual spending on foreign missions partially due to the new embassies, the short run export returns by itself seem not enough to compensate the substantial expenditure needed to maintain those foreign missions. However, it has to be also noted that export returns may be higher in the long run as the availability of consular affairs enhances the mobility across countries.

Conclusion

This study analyzes the short term trade impact of the presence of foreign missions by using the significant variation in Turkey's foreign mission network in recent years. As oppose to the existing cross-sectional estimations, this study employed a dynamic panel difference-in-differences strategy thanks to the size of the variation in a short time period. After controlling for the country specific time trends and standard gravity covariates, it is found that the presence of an embassy increases exports by 26% and has no impact on imports. Increase in the level of exports is due to the increase in differentiated goods exports and explained largely by the volume (intensive margin) effect. Considering over 200 million dollars increase in annual expenses on foreign

missions, 26% increase in exports is moderate in monetary terms and corresponds to an only 550 million dollar increase in annual exports.

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Table 1: *List of the Countries with New Embassies*

Angola	Eritrea	Mauritania
Benin	Gabon	Namibia
Burkina Faso	Ghana	Niger
Brunei Darussalam	Guinea	Panama
Botswana	Gambia	Peru
Ivory Coast	Cambodia	Rwanda
Cameroon	Sri Lanka	Chad
Congo	Madagascar	Tanzania
Colombia	Mali	Uganda
Costa Rica	Malta	Zambia
Djibouti	Myanmar	Zimbabwe
Dominican Rep.	Montenegro	
Ecuador	Mozambique	

Table 2: *Summary Statistics*

VARIABLES	Treatment Countries (N=38)			Never had an embassy (N=62)			Had embassy before 2008 (N=90)		
	2008	2016	Change	2008	2016	Change	2008	2016	Change
Log exports	21.52	21.63	0.11	20.91	20.96	0.05	25.53	25.62	0.10
Log exports (differentiated)	21.18	21.25	0.08	20.67	20.52	-0.14	25.14	25.25	0.11
Log exports (non-dif)	20.29	20.47	0.18	19.36	19.91	0.55	24.38	24.44	0.06
Log variety	9.25	10.13	0.88	8.75	9.40	0.65	11.98	12.12	0.14
Log variety (differentiated)	9.10	9.98	0.88	8.60	9.24	0.64	11.73	11.85	0.12
Log variety (non-dif)	7.23	8.17	0.94	6.76	7.47	0.71	10.49	10.69	0.19
Log number of firms	8.44	9.43	0.99	8.10	8.86	0.76	12.06	12.50	0.44
Log GDP	27.63	27.99	0.36	27.26	27.59	0.33	31.73	31.90	0.17
Development agency (sum)	0	6	6	0	0	0	14	23	9
Free trade agreement (sum)	0	0	0	1	2	1	10	14	4

Table 3: *Embassy Impact on the Log of Total Exports*

VARIABLES	(1) Log Exports	(2) Log Exports	(3) Log Exports	(4) Log Exports	(5) Log Exports	(6) Log Exports
Embassy dummy	0.552*** (0.150)	0.467*** (0.129)	0.272*** (0.0905)	0.365*** (0.121)	0.264** (0.116)	0.267** (0.116)
Log GDP	1.392*** (0.126)	0.829*** (0.197)	0.509*** (0.133)	0.644*** (0.226)	0.788*** (0.162)	0.795*** (0.162)
Dependent variable, lag 1			0.345*** (0.0573)			
Constant	-16.05*** (2.997)	-2.835 (4.651)	-0.853 (3.131)	-67.21** (27.13)	-257.8*** (6.909)	-261.0*** (7.383)
Observations	1,900	1,900	1,710	1,900	1,900	1,900
R-squared	0.325	0.365	0.381	0.410	0.599	0.600
Number of id	190	190	190	190	190	190
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE		Yes	Yes	Yes	Yes	Yes
Region Sp. Time Trend				Yes		
Country Sp. Time Trend					Yes	Yes
Additional controls						Yes

