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EXPORT CREDIT INSURANCE EFFECT ON TURKEY'S EXPORT TO
EMERGING MARKETS: AN EMPIRICAL ANALYSIS

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TÜRKİYE'NİN GELİŞMEKTE OLAN ÜLKELERE İHRACATINDA YURT
DIŞI ALACAK SİGORTASININ ETKİSİ: AMPİRİK BİR ARAŞTIRMA

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- 3) Gravity Model

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ABSTRACT

The fact that international trade has strategic importance in terms of growth, has forced states to produce supportive and protective policies. As a result of trade-supporting strategies, trade finance has gained importance and export credit insurance product was developed at the beginning of the 20th century in order to increase international trade and preserve its current levels in times of crisis. The most important purpose of the product is to ensure that receivables are collected safely. In this way, it is aimed to eliminate the negative effect of commercial and political risks on international trade.

In this study, the effect of export credit insurance in Turkey's exports to 15 developing countries (emerging 15) are examined within the framework of the gravity model. The Gravity Model is an empirical model that shows the international trade flows between different geographical locations. Our study differs from other studies to examine the contribution of exports to Turkey's insured export to countries called. The data used in the study (except Turkey's export) was obtained from Turk Eximbank and Business Monitor International, a Fitch Group Company. This data is analyzed for the first time in this study. Turkey's insured exports to emerging 15 between 2001-2016 has been analyzed with panel data method. According to the results, it is determined that insured exports have a positive effect on Turkey's export amount to emerging markets.

Keywords: Export credit insurance, emerging countries, gravity model

ÖZET

Uluslararası ticaretin büyüme açısından stratejik öneme sahip olması, devletleri ticareti destekleyici ve koruyucu politikalar üretmeye zorlamıştır. Ticareti destekleyici stratejilerin sonucu olarak, uluslararası ticaretin artırılması ve kriz dönemlerinde mevcut seviyelerini koruması için ticaretin finansmanına özel önem verilmiş, 20. yüzyılın başlarında ihracat kredi sigortası ürünü geliştirilmiştir. Ürünün en önemli amacı, tahsil edilemeyen alacakların güven içinde tahsil edilmesini sağlamaktır. Bu şekilde ticari ve politik risklerin uluslararası ticaret üzerindeki olumsuz etkisini bertaraf etmek amaçlanmaktadır.

Bu çalışmada Türkiye'nin gelişmekte olan 15 ülkeye ihracatında ihracat kredi sigortasının etkisi çekim modeli çerçevesinde incelenmektedir. Çekim Modeli, farklı coğrafi konumlar arasındaki ekonomik akımları inceleyen ampirik bir modeldir. Çalışmamız sigortanın Türkiye'nin sadece emerging 15'e yaptığı ihracata katkısını incelemesi bakımından diğer çalışmalardan ayrılır. Ayrıca kullanılan veriler (Türkiye ihracatı hariç) Fitch Group bünyesinde faaliyet gösteren Business Monitor International ve Türk Eximbank'tan elde edilmiştir. Bu veriler ilk defa bu çalışmada analiz edilmektedir. İhracat kredi sigortasının Türkiye'nin 2001-2016 yılları arasında Emerging 15'e gerçekleştirdiği ihracata etkisi panel data yöntemi ile analiz edilmiştir. Sonuçlara göre sigortalı ihracatın Türkiye'nin gelişmekte olan ülkelere olan ihracatı üzerinde pozitif etkisi olduğu tespit edilmiştir.

Anahtar kelimeler: İhracat kredi sigortası, gelişmekte olan ülkeler, çekim modeli

INTRODUCTION

The world economy witnessed large fluctuations in the post-2000 period. After the attack on twin towers in the United States (US) on September 11, 2001, the political and economic landscape of the world changed. In the years following the attack, new US policies laid the groundwork for the global economy. Liquidity abundance and risk appetite accelerated the international investment and capital movements considerably. Capital began to flow into emerging economies. At the same time, developed countries were gaining momentum as in developing countries. The world enjoyed a period of abundance of liquidity.

Although everything looked good for a while, uncontrollably growing risk appetite and inconsistent economic decisions led to new financial crisis. The crisis erupted in the US in 2008 and soon turned into a global crisis.

The world's leading economies have been greatly influenced by the crisis that began in the US. The influence of major economies also affected the economies that were dependent on these economies. According to IMF data, the world economy, which grew by 5.6 percent in 2007, contracted by 0.1 percent in 2009. In 2009, European Union economy contracted by 4.3 percent, while developed countries contracted by 3.4 percent in total. Emerging economies grew by 8.6 per cent in 2007 and could only grow by 2.1 per cent in 2009.¹

There was a major collapse in trade and finance. According to the World Trade Organization (WTO), global trade contracted by 12.2 percent in 2009. During this period, hundreds of thousands of companies both in the real sector and in the finance sector went bankrupt. The remaining companies needed urgent financing. Economic and political uncertainty increased, risk increased, economic activity ceased.

The main causes of the crisis affecting the world considered as "liquidity abundance, wrecking loans, real estate bubble, expansion of credit derivative markets, inadequacy of banking regulation system". Reinheirt and Rogoff (2008)

¹ International Monetary Fund, Retrieved from www.imf.org, 03.01.2018

stated that the 2008 global financial crisis involves esoteric instruments, unaware regulators, and skittish investors. Blundell-Wignall, Atkinson et al. (2009) emphasize financial crisis caused by global macro liquidity policies and by a poor regulatory framework and add that it originated from the distortions and incentives created by past policy actions.

In such high-risk situations, it is expected to encourage the markets by putting the incentive and support mechanisms of the states in motion for the mobilization of the markets. In this study, the effects of export credit insurance on exports are examined as a financial product that activates the markets.

The main role of credit insurance is to support trade and guarantee receivables. The risks covered by export credit insurance programme are commercial and political risks. *Commercial risks* are insolvency of the importer, protracted defaults, repudiation of the goods and *political risks* are transfer risks, non-payment due to social turmoils such as, war, civil-war, rebellion, etc., legitimate acts/regulations in debtor's county hindering export transactions and/or resulting in non-payment, Non-payment due to acts such as, seizure, nationalisation, confiscation, expropriation, etc., or non-payment of public debtor.

We try to analyse credit insurance mechanism's effects on Turkey's exports to emerging markets and use importing country's GDP per capita, the BMI Economic Risks Index, distance, populations; Turkey's export price index, real effective exchange rate and insured export data. 15 countries were selected as importer which will be referred as "*emerging 15*" in the following sections.

The main reason of the selection of emerging markets is that the risk indices of these countries are higher than developed countries which is another category according to criteria set by major economic institutions. Emerging markets are appropriate for monitoring economic and political risks. In this respect, they are eligible countries to analyze the effectiveness of export credit insurance, which provides assurance against commercial and political risks. In addition, import demand growth in emerging 15 is higher than in developed countries. These

countries are a potential market for Turkey. Thus, they are eligible countries to analyze the effectiveness of export credit insurance on entry the new markets.

In the literature, there are many studies examining Turkey's export performance and exports structure. There are also studies that examined the effect of export credit insurance in the world and Turkey. However there is not a study examining the effect of export credit insurance on Turkey's export to "emerging markets". This study aims to fill this gap in the literature.

The paper is organized as follows. The following chapter is about international trade developments, 2008 global financial crisis effect and emerging markets. Share of emerging market in the world economy, import performance and their classification and selection methodology will be shown in *First Chapter*. We also mention Turkey's export structure and try to make diagnosis about Turkey's export risk management in this chapter.

It is fact that international trade is supported by many financial products as well as incentives provided by governments targeting export-oriented growth. *In Chapter II* we examine export credit insurance as an export incentive and export risk management program, its history, how does it works and Turkey's export credit insurance numbers and performance.

Literature review is in *Chapter III*. There are many studies examining how export credit insurance affects international trade and in what ways. *In Chapter IV*, we give some information about gravity model and examine the gravity model which is mostly used in these studies. Then we discuss empirical results in *Chapter V* and it also gives some details of the estimations, data and methodology. *Final Chapter* is the conclusion. We criticize our findings and try to offer policy advises in final chapter.

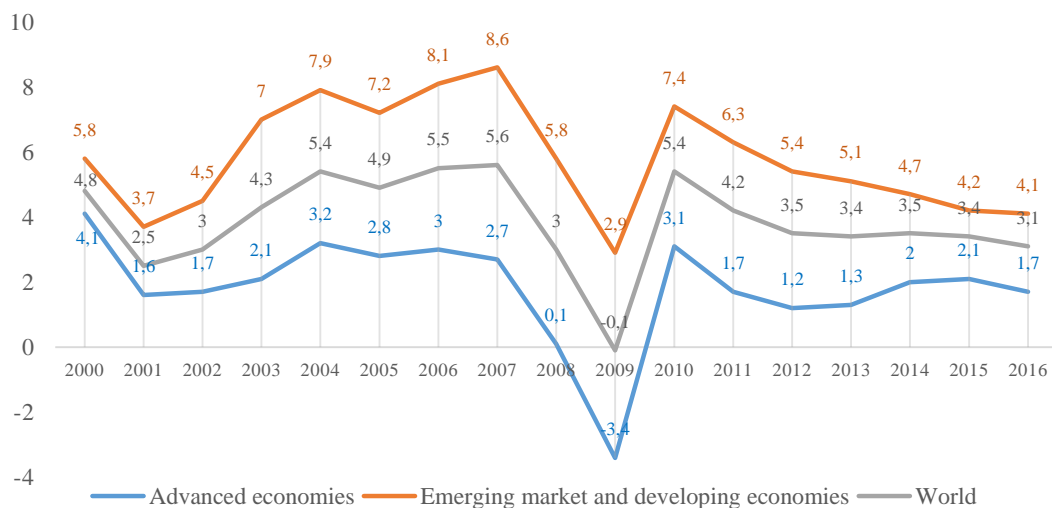
CHAPTER I

INTERNATIONAL TRADE DEVELOPMENTS, EMERGING MARKETS AND STRUCTURE OF TURKEY'S EXPORT

1.1. International Economic Developments and Growth Performance

The world economy has been experiencing both expansion and contraction during the last 17 years. The new century has made a good start in the world, and the economies have achieved positive growth rates under the influence of expansive policies. These positive rates continued until the 2008 global crisis. Large decline seen in developed countries, especially the impact of the 2008 global financial crisis spread around the world through a domino effect. In 2009, US economy contracted by 2.8 percent. European economies contracted by 4.9 percent. Developed countries suffered more than developing countries. But due to the financial and trade relations with developed countries, developing countries, were also heavily affected by the crisis. Eastern Europe contracted by 6.3 percent in 2009, while South America contracted by 1 percent. Russia, which is one of the most affected by the crisis, contracted by 7.8 percent in 2009.

Figure 1: Real GDP growth (Annual percent change)



Source: International Monetary Fund Database, retrieved from www.imf.org, (03.01.2018)

South Asian countries successfully surpassed this period. (*Excluding Thailand - 0.7%, and Malaysia -1.5%*) In 2009, China grew by 9.2 percent, India by 8.5 percent, Indonesia by 4.7 percent, and the Philippines by 1.1 percent.

Developing countries have recovered faster after the global crisis. Major economies have produced expansionary and supportive policies as a measure against global crisis. These policies continued in the years following the crisis. For example, financial markets have been regulated, and they have been more selective in giving credit. Measures were taken to increase private demand, and tax policies were rearranged. Liquidity support has been provided to keep the economic activity alive. All this helped to rebuild the global economy. Although the pre-crisis global growth performance has not yet been caught, the devastating impact of the crisis in the first years seems to have diminished after 2010.

1.2. International Trade and Global Crisis Effect

As seen in Figure 2, global goods and services is largely demanded by developed countries. The share of developed countries with 83.5 percent of global import demand in 2000 declined over time, falling to 63.5 percent in 2016. Imports demand has also grown in line with the growth rates of developing countries.

Figure 2: Global Imports of Goods and Services (USDbn)



Source: Business Monitor International, www.bmiresearch.com

Global imports, which increased steadily until 2008 due to the stimulating effect of the increase in global liquidity after 2001, decreased by 19.8 percent in 2009 compared to the previous year. While the total imports of developed countries decreased by 21.2 percent in 2009, the total imports of developing countries decreased by 16.8 percent.

The erosion of confidence and stability in the global economy has also adversely affected trade. Global trade has begun to revive with the reorganization of financial markets. Governments have had to consider how public resources can be used most effectively to boost economic stimulus and trade. Comprehensive tax policies have encouraged consumption, and business-enhancing moves have helped the rebuild the real sector.

1.3. Emerging Markets in Global Economy

Despite the various definitions for developing markets, no clear definition can be made. It is generally accepted that emerging markets have high growth rates. Emerging markets are more fragile than developed markets, their per capita income is lower and volatility is higher. They are also more attractive in terms of investment opportunities. In this respect, they offer higher returns than developed markets.