Note: Clustered standard errors by country in parenthesis *** p<0.01, ** p<0.05, * p<0.1. Column (5) is the preferred specification. The additional controls include dummies for the presence of a free trade agreement with the partner country i, a Turkish development agency in country i, and a direct flight from Turkey to partner country i at time t. All variables are annual aggregates between 2006 and 2016 except 2009 (due to significant decline in international trade as a result of the 2008 financial crisis). Countries that imported less than a thousand dollar value goods annually during the observation period are dropped from the sample)

Table 4: *Decomposition of the Embassy Impact*

DEPENDENT VARIABLE	Embassy Impact
(1) Log of total exports	0.264** (0.116)
(2) Log of total differentiated exports	0.287** (0.123)
(3) Log of total homogenous exports	0.150 (0.250)
(4) Log of the total variety of exports	0.112** (0.0464)
(5) Log of the total variety of differentiated exp.	0.109** (0.0472)
(6) Log of the total variety of homogenous exp.	0.142** (0.0675)
(7) Log of the number of exporting firms	0.0911*** (0.0341)

Note: Clustered standard errors by country in parenthesis *** p<0.01, ** p<0.05, * p<0.1. All regressions are run on the same set of control variables from the preferred specification in the Table 3 column (5). The total number of variety represents the total number of export industries at 6 digit HS2002 classification by partner country

Table 5: *Robustness Checks for the Overall Embassy Impact*

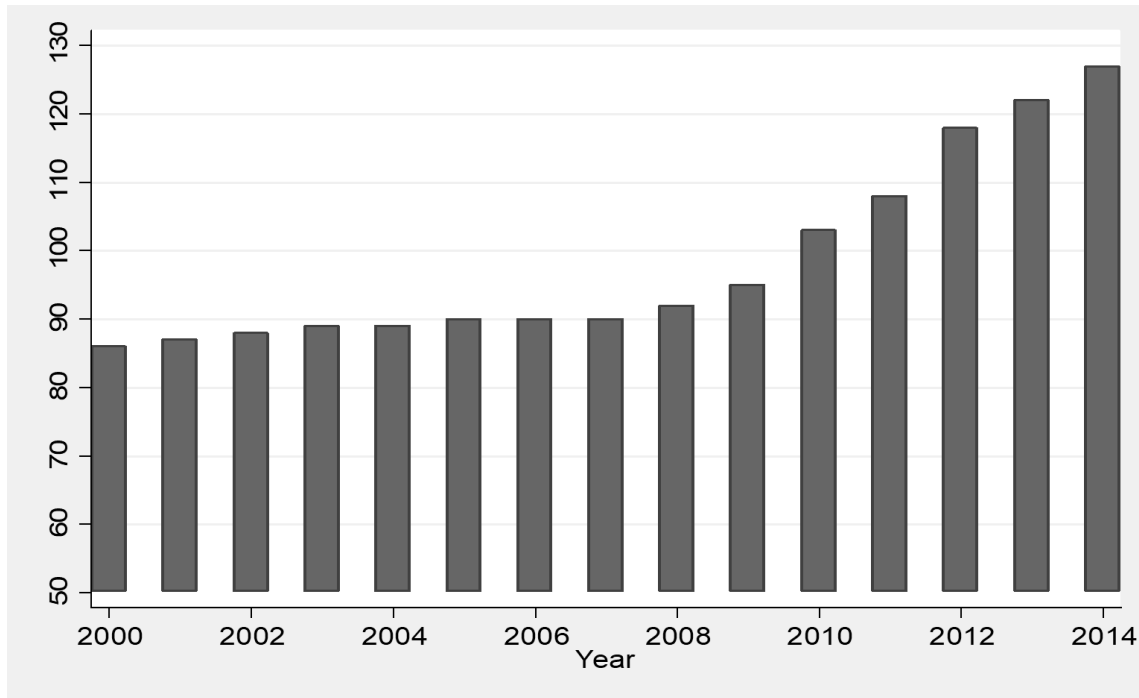
SAMPLE	Embassy Impact
(1) Original model: all countries, 2006-2016	0.264** (0.116)
(2) Longer period: 2005-2016	0.233** (0.115)
(3) Shorter period: 2007-2016	0.287** (0.111)
(4) High Income countries (>\$75,000 per capita) excluded	0.265** (0.120)
(5) Small countries excluded (<0.5 mil. population)	0.263** (0.117)
(6) Only countries with no embassy as of 2006	0.212* (0.116)
(7) Only countries currently have an embassy	0.309** (0.121)