The main criteria used by the IMF in World Economic Outlook to classify the world into advanced economies and emerging market and developing economies are (1) per capita income level, (2) export diversification—so oil exporters that have high per capita GDP would not make the advanced classification because around 70% of its exports are oil, and (3) degree of integration into the global financial system.²

Developing countries with high growth rates have a high-risk business environment at the same time. In developing countries, there is a competitive economic structure with the density of young population and low production

² International Monetary Fund, retrieved from www.imf.org 10.01.2018

costs. This situation is a factor that causes emerging markets step forward of the world market.

Despite all the positive features, emerging markets are quite volatile. Their political systems have not developed enough to make a positive contribution to their economy. In this direction, there are various political risks to investors' entering these markets. Deficiencies in the legal system, bureaucratic obstacles, difficulties in doing business, etc., are the negative side of emerging markets. All these disadvantages adversely affect investor decisions.

According to Simon (1997), the most important features of the emerging countries refer to:

- The small size of the economy
- GNP/Capita much lower than in developed countries
- a reduced opening for accepting foreign investors
- a high volatility of the exchange rate which implies greater risk in trading.

(Simon, 1997)

Miller, (1998) categorizes emerging economies under three characteristics. Firstly, he highlights the inadequacies of commercial infrastructure and other physical characteristics such as transportation and communication. This state is interpreted under the heading physical characteristics. In addition, political instabilities, legal frameworks, and inadequacies in terms of technological superiority are also among the characteristics of developing countries. This is called sociopolitical characteristics. He emphasized economic characteristics as the third characteristic of emerging markets. The economic characteristics of these markets are the low level of personal income and the effective role of the state in economic life.

In addition, International Economic and Finance Institutions and economists classify countries based on their level of economic and industrial development. These classification can be listed as “developed countries”, “developing countries” or “emerging countries”. Although emerging countries look like the

same concepts in developing countries, they are actually different. The main difference is that emerging markets are growing rapidly while developing countries are still in industrialization stage and need more help from other countries.

1.4. Classification and Selection of Emerging Markets

In this study, the investigation was based on Turkey's export performance to emerging markets. It is certain that there is no common classification for emerging markets and no concensus on which countries are emerging markets.

International Monetary Fund (IMF), Morgan Stanley Capital International (MSCI), Standard and Poor's (S&P), Russell and Dow Jones classify emerging markets. *IMF* and *MSCI* classify 23 countries as emerging markets but there are some differences between the two list. *Standard and Poor's (S&P)* and *Russell* each classify 21 countries as emerging markets, while *Dow Jones* classifies 22 countries as emerging markets. In this study, common countries in five institutions were selected. A list of countries (16 countries) that all five institutions classify as emerging markets includes:

1. Brazil
2. Chile
3. China
4. Colombia
5. Hungary
6. Indonesia
7. India
8. Malaysia
9. Mexico
10. Peru
11. Philippines
12. Poland
13. Russia

14. South Africa
15. Thailand
16. Turkey (*is excluded because it is exporting country*)

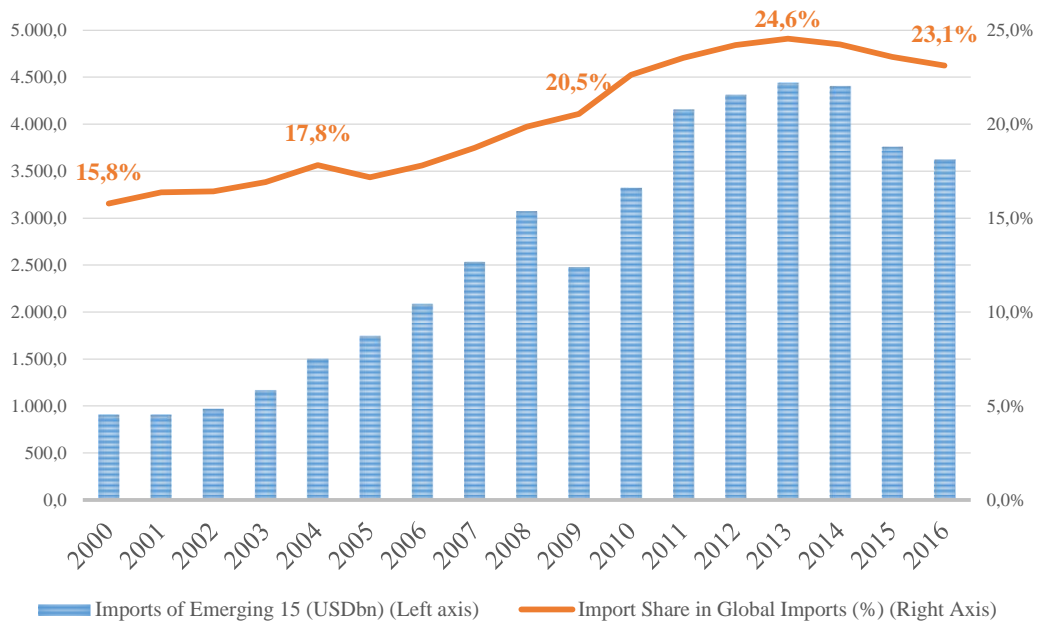
The above mentioned 15 countries are in the category of emerging economies. These countries have been selected due to their potential for Turkey's export market and high growth rates. But emerging markets are vulnerable to fluctuations in exchange rates. These countries are politically and economically more risky than developed countries. Moreover, they have to be in the stage of integration to the world markets and create uncertainties in terms of exporting companies. Exporters may hesitate to sell to developing countries even though they have high import demand. In this case they need a variety of support to secure their sales. This support can be provided by export credit insurance. Due to the fact that export credit insurance protects its export receivables against commercial and political risks, exporters are increasingly preferring insurance for their exports directed to these countries.

High risk and uncertainty encourage exporters to use insurance products. The impact of the insurance also becomes more apparent in exports to emerging markets. This is the main reason for the selection of "emerging markets" in this study. For this reason, 15 countries excluding Turkey (emerging 15) have been analyzed in the following parts of the study.

1.5. Import Performance of "Emerging 15"

The emerging 15 countries that made about 16 percent of world total imports in 2000 rose to 24.6 percent of world imports in 2013. Total imports of emerging 15 from 2000 to 2008 have increased in quantity. The total imports increased again after the crisis and reached the maximum level in 2013. The year 2013 is also the year in which the share of emerging 15 is the highest in world imports.

Figure 3: Total Imports of Emerging 15 (bn USD)



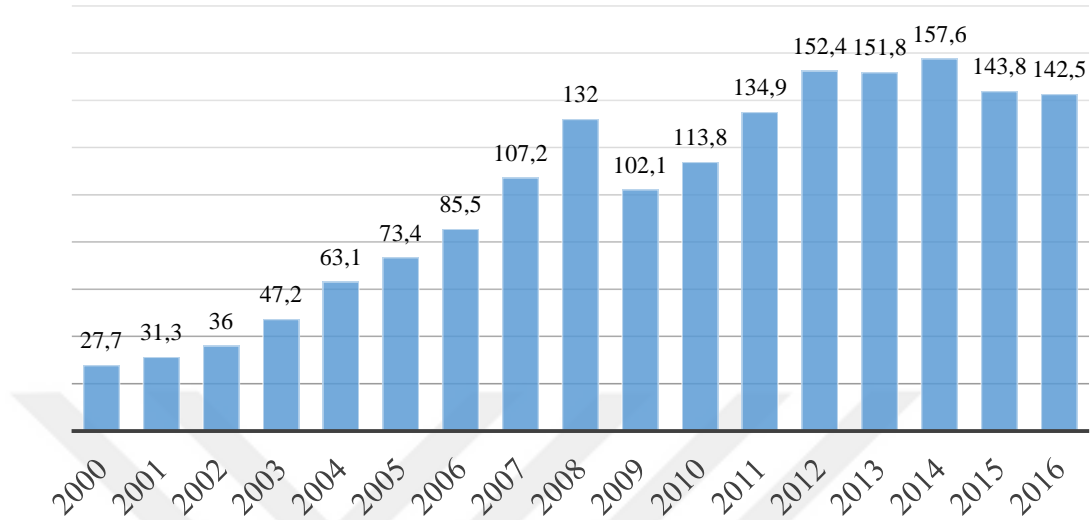
Source: Business Monitor International www.bmiresearch.com

As seen Figure 3, emerging 15 are making an important part of the import demand. After the crisis, emerging economies, which experienced intensive capital inflows, achieved significant growth rates. Emerging economies strengthened by foreign capital flows have become important markets for developed economies.

1.6. Structure of Turkey’s Export

Turkey is a country attaches great importance to exports. In Turkey, the export-oriented growth policies has gained speed in the 1980s under the influence of the liberalization policies. With the effect of the export-oriented growth strategy, exports contribute to economic growth as the most important foreign exchange source.

Figure 4: Turkey's Total Exports (USDbn)



Source: Turkish Statistical Institute www.tuik.gov.tr

As seen in Figure 4, Turkey's exports is in a steady upward trend in the period from 2000 to 2008. Regularly increasing exports in the 2000-2008 period were down in 2009 compared to the previous year. Decline in global import demand due to the global crisis has adversely affected Turkey's export performance. Indeed, according to the Foreign Trade Financing Report (2009) prepared by the Economic Policy Research Foundation of Turkey (TEPAV), the decline in exports during the global crisis does not stem from Turkey financing problems, it is due to the contraction in external demand (Acar, 2009). It can be said that the decline in Turkey's exports in 2013 and 2015 are due to political instability in Turkey's neighbours.

It is important that distribution of Turkey's export market share show the sensitivity of the developments in Turkey's export markets. As shown in the Table 1, the European Union is the market that has the highest share in Turkey's exports. According to the Turkish Statistical Institute data in 2016, the share of the European Union in total exports is 48 percent, and the share of the European market (with the inclusion of European countries outside the European Union) in exports is 54.8 percent. The share of Middle East and North Africa markets in

total exports is 27.4 percent in 2016. Turkey's export market, as seen clearly from these data are concentrated in the neighboring region.

Table 1: Regional Overview Of Turkey's Export Destination (%)

Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
European Union (EU 28)	56,6	48,3	46,2	46,5	46,4	39	41,5	43,5	44,5	48
Near and Middle East	14,1	19,3	18,8	20,5	20,7	27,8	23,4	22,5	21,6	22
Europe (excl. EU)	9,8	11,6	10,9	9,8	9,4	9,3	9,4	9,6	9,8	6,8
Asia, (Other)	4,9	5,4	6,6	7,5	7,6	6,9	7,9	7,4	7,2	6,8
North Africa	3,8	4,4	7,3	6,2	5	6,2	6,6	6,2	5,9	5,4
North America	4,2	3,6	3,5	3,7	4	4,4	4,3	4,6	4,9	5,2
Africa (Other)	1,8	2,4	2,7	2	2,7	2,6	2,7	2,5	2,7	2,6
Free Zone	2,7	2,3	1,9	1,8	1,9	1,5	1,6	1,4	1,3	1,3
South America	0,5	0,7	0,7	1,1	1,4	1,4	1,4	1,2	0,9	0,8
Other Countries and Regions	1,6	2,0	1,5	1,0	1,0	0,9	1,2	1,1	1,1	1,2
TOTAL	100	100	100	100	100	100	100	100	100	100

Source: Turkish Statistical Institute www.tuik.gov.tr

Countries with the highest average annual export growth of Turkey between the years 2001-2015 are Iraq (24.5%), Turkmenistan (22.8%), United Arab Emirates (19.6), China (19.5%), Iran (18%), Poland (17,6%), Azerbaijan (16,4%), Egypt (15,4%), Romania (15,1%) and Saudi Arabia (14,8%)³. So it shows that between 2001-2015, Turkey developed strategies for export to Middle East, North Africa and Asia.

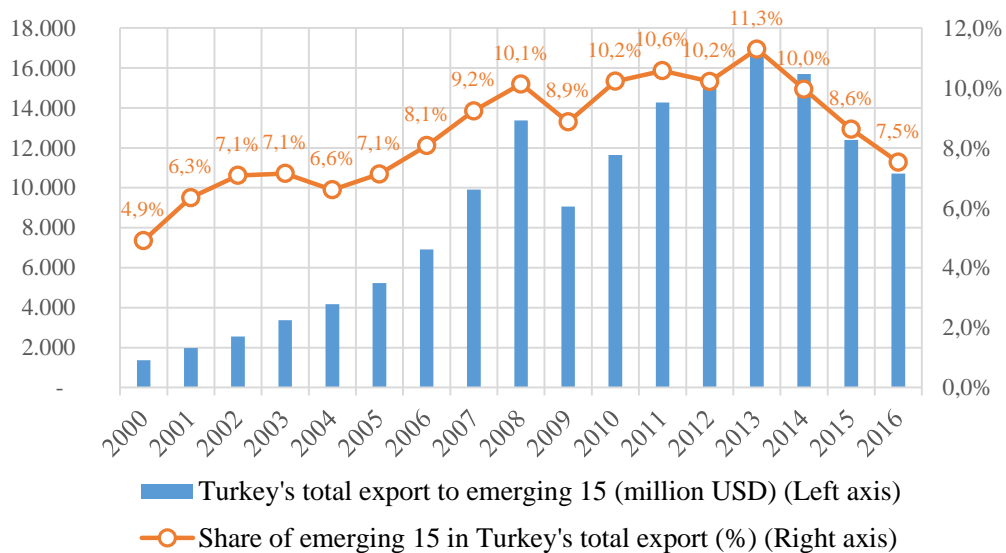
According to 2016 data, Iraq, United Kingdom, United Arab Emirates, Israel, Saudi Arabia, Egypt, Algeria, Syria, Azerbaijan, Georgia, Turkmenistan, Libya, Tunisia and Lebanon are the countries that Turkey is net exporter. Turkey's exports to its near geography makes largest contribute to the Turkey's trade surplus.

³ Turkish Exporters Assembly, TİM, www.tim.org.tr

The political situation in the countries contributing to net exports is an important influence on the export revenues. Moser et al. (2006) reached strong evidence that political risks to exports to 130 countries in Germany during the period covering 1991-2003 caused significant damage to exports. In empirical trading models, political risk is statistically and economically significant factor. (Moser, Nestman, Wedow 2006) The political risks that complicate the integration of the Middle East and North African countries into the world economy indicate that export performance is dependent on market developments and is fragile in this sense. Thus, it would not be wrong to say that increasing political risks in the Turkey's export market affects Turkey's export performance negatively.

The exports to Emerging 15 have also changed while the market shares have changed in Turkey's total exports. The share of Emerging 15 in total exports in 2000 was 4.9 percent. In 2013, it reached its the highest level, 11.3 percent. The share of Emerging 15 in total exports in 2016 was 7.5 percent.

Figure 5: Turkey's Export to Emerging 15



Source: Turkish Statistical Institute www.tuik.gov.tr

While the share of risky markets increased in exports, it is seen that the share of cash against goods (open account), which is the most risky payment term,

increased over the years. This form of export makes the exporters unprotected against political and commercial risks.

When defined basically, the open account transaction is the payment method that the seller collects his/her receivables after the delivery of the goods. Payment is usually made 30, 60, 90 days later. This payment method is the riskiest payment method for the seller. It provides advantage to the buyer.

As seen in Table 2, most used payment term in Turkey's export is cash against goods (open account). The open account payment term is followed by cash against documents, letters of credit and cash, respectively. The share of these four payment terms is 97.5 percent on average between 2000 and 2015.

Table 2: Payment Terms of Turkey's Exports (%)

Payment Terms	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cash against goods	46,0	44,5	50,8	54,0	56,1	56,6	57,0	60,0	57,1	59,5	59,2	60,3	57,3	61,9	65,3	66,1
Cash against documents	27,9	28,6	25,3	24,0	23,0	21,5	19,9	18,9	17,4	18,8	18,4	18,3	16,0	17,0	15,4	14,9
Letter of credit	17,2	18,1	16,6	14,9	13,8	14,5	13,9	13,5	16,1	11,5	12,7	12,6	11,1	9,7	8,7	8,2
Cash	4,9	4,6	3,7	3,5	3,9	4,5	5,8	5,6	6,6	7,9	7,7	7,2	14,3	10,0	9,5	9,7
Other	4,0	4,2	3,6	3,6	3,0	2,0	3,0	2,0	2,8	2,3	2,0	1,6	1,3	1,4	1,1	1,1
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Turkish Statistical Institute

1.7. Some Findings in Export Risk Management For Turkey

When the structure of Turkey's export observed, it seen that its vulnerability and risk levels increased over the years. As Turkey's export markets most important export market is Near and Middle East after the European Union. Near and Middle East, while 14.1 percent share in Turkey's exports in 2007 rose to 22 percent in 2016 (Table 1). The increase in the share of exports to the Middle East, where political instability is high, shows that Turkey's exports have become more fragile. Political instabilities are increasing both in political risks and in commercial risks. This situation can lead some problems such as the non payment cases, increase in probability of default and difficulty in collection of export receivables. So expect an increase in bad cases of export receivables in Turkey

would not be wrong. In this context, increase in share of export to emerging markets where uncertainty and risk level is relatively high, creates fragile export structure. It is not wrong to assume that probability of default in Emerging 15 is higher than developed markets such as Germany, United Kingdom, United States, Japan, France.

In terms of payment terms, Turkey's export has also become more risky. The share of cash against goods, which is the most risky form of payment for exporters, increased from 46 percent in 2000 to 66.1 percent in 2015 (Table 2). Increase in the share of the cash against goods by 20% increases the debt collection risk of the Turkish exporters.

As a result of export destinations and payment terms changes Turkey's export has evolved a more fragile structure. This situation is expected to increase the demand for export credit insurance. How to be a risk management tool of export credit insurance and Turkey's insurance performance is examined in the next chapter.

CHAPTER II

AN EXPORT INCENTIVE INSTRUMENT AND EXPORT RISK MANAGEMENT PROGRAM: EXPORT CREDIT INSURANCE AND TURKEY'S PERFORMANCE

International trade is supported by many financial products as well as incentives provided by governments targeting export-oriented growth. In this chapter we examine export credit insurance as an export incentive and export risk management program, its history, how does it works and Turkey's export credit insurance numbers and performance.

2.1. What is Export Credit Insurance?

Export credit insurance is basically a risk management product. It is provided by private insurer companies and officially supported export credit agencies (SACE, COFACE, Euler Hermes, United Kingdom Export Finance, US Eximbank, Türk Eximbank etc.) to exporters that wishing to protect their receivables from loss due to credit risks such as bankruptcy and insolvency.

The main role of credit insurance is to support trade and guarantee receivables. It is the fact that all investors, traders and policymakers seek to avoid international risks. Investing or trading without correct information is very risky. In order to detect the risks that may emerge in the world economy and to ensure that measures are taken to minimize losses of investors, banks and other financial institutions are building their own internal rating and early warning systems. It is believed that a system established through the economic, social and political data will reflect the level of risk in the country.

The risk covered by export credit insurance programme are below:

Commercial Risks

- Insolvency of the importer
- Protracted defaults

- Repudiation of the goods

Political Risks

- Transfer risks
- Non-payment due to social turmoils such as, war, civil-war, rebellion, etc.,
- Legitimate acts/regulations in debtor's country hindering export transactions and/or resulting in non-payment,
- Non-payment or emergence of additional costs due to acts such as, seizure, nationalisation, confiscation, expropriation, etc.,
- Non-payment of public debtor. (www.eximbank.gov.tr)

In accordance with their economic and foreign policy objectives, governments of developed countries support their local firms exporting to or undertaking project in high risk developing countries through their export credit agencies.

2.2. Historical Overview of Export Credit Insurance

Looking at the historical development of export credit programs, it is seen that they are produced as a policy tool on export increase and diversification.

Export credit insurance was first applied by a private company in Switzerland in 1906 (Krauss 2011, 7). But the first known example of an officially provided export credit insurance product was developed by the British Government in 1919. (Dietrich 1935, 236-349) In the following years Belgium (1921), Denmark (1922), Netherlands (1923), Finland (1925), Germany (1926), Austria and Italy (1927), France and Spain (1928), Norway (1929), Poland (1931) and Sweden (1933) developed their own export credit programs. The Export-Import Bank of the United States (US Exim) was established in 1934 after the 1929 crisis. These developments can be considered as the beginning of export credit insurance practices we know today.

The first examples of insurance schemes have emerged in developed countries such as the United Kingdom, France, Spain, Germany, Italy and the United States. It then began to be implemented in developing countries that needed new financial

products. The first export credit institution in developing countries was established in Mexico in 1937. New economic policies that developed after the Second World War and the existing export credit institutions were restructured, and new ones were added to the export finance system. Africa's first export credit institution was established in South Africa in 1956. Then in 1959 Morocco passed the first insurance programs. By the 1960s, Brazil, Hong Kong, Greece, South Korea, Peru, Pakistan and Portugal had created their own export credit programs to support the balance of payments, create jobs, and support international competitiveness. In the 1970s, countries such as Ecuador, Malaysia, the Philippines, Singapore, Sri Lanka, Uruguay and Venezuela began to develop export support programs. Finally, Egypt, Indonesia and Tunisia joined the countries that supported exports with export credit, guarantee and insurance services in 1980s.

2.3. How Does Export Credit Insurance Work?

Credit sales that common in international trade burden some cost to seller. The costs that the company imposes, including the cost of the doubtful receivables, in particular the monitoring of trade receivables, costs in the collection period, providing information about new customers and calculating creditworthiness are the costs to which the company is charged. The credit insurance has important functions in order to eliminate or reduce these costs.

When examining the reasons leading the companies to have credit insurance, it is revealed which factors encourage companies the most. In the study conducted by Leeds University Business School Credit Management Research Center in 2000, it was investigated what the most influential causes of deciding to take out insurance. The options that participants consider as "important" are (Becue, Smet, Volcke 2012, 53):

- Complacency given by insurance (77%)
- Protection of cash flows (71%)
- Improved customer recognition (64%)

- Previous experience on outstanding receivables (49%)
- Business volume growth (48%)
- Entry into new markets (45%)
- Additional financing opportunities (29%)

The credit insurance directly or indirectly contributes to the financial structure of the company. The contributions and opportunities provided by the insurance are summarized below:

Guarantee of payment to commercial receivables: Export credit insurance provides payment guarantee for receivables arising from insured sales. It supports the management of risky receivables within the entity's assets by removing the buyer's risk of nonpayment and protects to failure to receive regular payments from customers for which the business is a creditor, damages the financial structure, causing the cash flow to deteriorate and the capital to erode. Even in the worst case scenario, the bankruptcy situation arises because the company cannot collect its claims.

Cash flow support: Companies use certain inputs according to the products and services they sell. Therefore, companies may be indebted to the creditors for the goods and services they sell. The receivables collected are often used to finance debt payments or inputs used in the production-sale process. In this sense, companies that have problems in collection of receivables may become unable to pay their debts and may have difficulties in financing their production-sales inputs. This shows that any non-payment can indirectly affect companies that the company owes. The credit insurance has a function to prevent the non-payment situation from spreading to the market in a series and supports the continuity of intercompany cash flows.

Increasing sales revenue and expanding sales portfolio: Companies that want to increase their exports are looking for ways to open up new markets as well as increase their sales in their existing markets. The trust mechanism provided by selling off the receivables risk encourages increased sales to existing customers.

Apart from this, acquiring new customers brings the risks of new receivables with it. Exporters who do not have the opportunity to increase their sales in the current market and want to open up to new markets have to bear the risks and costs of selling to a new country at this stage. This is an obstacle for companies to decide to go to market diversification. In the entry of new market, exporters are exposed to operational risks, political risks of the country they wish to sell, the buyer's risk and a new export procedure. Thanks to the receivable insurance, the exporter is protected from these risks.

Providing country and sector information: The company that uses the credit insurance service also benefits from the information on the market, sector and country that it has recently entered.

In the market research process, companies have to take into account both sectoral and political conditions in their new markets. This research process increases the cost at companies. In this context, the insurance company provides macro support to the business. In other words, with credit insurance, the companies have macro knowledge about the risk of the sector and the country it sells, in addition to having a more detailed understanding about customers in the micro sense.

Providing business intelligence: Seller companies using the receivable insurance product can benefit from the information of the buyer company-which they plan to sell- from the insurance company's database. The insurance company evaluates the financial data of the receiving company and conducts risk analysis so that the seller can obtain more detailed commercial information about the customer. Since the risk analysis process that is required by the technical information is carried out by the insurance company, the seller does not have to assume the personnel and time costs in this process.

Increase bargaining power in trade: Exporter companies are protected from the risk of collecting their receivables in various ways. First of all, if bargaining power is high, the exporter company prefers to sell cash, which is the safest form of payment. However, because generally, the buyer is not willing to pay in

advance, if the exporters insist on selling in advance, it can lead to market losses due to the competitive nature of international trade. Developing international trade market, allows buyers to find new sellers to offer them payment options. In this context, the receivable insurance helps to increase the bargaining power by expanding the maturity options offered by the seller firm.

Expanding financing facilities: With securing of assets, exporters can more easily access to financing resources. An exporter with a risk-free loan portfolio can use the loan more easily from the banks. Beyond that, it provides cash flow by discounting receivables by using insurance policy.

Collection of delayed payment: The basic function of the credit insurance begins with the nonpayment of insured receivable on terms. In case the payment is not made within the terms, the credit insurance companies contact the debtor company to make it pay the debt. There are attempts to make the buyer pay its debts to the seller before it is certain that the money will not be paid. When the receivable is not insured, this process should be carried out by the seller. Whereas when the receivable is insured, the process is supported by the insurance companies.