Note: Clustered standard errors by country in parenthesis *** p<0.01, ** p<0.05, * p<0.1. Each row represents a regression that are differing only in sample. All regressions are run on the same set of control variables from the preferred specification in the Table 3, column (4).

Table 6: *Embassy Impact on Imports*

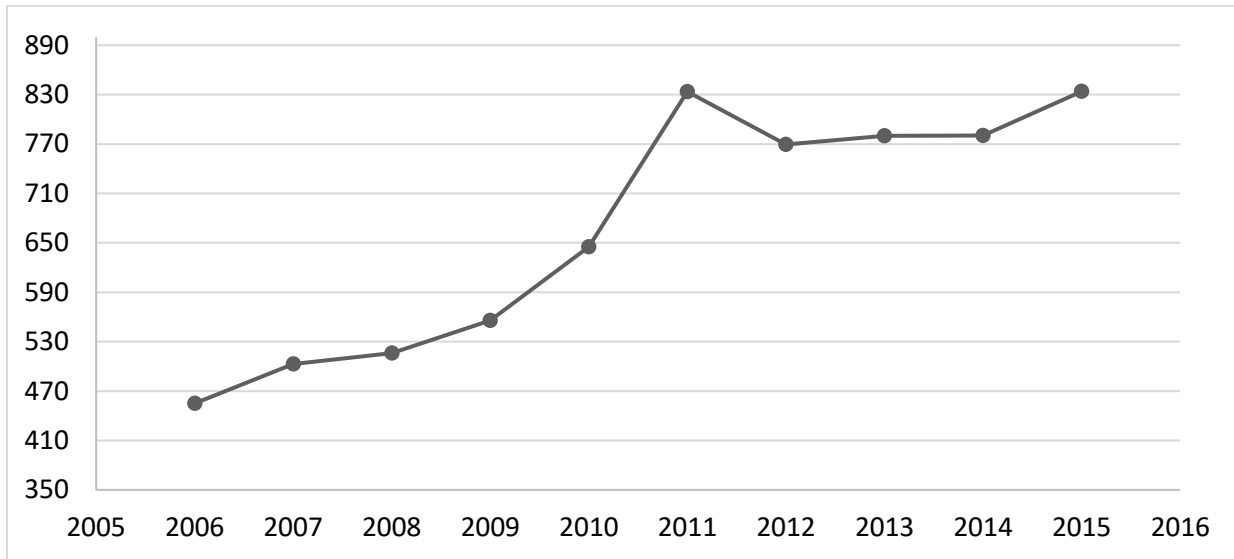
VARIABLES	Total import value			Total number of import varieties		
	(1) All	(2) Differentiated	(3) Homogenous	(4) All	(5) Differentiated	(6) Homogenous
Embassy	0.127 (0.221)	-0.452 (0.514)	0.484 (0.487)	-0.0392 (0.0826)	-0.0622 (0.115)	0.0268 (0.0702)
Observations	1,600	1,600	1,600	1,600	1,600	1,600
R-squared	0.403	0.300	0.307	0.426	0.363	0.401
Number of id	160	160	160	160	160	160
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country spec. TT	Yes	Yes	Yes	Yes	Yes	Yes

Note: Clustered standard errors by country in parenthesis *** p<0.01, ** p<0.05, * p<0.1. All regressions are run on the same set of control variables from the preferred specification in the Table 3, column (5).

Figure 1: *Total Number of Turkish Foreign Embassies Overtime*

Source: General Directorate for Laws and Decrees, Prime Minister's Office

Figure 2: Annual Expenses of the Turkish Foreign Ministry (Million\$)



Source: General Directorate of Budget and Fiscal Control, <http://www.bumko.gov.tr/>