Deducting from the tax and recognition: Premiums paid for credit insurance are considered as a deductible expense under the International Financial Reporting Standards (IFRS). The receivable insurance also helps in the accounting of income as required by the accounting regulations.⁴

Contribution to credit rating of companies: The use of credit insurance is a factor that credit rating agencies consider in rating procedures. The receivable insurance provides a positive contribution to the rating process through its ability to reduce the risk of receivables.⁵

⁴ The International Credit Insurance & Surety Association, <http://icisa.org>

⁵ The International Credit Insurance & Surety Association, <http://icisa.org>

2.4. The Function of Export Credit Insurance in Crisis Period

The issue of collecting credits securely becomes more important for companies especially during times of crisis. It is believed that the insurance at this point would prevent the spread of the crisis by supporting the cash flow cycle between companies. In the period from the second half of 2008 to the second half of 2009, which is considered as the most effective period of the global crisis, world trade has suffered very seriously. In 2009, world trade contracted by 25 percent compared to the previous year. During this period, many companies went bankrupt due to uncollectable receivables. The collapse of the global economy is based on many causes. The collapse of the global demand has a significant role among the causes of global economic and trade contraction. Hundreds of billions of dollars in losses in the 2008 global financial crisis caused redressing attention to risk management of trade receivables.

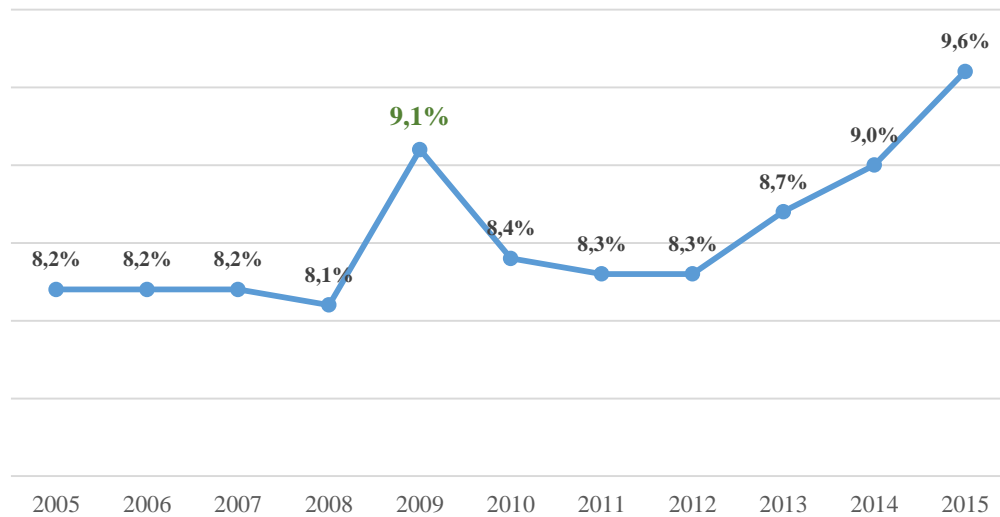
Surveys conducted by the World Bank (WB) and the International Monetary Fund (IMF) on trade financing show that in financial crises, emerging markets are severely damaged due to shortfalls in financing options. Bankers and the international community have been urging public supported export credit institutions (ECAs) to expand their activities to reduce credit risk and prevent the trading financing market from failing.

In February and April 2009 at the Summit of Banking Association for Finance and Trade (BAFT), the international community has agreed about "developing secondary markets against the risk of trade financing through ECAs" and "developing ECA programs to facilitate and accelerate trade financing in emerging markets". (Chauffours, Saborowski, Söylemezoğlu 2010, 2) These developments demonstrate the mission of ECAs to the development of international trade that shows signs of deterioration in the crisis process. It is also focused that ECAs, which have been in the financial sector for years in developed countries, has a role of developing countries' in remedying the financing deficiencies and in supporting exports in the crisis period. It is thought that export

credit insurance product as a risk management tool is important in providing accessibility to financing during crisis periods.

As a result of the 2008 global crisis, world exports fell by 25 percent compared to the previous year, while the total volume of the receivables insurance dropped by 13 percent. Nevertheless when compared proportionally, the ratio of insured export amount to total export amount was increased. The ratio, which was 8.1 percent in 2008, has risen to 9.1 percent in 2009. (Figure 6)

Figure 6: Insured Export Share in Global Export (%)



Source: Berne Union and Trademap data/The figure is prepared by author

Export credit insurance increased proportionally in 2009 when the crisis was effective. The utilization rate of credit insurance increased in world total exports. This is due to the declining tendency of exporters to take risks during crisis periods. The increase in the rate of insurance in the years following the crisis, shows that the factor of confidence in world trade has begun to weaken. In Turkey, as well as in the world after the crisis of 2008 there has been an increase in insurance rates. This subject is examined in the following section.

2.5. Turkey's Performance in Export Credit Insurance

Foreign trade has been encouraged and supported by the state throughout the world. This had a broad repercussion in Turkey. Export supporting policies in Turkey dates back to the early years of the Republic. The steps of supporting exports institutionally and legally have gained momentum especially after 1980. When viewed in specific to export credit insurance product, the history of this product in Turkey is based on 1979.

As the first example, between years 1979 – 1983 Başak Sigorta was given the duty to perform export credit insurance with the provision of "*the sale of industrial goods will be encouraged through the Export Insurance Law*" according to the fourth five-year development plan. (Sakarya ve Uçak 2007, 104) Within the fifth Five-year development plan (1985-1989), in 1987 Export Credit Bank of Turkey, Inc. (Türk Eximbank) was established. The main duty of Türk Eximbank, which is an officially supported export credit institution, is to support and diversify exports. Two years after the establishment of Türk Eximbank in 1989, export credit insurance programs has begun to be implemented for exporters.

Türk Eximbank has been established as a result of the export-led growth strategy that Turkey followed in the 80s. Türk Eximbank started to provide export credits in 1987 in order to meet the financial needs of exporters. After that, the bank started export credit insurance programs in 1989. Eximbank samples in developed countries have a great effect on the establishment of Türk Eximbank.

Turkey, that aimed at steady growth in exports was directed to different markets in exports. In this sense, Türk Eximbank has given more support in the risky markets to the exporters when compared to commercial banks. With the new products it has developed, it has supported the exporters in entering new markets. With export credit insurance Türk Eximbank, positively affects the increase of market share of exporters.

Turkey's export structure has become more risky both in terms of payment and export destination. The share of *cash against goods* which is the most risky payment term has increased in all terms of payment for importers. (Table 2) *Political instability* in Turkey's export markets in recent years are assumed to negatively affect Turkey's export performance. (Table 1) In this context, the field and application potential of export credit insurance product is addressing, is expanding. The use of export credit insurance products has increased thanks to securing payment guarantees against commercial and political risks in entry into risky markets as well as insuring cash against goods sales.

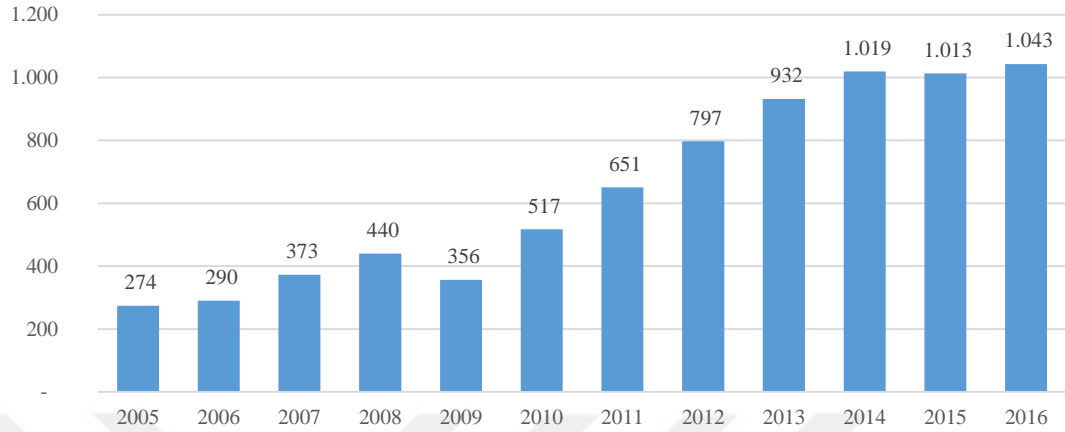
Since 2000, the export amount insured by Türk Eximbank has shown an upward trend. (Figure 7) In particular, the regular increase since 2009 can be interpreted as an increase in the tendency of exporters to avoid risk in the post-crisis period.

Figure 7: Turkey's Total Insured Export (Short Term, mio USD)



Source: Türk Eximbank data

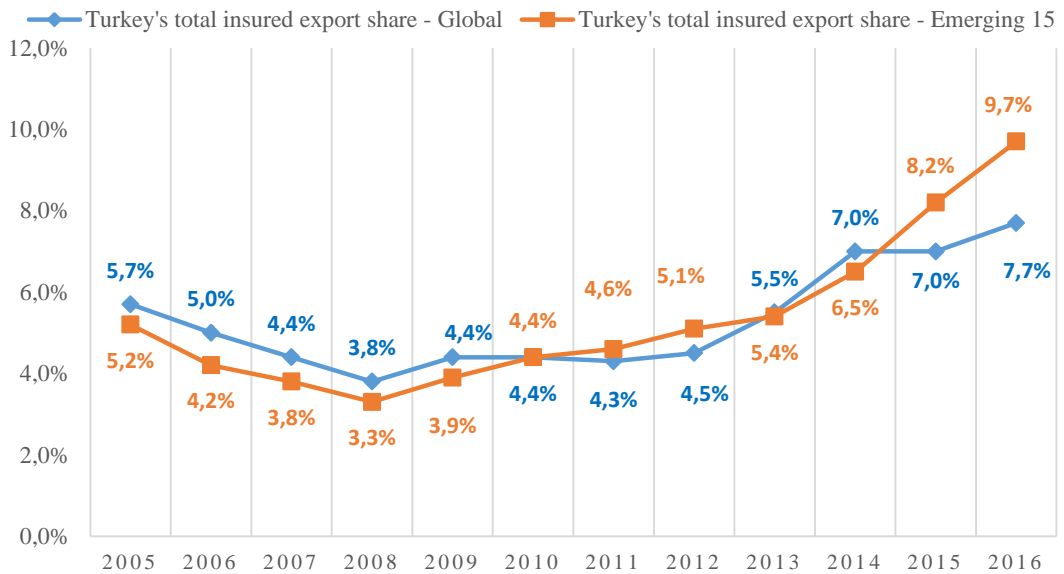
Figure 8: Turkey's Insured Expored to Emerging 15 (Short Term, Mio USD)



Source: Türk Eximbank data

It is seen in Figure 8 that the demand for export credit insurance for Emerging 15 is increasing in recent years. In Figure 9, which shows the export ratio insured by Türk Eximbank in total exports, the insured export rate, which was 3.8 percent in 2008 when it started to show the effects of the global crisis, rose to 4.4 percent in 2009. While the rate did not change in 2010, it rose to 7.7 percent in 2016.

Figure 9: Shares of Turkey's Insured Exports (%)



Source: Türk Eximbank data

It can be considered that exports and export credit insurance move in the same direction. Therefore, it would be more accurate to compare changes rates in exports and insured exports. Figure 10 shows the moving average of the growth rates of exports and insured exports in 2005-2015.

Figure 10: Turkey’s Export Growth Rate and Insured Export Growth Rate (% , Moving Average)



Source: Turkish Statistical Institute, Türk Eximbank data

Taking the moving average is healthier in explaining the trend of general change when the assumption is taken that exporters have a certain time between perception of crisis and taking measures. As seen in Figure 3, the rates moving in parallel until 2009 were reversed until 2012 in the post-crisis period. This means that the moving average of insured export growth rate is higher than the moving average of total export growth rate. After 2012, the growth rate of insured exports is above the rate of increase in exports.

CHAPTER III

LITERATURE REVIEW

Before analysis, we will determine which variables affect exports and note the most descriptive of these variables in order to use in our model. Then we will show what kind of results are obtained from the studies related to the gravity model mentioned in the previous chapter. Finally, we will review the studies that examine the effect of export credit insurance on exports.

First of all, export performance is affected by many internal and external factors. In this chapter, it will be focused primarily on the basic determinants of exports and it will be discussed that which might be the main determinant in Turkey's export structure.

In addition, the variables used in the literature in the gravity models will be examined. Finally, the studies examining the effects of export credit insurance on exports will be examined in detail and the results will be discussed. After evaluating the factors determining Turkey's exports, the difference of the established econometric model from other models will be shown and the model will be analyzed.

There are many studies in the literature that examine the main determinants of exports. In these studies, the variables are classified as micro or intrinsic variables besides the macro or exogenous variables are shown in the main determinants of exports.

Khan (1974) showed that prices play an important role in determining the imports and exports of developing countries. Similarly, Warner and Kreinin (1983) found that exchange rates and the export prices of competitive countries have a strong influence in determining the export of the countries.

Aaby and Slater (1989) who investigated the factors mentioned most in the literature, collected these factors under four headings: *firm characteristics* that show company size and management perceptions, *firm competencies* that express

technology, planning and export policy, *export strategies* that show pricing and market selection, and *external environment* that shows external environmental effects. Similarly, Moini (1995) divided the factors affecting export performance into four. Firm size, competitive advantage, etc., were expressed as organizational characteristics. Moreover, he has emphasized three factors as the managers' expectations, managers' characteristics and systematic search for new external markets. Similarly, Cavusgil and Zou (1994) performed a study for United States. In the study, they focused on export marketing strategy, company characteristics, product characteristics (internal variables), sector characteristics and export market characteristics (external variables), as variables that determine performance. Zou and Stan (1998) explain export performance with internal and external factors. They defined the export strategy, managerial perception and behaviors, and managerial characteristic as the internal determinant. Industrial characteristics, domestic and external market characteristics are defined as external determinant.

Katsikeas, Leonidou and Morgan (2000) examined the factors that directly and indirectly affect export performance. Target market selection and export strategy are factors that directly affect export performance. Managerial characteristics, organizational characteristics and environmental variables are factors that indirectly affect export performance.

In most of studies in the literature, the findings about determinants of export are similar and especially focused on common factors. In summary, it attracts notices that the factors affecting export performance are organizational characteristics, manager characteristics, firm characteristic, marketing strategy, export strategy and external environment. One of the common factors in the studies is external factors. In external factors, the market situation stands out. On the other hand, the economic and political situation of the importing countries is considered as a decisive factor for exports.

There are a number of studies about what are the main determinants of Turkey's exports are. According to Atabay's study (2004) which is based on Turkey's

economy, the internal characteristics of the firm (firm size, export experience, manage specifications, product features, marketing strategy firm) and external factors (the export market characteristics, market development level, competition in the market, the brand and product recognition, market entry barriers), are determinants of exports. In addition to these factors, firm-level factors that determine the export of a company, are the nature of the company's employment, wage level, technological creativity, R-D activities, scale economy and natural resource density. (Yücel, 2006)

In the literature, there are many studies on the impact of growth and the real effective exchange rate over Turkey's exports. In the study covering 1980-1996 period Yiğidim and Köse (1997) did not find a causal relationship between exports and growth when they used percentage changes of variables. In the analysis in which they take the logarithmic differences of the variables, they found a one-way causality from growth to export.

On the side of “*exchange rate*”, Abuşoğlu (1990) stated that there is no meaningful relationship between exchange rate policies and exports for 1980-1988 period and that the depreciation of the Turkish Lira (TL) against foreign currencies has little effect on exports. In another study about RER effect on Turkey's export, Balcılar et al. (2013) found that real effective foreign exchange positively affects long-term exports. Productivity variability is another reason for export. An increase in real wages negatively affects both short and long term exports. The other factor determining exports is, the amount of foreign income and the amount of external demand connected to it. According to the author, the increase in international exports positively affects exports. Karagöz and Dogan (2005) have shown that RER has no long-term causality effect on foreign trade. Nonetheless, they have reached the conclusion that there is correlation in short-term and the devaluation effect is meaningful. Nowak-Lehmann et al. (2007) examined the effects of EU protectionism, price competition and transport costs in their studies. The study investigates the trade effect with the Turkey's Customs Union process with EU by the help of the gravity model for the period 1988-2002.

The obtained results, has revealed that Turkey's exports are negatively affected by transport costs and positively affected by the rise of the RER.

The factors affecting the performance of Turkey's export are centered upon export market strategies, firm based market characteristics, revenues of other countries, development of global economy, exchange rates, growth performance and export incentives.

Along with many factors affecting the export performance of countries, there are multiple factors that affect bilateral trade. One of the most frequently used models for describing trade flows between countries is the gravity model. Studies to use gravity model are also useful sources for determining the determinants of an export of a country.

Tinbergen (1962) argued that the total exports from one country to another can be explained by the gross national product of the importer and exporter countries and the distance between the countries through an economic model. Tinbergen has stated that the distance between countries has a negative effect on trade flows.

Just after Jan Tinbergen's pioneering work, Pentium Pöyhönen published a work in 1963 that examined trade flows between 10 European countries. Pöyhönen, used datas for 1958, GDP, geographical distance, exports, imports and dummy variables (inclusion in trade agreements, regional and cultural proximity) in his model. Analysis results shows that, trade agreements, geographical proximity, regional and cultural proximity, and the size of the GDP have affected the trade volume of the countries positively.

Barry Eichengreen and Douglas A. Irwin (1998) have made an analysis over the European Union countries. The results of the study are interesting. According to the results of the study; membership of the European Payments Union does not increase trade significantly, shows that past colonial ties have had a considerable effect on the trading of the countries. GATT has the trade enhancing effect of the among member countries. The main emphasis of the study is that while the foreign trade trends are examined with the Gravity Model, the importance of the

important milestones in the history of the relevant countries should not be overlooked.

Howard J. Wall, (1999) examined United States trade with 85 countries during the period 1994-1996. According to the results of the analysis using the Commercial Freedom Index and the NAFTA membership dummy variable as additional variables; the impact of commercial protectionism in the world to the US during the review period was welfare loss by 1.45% of 1996 GDP.

Robert C. Feenstra (2004) is an economist who has used the Gravity Model in many studies and has introduced the Model in a broader way in his book "Advanced International Trade", which he used in his graduate course in economics and who has gained an important place in the literature.

The main result of C line Carr re's work in 2006; regional agreements lead to substantial trade increases within the region. However, when examined globally, this often leads to trade deflecting effects.

In his article published in 2013 William H. Greene, analyzed the exports of US that are exported to 78 countries and are in high technology product group, by using the Gravity Model. The study includes the period of 1990-2011. In the study; it's reached the result that the GDP per capita, the population, the country's physical surface area, trade liberty, common membership to free trade agreements and common culture variables affect the US exports in the high technology product group in the positive direction whereas geographical distance affects them in the negative direction.

In a joint study of James E. Anderson and Eric van Wincoop published in 2003 there is a comprehensive analysis of Canada, the United States and 30 other industrialized countries with the data of 1993. In the model, export, import, geographical distance, GDP and population variables are used. In the study, the border effects were discussed and the trade reducing effects of border effect was found to be statistically significant.

Carlo Filippini and Vasco Molini (2003); examined the bilateral trade flows between the East Asian countries given the 1970-2000 period. Writers; established the model using population, GDP, geographical distance and technological distance variables. The basic results of the study are summarized as follows: The richer countries are doing more trade. Mutual trade is closely associated with geographical distance and technological distance (by being close to technology levels). In this framework, geographical distance and technological distance should be considered as two main obstacles to international trade flows. The main emphasis is that as the geographical distance between countries increases and the gap between technological levels of countries grows, mutual trade flows decreases.

Fukunari Kimura and Hyun-Hoon Lee (2006); In the model which they created using panel data of 1999 and 2000 regarding 10 OECD countries; gave a place to GDP, population, geographical distance, GDP per capita, and World Economic Freedom Index and common language dummy variable. In this study, the authors analyzed the service trade using the Gravity Model and stated that the Model is as applicable in analyzing the trade of service as it is in analyzing trade of goods. The differences of the elasticities of explanatory variables between commodity trading and service trading, lead to differentiation in the analysis. Geographical distance has the feature of being a more important variable in service trade than in goods trade. This result indicates that transportation costs are generally higher in service trade than in goods trade. The study also notes that membership in regional trade agreements has a strong stimulating effect on both goods and services trade.

In his study, which published in 2006, Keith Walsh (2006) examined the determinants of service exports, using data of 27 OECD countries for 1999-2001 period. The author used the values of Economic Freedom Index and Commercial Constraint Index together with GDP and geographical distance. As a result of the study, it is stated that the Economic Freedom Index has a negative effect on public

services imports, the Commercial Constraint Index has a positive effect and only the Economic Freedom Index has a significant effect on total imports.

Amita Batra (2006); has analyzed India's trade flows in detail using the Gravity Model. In the article, data of the year 2000, GDP at current prices, purchasing power parity calculated according to GDP, trade volume, population, per capita income variables, geographical distance data and dummy variables (neighboring countries:1, no common border: 0, common language spoken, colonial engagement existence, regional trade agreements existence: 1, the absence of regional trade agreements: 0) are used. Batra indicates that the Gravity Model analyzes used in the study, predict the elasticity of income and distance accurately and reasonably. It also states that the model regarding the influence of geographical, cultural and historical features is very reliable. The results indicate that India's commercial potential is highest in the Asia-Pacific region, followed by Western Europe and North America.

The work of Gordon H. Hanson and Chong Xiang published in 2004 handled the OECD countries. The authors used variables of the data for 1990, total export, GDP, physical distance, common border, common language, labor/capital ratio, the average wage in low-quality jobs, population, physical country size, average education status.

Jean-François Brun, Cèline Carrère, Patrick Guillaumont and Jaime de Melo (2005) handled the trade flows of 130 countries during the period 1962-1996 in their work in which they made a comprehensive analysis through the Gravity Model. In the model, authors used total imports, GDP (fixed prices), population, physical distance, infrastructure index, the share of total exports of primary export goods (basic goods), real exchange rate variables and membership of any customs union as a dummy variable (customs union exists: 1, no customs union: 0). It has been suggested that the geographical distance has about 11% reduction effect on trade by examining the mutual trade flows in the world in a 35 year period with a Modified Attractive Model using the enhanced trade barriers function. According to the authors, poor countries have been marginalized by the wave of

globalization, while developed countries can benefit from various factors that reduce the distance.

Another important study employing the gravity model belongs to UNCTAD (United Nations Conference on Trade and Development) and the World Trade Organization. These two international organizations, in a joint work they published in 2003, have proposed an Extended Gravity Model to calculate the trade potentials of developing countries and transition economies. Using the Extended Gravity Model they named *Tradesim*, they identified 36 developing countries as exporting countries and 58 as importing countries. The variables they suggest are: GDP, distance, common language, literacy rates of countries, stocks of direct foreign investment, freedom of entry into new market and telecommunication infrastructures. The study concludes that the most influential variable in the foreign trade capacities of developing countries and transition economies is the regulation of entry into the market. Both UNCTAD and WTO, at the beginning of the study, they state that they regard the gravity model as a convenient and useful model.

Bilici, Erdil ve Yetkiner (2010); investigated the effect of customs union on Turkey-EU Trade using gravity model. The authors studied the period 1992-2006. In the model, the absolute difference in GDP per capita between countries, exports, GDP, population, distance were used as explanatory variables and European Union membership, BSEC (Organization of the Black Sea Economic Cooperation) membership and border neighborhood items were used as dummy variables. According to the results of the analysis, Turkey's foreign trade pattern has not undergone a dramatic change after the Customs Union, but there have been temporary changes in favor of the European Union.

As can be seen, there are similar and consistent results in the gravity model used for examining the international trade flows. Due to the fact that it is a reliable analysis method, different factors such as export incentives, export credit insurance and guarantee programs have been included in the gravity model and the effects on export have been investigated.

One of the first studies on export credit insurance was made by Ross and Pike (1997). They have studied the effects of export guarantees with a survey work on the Canadian exporters. Findings show that current commercial credit models are inadequate to account for export credit decisions. Risks faced by exporters are export-specific risks when considered to export credits. It is therefore different from commercial loans. So that, government-sponsored export credit agencies have been established against export-specific risks.

In a study over officially supported export credit agencies, Abraham and Dewit (2000) examined the 1984-1993 period using the Belgian OEIA data. According to the regression result, export promotion does not necessarily imply trade distortion.

There are also studies examining the effect of export credit insurance on exports to the developing markets. Garcia-Alonso, Levine and Morga (2004) highlighted the role of export credit insurance in emerging markets. Regression results are interesting in the study of the relationship between export credits and moral hazard and export quality. They claim that the credit insurance has exacerbated the exports structure by increasing exports to countries with high political risk and encouraging firms to export low-quality goods.

Egger and Url (2006) examined the effects of export credit insurance on Austrian exports. 1996-2002 years were studied in the study. According to the results, export credit insurance has significant effects on exports in the short term. Egger and Url (2006) also analyze Austrian export flows disaggregated by receiving country and industry, and show that export credit guarantees extended by Austria's ECA, Oesterreichische Kontrollbank (OeKB), indeed fosters economic activity, resulting in a multiplier effect of 2.8. Furthermore, ECA financing not only results in the broadening of trade partners towards high-risk regions but also leaves the goods structure of foreign trade almost unchanged.

Mah (2006) examined the impact of export credit insurance on Japan's exports. Despite the fact that Japan was the country that mostly uses export credit insurance, contribution of the credit insurance to exports is not found trace.

Moser, Nestmann and Wedow (2008) investigated Hermes guarantees in terms of political risks. The data for the period of 1991-2003 of 130 countries were examined with the Gravity Model. In a study using a static and dynamic panel, it became clear that political risk is an important determinant of exports.

Baltensperger and Herger (2009) examined the effect of export credit insurance on international trade. In the study of 1999-2005 period, it was seen that export credit insurance had a positive contribution to high and middle income countries. Especially the foreign default risk in countries affected by political and commercial risks prevents international trade.

Herger and Lobsiger (2010) examined the success of export guarantees in boosting exports. Swiss Export Risk Insurance Scheme data was used for the study of 2006-2008 period. According to the analysis made with the Gravity Model, the insurance increases manufacturing sector's exports by about 1%. This positive contribution is also seen in some sectors in developing countries such as Turkey, Russia, Indonesia.

Amiti and Weinstein (2011) conducted a survey on the impact of the financial crisis in Japan on Japanese companies in the 1990s. There is an important relationship between the export performance of firms and the ease of reaching credits and the performance of banks. The decline in bank equity has been influential in a significant portion of Japan's exports to the US. This shows the effect of the financial system on exports.

Manova (2013) examined the impact of financial markets on international trade flows. In the study of 27 sector data from 107 countries, 1985-1995 period was examined. Panel data show that credit constraints have a significant impact on trade when used.

Badinger and Url (2013) reviewed the use of export credit guarantees in Austria in 2008. In the study, it was observed that firms using export credit guarantees had high volume, gave high importance for research and development and had high risk exposure.

Felbermayr and Yalcin (2013) examined the impact of export credit guarantees on exports to Germany. In the study of the period 2000-2009, it was observed that export guarantees positively affected the export performance of Germany.

Auboin and Engemann (2014) examined the data of Berne Union in their study, which examined the effects of the insurance. According to the study conducted for the period of 2005-2011, it is found that the insurance has significant positive effects on exports.

Veer (2014) examined the exports of 25 OECD countries to 183 countries. In the study examining the performance of large export support organizations from 1992 to 2006, the positive effect of the insurance company was observed. However, this positive effect is given mainly by private export credit institutions. Export credit insurance increases exports by creating a multiplier effect on exports.

Brunner (2015) examined the export credits and the effect of export credit insurance on trade in Africa and Asia. Panel data was used in the study which examined the years 2005-2012. Regression results show that export credits and insurance market have positive effects on trade.

CHAPTER IV

AN EMPIRICAL APPROACH TO INTERNATIONAL TRADE: THE GRAVITY MODEL

There are many approaches to explain the developments in international trade. These are (i) traditional trade empirics such as Heckscher-Ohlin (HO) theorem, the factor price equalization theorem, the Stolper-Samuelson theorem, the Rybczynski theorem, (ii) new trade empirics, (iii) the empirics of product trade, (iv) plant and firm trade and (v) trade policy. (Redding, 2006)

The “direction” of trade is particular topic which has also been researched extensively through factors such as increasing global production, technological developments, innovations, financing facilities, population. The gravity model - used in this study- is one of the most frequently preferred models for analyzing those international trade flows. For this reason, in this section we try to examine the developments in the model, the prominence in international trade, the mathematical demonstration, discussions and implication of the model.

3.1. Gravity Model

The Gravity Model is an empirical model and based on The Law of Gravity, developed in the 17th century by Sir Isaac Newton in the field of physics. Economic size and geographical distance were frequently used in the first applications of the model. The interaction between large economic blocks is greater than interaction between small blocks. In a similar way between close blocks there is more attraction when compared to distant ones (Bergeijk and Brakman, 2010)

With the increasing importance of international trade, the research using gravity model is also increasing. Extended gravity models aim to analyze the many different factors that affect trade flows between countries, as well as their economic size and geographical distance. Population is also one of the most frequently used variables in the model. In the simplest terms, the Gravity Model

explains the merchandise flows among trading partner countries in terms of country-specific factors such as income of the countries, distance to each other, common border, common language, common religion, common currency and other factors that increase or decrease trade such as trade incentives, economic or political risks. In this context, variables such as economic and political risk levels of countries, insurance amounts of exports made to the country and exchange rate were chosen as factors affecting trade in this study.

3.2. Gravity Equations

The standart/basic and extended versions of the gravity model are:

Basic Gravity Model: Tinbergen and Poyhonen, who first applied the gravity model to international trade, pointed out the basic gravity model equation as follows:

$$trade_{ij} = A [(GDP_i \times GDP_j)]^{b1} / distance_{ij}^{b2} \quad (1)$$

$trade_{ij}$, the value of trade between countries i and j ; GDP_i GDP_j , respectively gross domestic product (GDP) of countries i and j ; $distance_{ij}$ is distances between countries i and j . A is the constant in the model. The model is linearized by taking the log of both sides. As a result, the predicted model is expressed as follows:

$$\log(trade_{ij}) = \beta_0 + \beta_1 \log[(GDP_i \times GDP_j)] - \beta_2 \log(distance_{ij}) + e_{ij} \quad (2)$$

β_0 , β_1 and β_2 represent the predicted parameters, e_{ij} represents the error term. Error term measures the effects of stochastic factors on bilateral trade. In the model, the trade volume between the two countries is an increasing function of the countries' GDP, and the distance between them is a decreasing function.

Extended Gravity Model: It is the equation created by expanding the basic gravity model variables. Basic model can also be extended using some variables such as population and other factors promote or impede trade between countries. In the

studies of Linnemann (1966), Anderson (1979) and Bergstrand (1985), the trade flows between countries i and j are formulated as follows:

$$\ln(\text{trade}_{ij}) = \beta_0 + \beta_1 \ln \text{GDP}_i + \beta_2 \ln \text{GDP}_j + \beta_3 \ln \text{Pop}_i + \beta_4 \ln \text{Pop}_j + \beta_5 \ln \text{Dist}_{ij} + \beta_6 \ln \text{A}_{ij} + \sum \delta_h P_{ijh} + u_{ij} \quad (3)$$

- trade_{ij} , bilateral trade flows between countries i and j
- GDP_i ve GDP_j , GDPs of countries i and j
- Pop_i ve Pop_j , populations of countries i and j
- Dist_{ij} , distances between countries i and j
- A_{ij} , refers to all the factors that promote or impede bilateral trade between countries i and j
- P_{ijh} , is the sum of the preferential trade dummy variables. When a certain condition is met, it has a value of 1 (for example, belonging to a trade block), otherwise it has a value of zero.
- u_{ij} denotes the error term.

3.3. Implications on International Trade and Frequently Used Variables in the Model

The Gravity Model is one of the most utilized models for explaining the foreign trade trends because it gives consistent results. (*Frequently used variables summarized in Appendix A*) On the other hand, the Gravity Model is also used to explain other economic phenomena. For example, the Gravity Model is extensively used to study the effects of regional integrations, foreign direct investment between countries and regions, and economic migration, in addition to foreign trade flows between countries. In this section, a review of gravity models in explaining international trade flows will be examined.

The determination of growth policies based on international trade has prompted countries to determine new trade strategies and research in international trade. The gravity model, in this context, used intensively to predict trade flows is a simple

model based on the economic size of the countries and the distance between the countries.

Gravity model was first performed by Tinbergen (1962) and Poyhonen (1963), and known in the literature as *Standard, Original, Simple* or *Basic Gravity Model*. The basic philosophy of the *Simple model* is that the trade flow between the two countries is affected by the national income of the countries and the distance between the countries. The Simple model is based on the assumption that the trade flow is positively affected by the countries' income, and is affected negatively by the distance between the countries. Pentium Poyhonen, one of the pioneer in the field, published a work in 1963 that examined trade flows between 10 European countries. Poyhonen, used datas for 1958, GDP, geographical distance, exports, imports and dummy variables (inclusion in trade agreements, regional and cultural proximity) in his model.

Later, Linnemann (1966) developed the Gravity model by adding other variables in addition to the traditional variables of the model. In his work he focused on determining the factors that motivate countries to trade and measuring the effects of these factors on trade flows. In this direction, he added variables such as population to the model. By adding the population variable to the model, he made it possible to measure the share of the domestic demand in the total national product. Linnemann tried to explain the international trade flow by using a similar method to the Walrasian equivalence⁶ system, based on the theoretical basis of the Gravity Model.

Later, Barry Eichengreen and Douglas A. Irwin (1998) claimed that the application of the Gravity Model used in the literature had a basic deficiency. According to the authors, history has an important role in explaining the mutual trade flows between countries. They have made an analysis over the European Union countries. Variables used in model are GNP, GNP per capita, geographical

⁶ A Walrasian equilibrium is a vector of prices, and a consumption bundle for each agent, such that (i) every agent's consumption maximizes her utility given prices, and (ii) markets clear: the total demand for each commodity just equals the aggregate endowment. (Levin, 2006)

distance, and the presence of border neighborhood as a dummy variable. Then they added additional dummies to the model. First of these is whether or not the countries are GATT members. Second, is whether or not they are EEC members. Thus, the effects of two important stages of commercial liberalization in Europe will also be seen. The third is a whether or not they are member of the European Payments Association. Finally, the presence or absence of colonic bonds in the past has also been added as a dummy variable. In another similar study, Howard J. Wall, (1999) studied international trade with 85 countries in 1994-1996 period, has also used the Commercial Freedom Index and the NAFTA membership as a dummy variable.

Peter Egger (2002) also examined the trade flows of OECD countries and the "Central and Eastern European Countries" (CEECs) using Gravity Model. In his model, Egger used the data for 1986-1997 period, GDP, physical country size, differences in relative factor endowment of countries, real exchange rate variables, physical distance values and as dummy variables common language and common boundary. In the same paper Egger (2002) noted that when measuring the success of countries or regional associations with Gravity Model, it is a frequent problem to make incorrect specifications, using extra, missing or incorrect variables. For this reason, it is necessary to be very careful when using the Model and / or interpreting the results. Despite everything, the Gravity Model is a very useful tool for developing factual simulation analysis.

Paas (2002) mentions two advantages of the model. First of these advantages is that the data required for the model is easily accessible and reliable. The second is that the model is much tested and expanded in the economic literature to get better results.

Carlo Filippini and Vasco Molini (2003) established the model using population, GDP, geographical distance and technological distance variables.⁷

⁷ Technological distance means absolute difference between the ArCo index (Archibugi, Coco 2004) of the two trade partners. ArCo index takes into account three dimensions. Creation of

Another important study employing the gravity model belongs to UNCTAD (United Nations Conference on Trade and Development) and the World Trade Organization. These two international organizations, in a joint work they published in 2003, they identified 36 developing countries as exporting countries and 58 as importing countries. The variables they suggest are: GDP, distance, common language, literacy rates of countries, stocks of direct foreign investment, freedom of entry into new market and telecommunication infrastructures.

Gordon H. Hanson and Chong Xiang (2004) handled the OECD countries. The authors used variables of the data for 1990, total export, GDP, physical distance, common border, common language, labor/capital ratio, the average wage in low-quality jobs, population, physical country size, average education status.

Jean-François Brun, C line Carr re, Patrick Guillaumont and Jaime de Melo (2005) handled the trade flows of 130 countries during the period 1962-1996 in their work in which they made a comprehensive analysis. In the model, authors used total imports, GDP (fixed prices), population, physical distance, infrastructure index, the share of total exports of primary export goods (basic goods), real exchange rate variables and membership of any customs union as a dummy variable (customs union exists: 1, no customs union: 0).

After the joint study, C line Carr re (2006) publishes articles by her signature and studied the data for the period of 1962-1996 of 130 countries. In her study she used import, GDP, population and geographical distance variables.

Fukunari Kimura and Hyun-Hoon Lee (2006) use the variables such as GDP, population, geographical distance, GDP per capita, and World Economic Freedom Index and common language as dummy variable. In the model, they employed panel data of 1999 and 2000 regarding 10 OECD countries.

technology (*number of patents, number of scientific papers*), diffusion of technology (*internet penetration, telephone penetration, electricity consumption*) and development of human skills (*engineering enrolment, mean years of schooling, adult literacy rate*) (Filippini, Molini 2003)

Keith Walsh (2006) examined the determinants of service exports, using data of 27 OECD countries for 1999-2001 period. The author used the values of Economic Freedom Index and Commercial Constraint Index together with GDP and geographical distance.

Amita Batra (2006); has analyzed India's trade flows in detail using the Gravity Model. In the article, data of the year 2000, GDP at current prices, purchasing power parity calculated according to GDP, trade volume, population, per capita income variables, geographical distance data and dummy variables are used.

In the study of Elhanan Helpman, Marc Melitz and Yona Rubinstein published in 2008, the mutual trade flows of 161 countries are examined. The authors used variables in their models such as exports, real GDP, real GDP per capita, geographical distance and dummy variables such as GATT / WTO membership, colonial past, common language, and membership of a monetary union. The review period of the model, which is quite extensive, was 1970-1997. They point out that in the study, the Standard Simple Gravity Model estimates give deviant results in explaining the complex commercial relationships. The reason for this deviation depends on the choice of missing variable, not on the wrong choice of variable.

Bilici, Erdil ve Yetkiner (2010); investigated the effect of customs union on Turkey-EU Trade using gravity model. The authors studied the period 1992-2006. In the model, the absolute difference in GDP per capita between countries, exports, GDP, population, distance were used as explanatory variables and European Union membership, BSEC (Organization of the Black Sea Economic Cooperation) membership and border neighborhood items were used as dummy variables.

William H. Greene (2013) analyzed the exports of US that are exported to 78 countries and are in high technology product group, by using the Gravity Model. The study includes the period of 1990-2011. In the study; he used the variables

such as GDP per capita, the population, the country's physical surface area, trade liberty, common membership to free trade agreements and common culture.

Felbermayr and Yalcin (2013) analyzed German export and German export credit agencies Euler Hermes guarantees and used variables such as GDP, Hermes guarantees, population, exchange rate, OECD country risk, capital information, manufacturing imports, integration agreement and customs union as dummy variable.

In the limited number of studies on gravity models made for Turkey case, Polat and Yesilyaprak (2017) have analyzed Turkey's export for 16 years using the Gravity Model. In the article, GDP at current prices, purchasing power parity calculated according to GDP, trade volume, population, per capita income variables, geographical distance data and dummy variables are used.

In remarkable studies that critically evaluate the gravity model, James E. Anderson and Eric van Wincoop (2003) analyzed of Canada, the United States and 30 other industrialized countries with the data of 1993. In their paper the theoretical and model differences and deficiencies of the previous studies reaching the similar result were examined. Based on this work we can emphasize that, even if the variables are meticulously determined when creating the Gravity Model, results may not always be reliable. Although carelessly selected variables give correct results, they may not yield a reliable result. Redding (2006) also criticized the gravity model in terms of its theoretical foundations. Although the gravity equation had been known for some time to provide an extremely successful empirical explanation for bilateral patterns of international trade, it initially suffered from a lack of theoretical foundations.

CHAPTER V

ANALYSIS OF EXPORT CREDIT INSURANCE EFFECT ON TURKEY'S EXPORT USING GRAVITY MODEL

5.1. Econometric Model: Panel Data

Data sets used in economic studies are divided into three as horizontal cross-sectional data, time series data and panel data. (Hansen, 2013) The data type used in the gravity model applications is the panel data.

Panel data refers to the pooling of observations on a cross-section of households, countries, firms, etc. over several time periods. (Baltagi, 2005) This models vary depending on whether the parameters are based on unit and / or time.

The formulation of a panel data regression is as follows:

$$Y_{it} = \alpha + \beta_{1it} X_{1it} + \beta_{2it} X_{2it} + \beta_{3it} X_{3it} + \dots + \beta_{kit} X_{kit} + \mu_{it}$$

i : th cross-sectional unit, $i = 1, \dots, N$

t : th time period, $t = 1, \dots, T$

k : Number of explanatory variables

Y : Explained variable

X : Explanatory variables

α : Constant

β : Coefficients of explanatory variables

u : Error term

There are advantages and disadvantages of using panel data. Hsiao (2003) and Klevermarken (1989) list the advantages of panel data as follows:

Panel data is better able to controlling for individual heterogeneity and give more informational data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency. On the other hand, panel data are better

able to study the dynamics of adjustment and identify and measure effects that are simply not detectable in pure cross-section or pure time-series data. It allows us to test complicated behavioural models than purely cross-section or time-series data. (Baltagi, 2005)

Panel data also have limitations. That includes:

1. Design and data collection problems.
2. Distortions of measurement errors.
3. Selectivity problems: Self selectivity, nonresponse, attrition
4. Short time-series dimension
5. Cross-section dependence

With panel data, the most commonly estimated models are fixed effects and random effects models. The choice between fixed or random effect models varies according to the reason for the model being estimated. If an inference is to be made for a certain unit of the model's estimate, it would be appropriate to use the fixed effects model. If the data set consists of observations from a large population, and if it is desired to deduce the results for all of the groups, it would be advantageous to use the random effect model.

The Hausman test is performed to test the accuracy of the choice between the two models. The most significant difference between the fixed and random effect models is whether the unit effect is related to independent variables. *Hausman Test* measures whether there is a relationship between the error term and the explanatory variables due to the unit effect. That is to say, it measures whether the Random Effects Model is suitable. If it is determined that the components of the error terms of the random effect model are not related to the independent variables, the Fixed Effects Model will be preferred.

5.2. Data and Methodology

5.2.1. Data

Our data is collected from various sources and covers period from 2001 to 2016. (*Appendix B*) We have 15 countries for our analysis for 16 years that makes 240 observation in total. Our dependent variable is Turkey's export to Emerging 15 provided by Turkish Statistical Institute. Turkey's insured shipments provided by Turk Eximbank, Business Monitor International (BMI) Economic Risk Index, GDP per capita, populations, export prices index (EPI), distances and real effective exchange rates (REER) are the independent variables. A big portion of data is collected from Turkish Statistical Institute and Business Monitor International Database which is a Fitch Group Company.

5.2.2. Methodology

In this study, Turkey's exports to the Emerging 15 was analyzed using the Gravity Model. The gravity model has to come to be the starting point for a wide variety of research questions with a policy component. (Shepherd, 2013) Egger and Url (2006), Moser, Nestmann and Wedow (2008) and Janda (2013) have applied the gravity model in the contexts of credit insurance.

The selected econometric model is the *Random Effect Model* and the significance and the coefficients of the explanatory variables are estimated using the *Stata*. The years studied in the model cover the period 2001-2016. Emerging 15 are: Brazil, Chile, China, Colombia, Hungary, Indonesia, India, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand. The one of the main reasons for the selection of these countries are their high growth rates and potentials for Turkey's export market. The other reason for the selection is that these countries are politically and economically more risky than developed countries. So Turkish exporters are more intended to have export credit insurance when they export to "Emerging 15"

In practice, the gravity equation uses the variables in natural logarithm which allows an easy interpretation of the estimated parameters. Logarithmic transformations are convenient means of transforming a highly skewed variable into one that is more approximately normal. (Benoit, 2011) The logarithmic estimations are elasticities.

Extended gravity model, whose dependent (explained) variable is Turkey's export to "emerging 15" between years 2001 -2016 (*Appendix 1*), is established as following:

Extended Gravity Model:

$$\ln(\text{export}_{ijt}) = \alpha_i + \beta_1 \ln(\text{GDPper}_{jt}) + \beta_2 \ln(\text{dist}_j) + \beta_3 \ln(\text{pop}_{jt}) + \beta_4 \ln(\text{EPI}_{jt}) + \beta_5 \ln(\text{REER}_{jt}) + \beta_6 \ln(\text{risk}_{jt}) + \beta_7 \ln(\text{insurance}_{jt}) + u_{it}$$

The variables are described below:

- export_{ijt} : Total export from Turkey to i country in year t (explained variable)
- GDPper_{jt} : Importer countries' GDP per capita in time t
- dist_j : distance between Turkey and importer country
- pop_{jt} : population for country j in year t
- EPI_{jt} : Turkey's Export Price Index in time t
- risk_{jt} : Economic Risk Index in country j in time t
- REER_{jt} : Turkey's real effective exchange rate in time t (USD)
- insurance_{jt} : Turkey's insured export to i country
- u_{it} : Error term
- α_i : Constant
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$: Coefficients of explanatory variables

By taking the natural logarithm of all the variables, it is made possible to interpret the coefficients as percentage increase / decrease.

Choice of variables

In this model, importer countries' GDP per capita, economic risk index of importer countries, Turkey's real effective exchange rates, populations, Turkey's export price index and Turkey's insurance volume in exports to the Emerging 15 were used as explanatory variables.

We expect the following effects of the these variables:

GDP Per Capita: GDP per capita is a measure of a country's economic output that accounts for its number of people. It is commonly used in gravity. Given that we analyze exports from Turkey to other countries, we include recipient country's GDP per capita. We expect that there would be positive correlation between buyer country's GDP per capita and its import demand.

Distance: It shows the distance between Ankara, Turkey's capital city, and the capitals of other countries. We consider to be a proxy for transportation as well as information costs and expect a negative coefficient for distance.

Population: Populations is used as proxy of economic size. As the population increases in the importer country, consumption is expected to increase and as a result imports are expected to increase. We expect positive coefficient for population.

Real Effective Exchange Rate (REER): "Nominal effective exchange rate is the weighted average value of the Turkish lira relative to the basket of the countries' currencies that have a significant share in Turkey's foreign trade. Weights are determined using bilateral trade flows. As for *real effective exchange rate*, it is obtained by purifying relative price effects in nominal effective exchange rate.⁸ It is expected that the depreciation of the Turkish Lira (TL) against foreign currencies has positive effect on Turkish exports to Emerging 15.

Export Price Index: An export price index (EPI) is an index calculated for the price(s) of one or any specified group of commodities entering into international

⁸ The Central Bank of the Republic of Turkey, <http://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Statistics/Exchange+Rates/Real+Effective+Exchange+Rates+Deneme/>

trade using, ideally, f.o.b. export prices.⁹ In case of increase in Turkey's export prices, importer countries have to pay more for the goods which they were buying from Turkey. So Turkey's exports and competition power will decrease because buyers will try to look for alternatives for the same goods which they were buying from Turkey. However, an increase in export prices may result in an increase in export revenues, although it may lead to a decrease in the quantity of exported goods. That is, the net effect may be positive.

Economic risk: Economic risk has a restrictive effect on the country's trade. Countries with higher economic risk receive *ceteris paribus* less exports and we expect economic risk has negative effect on trade. The data obtained from Business Monitor International Economic Risk Index. The formula is as follows:

Table 3: BMI Economic Risk Index

BMI Economic Risk Index (%100)			
Long Term Economic Risk	50%	Short Term Economic Risk	50%
Structure of Economy	33%	Economic Activity	25%
Economic Activity	17%	Monetary	12,50%
Monetary	8%	Fiscal	12,50%
Fiscal	8%	External	25%
External	17%	Financial	25%
Financial	17%		

Export Credit Insurance: The main purpose of this study, explain whether official export credit insurance provided by Turk Eximbank fosters exports. We expect that insurance has positive effect on export performance. As we have mentioned above, one contribution of this study is to show the insurance effect on Turkey's exports to emerging markets.

⁹ OECD, <https://stats.oecd.org/glossary/detail.asp?ID=3032>

5.3. Analysis: The Effect of Export Credit Insurance on Turkey's Export to Emerging 15

The gravity model was also frequently used to explain Turkey's exports in several studies in the literature. However, no study has examined the effect of export credit insurance on emerging countries' exports. This study intends to fill this gap in the literature.

Regression analysis using non-stationary variables may cause spurious regressions by providing significant t and F statistics and a high R while there is no true relationship between the variables. (Gujarati, 2014). Therefore, we tested the stationaries of the variables by using Pesaran's CADF tests. They are examined and reported in Table 3.

If the test statistic obtained as a result of the analysis is greater than the Pesaran (2007) table value, it is said that the series is stationary. According to the analysis result, it is determined that all the variables are stationary.

Table 4: Pesaran CADF Test

	I(0)	I(1)
lnexport	-1.296*	-
lnGDPper	-2.293**	-
lnpop	-2.010**	-
lnREER	-3.721***	-
lnEPI	-3.121*	-
lnrisk	-2.130**	-
lnInsurance	-3.854***	-

Note: Critical Values, 4.11 (%1), -3.36 (%5) and -2.97 (%10) (Pesaran 2007, table I(b), p:275). ***p < 0.01, **p < 0.05 , *p < 0.1

$\ln(\text{export}_{ijt}) = \alpha_i + \beta_1 \ln(\text{GDPper}_{jt}) + \beta_2 \ln(\text{dist}_j) + \beta_3 \ln(\text{pop}_{jt}) + \beta_4 \ln(\text{EPI}_{it}) + \beta_5 \ln(\text{REER}_{jt}) + \beta_6 \ln(\text{risk}_{jt}) + \beta_7 \ln(\text{insurance}_{jt}) + u_{it}$ model is predicted by using the OLS model, random effect model, the Poisson random effect and the Poisson PML model, and the results are reported. We run ordinary least squares model (OLS) to allow comparison. Poisson random effect (Poisson) and Poisson

Pseudo maximum likelihood estimations (PPML) are also estimated to allow for zero trade values in dependent variable in its level.

As a second step, we used Hausman test to choose the appropriate model for our panel estimations. Null hypothesis of the Hausman test can be alternatively stated as:

$H_0 = \text{Random Effect Model is suitable.}$

If H_0 is rejected in the test result, it can be said that the Fixed Effect Model is appropriate.

Table 5: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq.d.f.	Prob.
Cross-section random	26.503056	7	0.0503

The p-value value (significance level) and the table value (α) are compared according to the results of Table 4.

p-value = 0.0503 > 0.050

The H_0 can not be rejected. Therefore, we proceed with random effect model.

Table 6: Regression results

Variables	Model 1: Inexport OLS	Model 2: Inexport Random Effect	Model 3: Inexport Poisson Random Effect	Model 4: Inexport Poisson PML
$\ln GDP_{per}$	0.685*** [0.109]	0.236*** [0.127]	0.035*** [0.005]	0.007*** [0.006]
$\ln dist$	-0.832*** [0.201]	-0.746** [0.336]	-0.036*** [0.010]	-0.018* [0.011]
$\ln pop$	0.451*** [0.083]	-	0.021*** [0.004]	-
$\ln REER$	-0.262 [0.518]	-0.332 [0.548]	-0.100 [0.034]	0.038 [0.033]
$\ln EPI$	1.020** [0.478]	1.277** [0.559]	0.085*** [0.024]	0.080*** [0.030]
$\ln risk$	-0.084 (0.283)	0.364 (0.405)	-0.008 (0.032)	-0.005 (0.035)
$\ln insurance$	0.326** [0.075]	0.452*** [0.075]	0.020*** [0.005]	0.037*** [0.002]
C	9.603*** [2.232]	9.820*** [3.457]	2.437*** [0.141]	2.165*** [0.146]
Prob	0.000	0.000	0.000***	0.000***

R ²	0.89	0.82	-	-
N	240	240	240	240
F	285.63			

Note:***p < 0.01, **p < 0.05 , *p < 0.1

As seen in Table 6. According to all model specifications, the coefficient of Emerging 15 GDP per capita, *lnGDPper*, is positive and statistically significant. This result is in accordance with the gravity model theory. This will make it possible to export to emerging 15 more because the increase in the countries' GDP per capita will increase the purchasing power in these countries.

The coefficient of the "*Indistance*" variable, which represents the distances of the capital cities of the Emerging 15 to Ankara, is negative and statistically significant in all models. The distance variant reflects the transport costs in trade flows. Transportation costs increase as the distance between trading partners increases. The increase in transportation costs also negatively affects bilateral trade flows. As seen in Table 6, the distance between partner countries and Turkey, negatively affect Turkey's exports.

Representing population of Emerging 15 "*lnpop*" variable coefficient is positive and statistically significant in model 1 and model 3. In the gravity models, the population is often used to represent the country's size. The increase in population means more consumption. In this case, imports are expected to increase. According to the results of the analysis, increases in population in emerging 15 is increasing Turkey's exports.

The coefficient of the "*lnREER*" variable was not statistically significant in any model. As it is known that exchange rate fluctuations are a risk factor for exporting countries. However it is assumed that the depreciation of the local currency will lead to cheaper domestic goods and an increase in exports. However, it has been determined that real effective exchange rate does not affect exports in any models.

The coefficient of the "*lnEPI*" variable is positive and statistically significant in all models and has been found to increase exports. This finding suggests that the

export price index and exports to Emerging 15 are positively correlated. Therefore, despite decrease in competitiveness of Turkey, a positive relationship suggests revenue effect dominates.

The coefficient of *lnrisk* is negative (except model 2) as expected, but statistically non-significant.

As can be seen in regression result (table 6), the coefficient of *lninsurance* is positive as expected and statistically significant in all models. An increase in *insured export* supports Turkey's exports to emerging 15. Insurance reduces risks and uncertainties. Insured exports ensure that export receivables are collected in confidence. It eliminates political and commercial risks. So it allows exporters to enter new markets with confidence and helping them to increase their sales in their existing markets.

5.4. Alternative Methods

In order to add new comments to the results of the analysis, our model has been analyzed with alternative methods. Economic time series often have a trend. In this regard, the trend is examined in our model. In addition, the year 2009 was added to the model as a dummy in order to examine the effects of the global financial crisis on exports.

The global crisis, which started in 2008 and was felt more clearly in the following years, was added to the models as *dummy2009*. The effect of this variable on exports was found to be positive. This finding can be explained by the fact that Emerging 15 is less affected by the global financial crisis, or that Turkey's exports increase due to the depreciation of TL against foreign currencies. The results of the new model support the results of the first model (*GDP Per Capita, distance, insurance and population*). In addition, the model was analyzed separately with both fixed and random effect models. Detailed results are shown in the appendix. (Appendix C)

CONCLUSION

With the liberalization of trade, technological developments and the development of financial products supporting trade, international trade has reached great dimensions. The recognition of the contribution of international trade to national economies has led the international competitions' increase. In these competitive environment countries aimed to produce policies that would take them a step forward. In this context, financing of trade has gained importance. One of the financial innovations brought about by global competition is export credit insurance product provided by export credit institutions or private insurance companies within the scope of financing of trade.

Export Credit Agencies (ECAs) established to promote exports have provided billions of dollars of credit and insurance support to international trade so far. The export credit insurance supplied by ECAs is an important financial instrument that provides an advantage in holding in existing markets and entering new markets. It provides an assurance of collection of export receivables and protects against political and commercial risks and supports export sales to different geographies of the world and to identify buyer company.

The contributions and opportunities provided by the export credit insurance are: Guarantee of payment to commercial receivables, cash flow support, increasing sales revenue, bargaining power in trade, expanding sales portfolio and financial facilities, providing country and sector information and business intelligence, collection of delayed payment. The use of credit insurance is also a factor that credit rating agencies consider in rating procedures. The receivable insurance provides a positive contribution to the rating process through its ability to reduce the risk of receivables.

Considering the above benefits of insurance, it should not be surprising that the rate of use in the world increases. In recent years, the use of insurance rates shows an increase and has reached large volumes both in Turkey and in the world. There are also private insurance companies that provide export credit insurance services

in Turkey, but a large part of the insurance market is dominated by Türk Eximbank.

Turkey's exports are concentrated in Europe and the Middle East. This indicates that exports concentrate in close geographies. The insurance product supports trade by helping exporters to identify customers in different regions of the world. The exporter also increases exports by offering a maturity option. Referring to Turkey's export structure in terms of payment terms, it is observed that cash against goods is increasing in recent years. Cash against goods (open account) is the most risky payment term for the exporter. Therefore, we can say that the need for export credit insurance increases in this period.

Established in 1987 and started export credit insurance in 1989, Türk Eximbank has reached \$ 11 billion in insurance in 2016. This number is 7.7 percent of total exports, which was \$ 142.5 billion. Insured export share was 5,7 percent in 2005.

The use of insurance is increasing as the risk perception of exporters increases. Entering new, unknown, politically and economically sensitive markets is risky. In recent years, Turkey's export market has shifted to more risky markets. This situation is thought to increase the use of insurance.

In this study we investigated the determinant of Turkey's export to emerging 15, among which we particularly intended to check for the impact of credit insurance.

According to the results “Emerging 15's GDP per capita”, is positive and statistically significant. This situation verifies the assumption that as the national income per capita in these countries increases, Turkey's export to these country increases as well. “Distance” variable is also statistically significant but negative. It is easily expected that increasing transportation costs negatively affects bilateral trade flows. So, the distance between partner countries and Turkey, negatively affect Turkey's exports.

“Population”, representing population of Emerging 15 is positive and statistically significant in model 1 and model 3. Increase in the population, consumption increases and this increases the demand for imports. The population growth in

these countries is seen to increase Turkey's exports to these countries. "Turkey's real effective exchange rate" was not statistically significant in any model. The devaluation of the domestic currency is assumed to be the reason of cheaper domestic goods and increased exports. However, it has been determined that exchange rate does not affect exports in all models. Export price index variable is positive and statistically significant in all models. The export price index has been found to increase exports in the majority of models. This finding suggests that the increase in the export price index has boosted exports to other countries. Importer countries' economic risks variable is negative (except model 2) as expected, but statistically non-significant.

Finally "Turkey's export credit insurance amount to the Emerging 15" is positive and statistically significant in all models as we expected. An increase in *insured export* supports Turkey's exports to emerging 15. Thus, it can be said that the export credit insurance effect on Turkey's export to emerging 15, is positive. Therefore, for Turkey, which is based on export growth target, insurance appears to be one of the positive factors affecting export. In order to increase exports, the way of Turkey to take more share of the global market is increasing the use of export credit insurance that encourages exporters and gives the exporters confidence entering to new markets. In this context, it is thought that it would be beneficial to make more promotion of this product.

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APPENDIX A

Gravity Model: Used Variables in Selected Studies

AUTHOR	DEPENDENT VARIABLES	INDEPENDENT VARIABLES										
		GDP or GNP	GDP per Capita or PPP	Distance	Exports or Imports or Trade volumes	Population	Economic Freedom Index	Political/Country Risk Index	Pyhsical country size	Real exchange rates	Export credit guarantees / credit insurance	Dummies or other variables-No
Tinbergen (1962)	Export	x		x								
Poyhonen (1963)	Export	x		x	x							1
Linnemann (1966)	Export	x		x		x						
Irwin (1998)	Export	x	x	x								2
Wall (1999)	Export	x		x			x					3
Egger (2002)	Export	x		x				x	x			4
Filippini, Molini (2003)	Export	x		x		x						5
UNCTAD and WTO (2003)	Export	x		x								6
Hanson, Xiang (2004)	Export	x		x	x	x		x				7
Brun, Carrère, Guillaumont, Melo (2005)	Export	x		x	x	x			x			8
Carrère (2006)	Export	x		x	x	x						
Kimura, Lee (2006)	Export	x	x	x		x	x					9
Walsh (2006)	Export	x		x			x					10
Batra (2006)	Export	x	x	x	x	x						
Moser, Nestmann, Wedow (2006)	Export	x		x		x		x		x		11
Helpman, Melitz, Rubinstein (2008)	Mutual Trade Flows	x	x	x	x							12
Janda, Michalikova, Skuhrovec (2010)	Export	x		x		x		x				13
Bilici, Erdil ve Yetkiner (2010)	Export	x	x	x	x	x						14
Greene (2013)	Export		x		x				x			15
Dinçer (2013)	Export	x	x	x								16
Felbermayr, Yalçın (2013)	Export	x				x		x		x	x	17
Ata (2013)	Export	x		x		x			x			18
Brandi, Schmitz (2015)	Real imports		x	x		x			x	x		19
Agarwal (2016)	Bilateral trade costs			x		x						20
Polat, Yeşilyaprak (2017)	Export		x	x		x		x	x	x	x	21

Continued

N O	Dummies or other variables
1	Inclusion in trade agreements, regional and cultural proximity
2	Neighbourhood, GATT/ECC/European Payment Association member and colonic bonds
3	NAFTA Membership
4	Common Language, common boundary, differences in relative factor endowment of countries
5	Technological Distance
6	Common Language, literacy rates of countries, stocks of foreign direct investment, telecommunication infrastructures, freedom of entry into new market
7	Common border, common language, Labor /Capital Ratio, the average wage in low-quality jobs, average education status
8	Membership of any customs union, infrastructure Index, the share of total exports of primary export goods (basic goods)
9	Common language
10	Commercial Constraint Index
11	Other control variables
12	GATT / WTO membership, colonial past, common language, and membership of a monetary union
13	Country's share of manufacturing imports in total imports and country's gross fixed capital formation to GDP
14	European Union membership, BSEC (Organization of the Black Sea Economic Cooperation) membership and border neighborhood
15	Common membership to free trade agreements and common culture, trade liberty
16	Customs Union, Turkey's and importer countries' R&D spending per capita
17	Customs Union, integration agreement, capital formation, manufacturing imports
18	Neighbourhood, common language, colonial past, landlocked country
19	Trade openness
20	Common language, common currency, common border, same legal origin, membership GATT/WTO, common regional free trade agreement with US
21	Common borders, common religion, landlocked country, time difference, EU membership and conflict

APPENDIX B

Turkey's total export to Emerging 15

TURKEY'S EXPORT TO...	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Brazil	89.817.583	48.978.714	50.165.465	69.355.258	103.457.889	121.881.519	229.913.652	318.027.800	388.206.717	614.551.000	883.471.294	1.002.759.403	956.095.843	794.186.310	458.366.725	333.803.868
Chile	19.919.365	19.797.617	15.338.294	24.328.648	24.859.437	34.788.061	41.842.954	150.267.468	37.454.863	81.221.775	130.618.241	174.832.122	219.338.048	198.579.333	187.880.776	217.161.794
China	199.373.814	388.229.485	594.625.797	391.385.394	549.763.633	689.037.514	1.039.533.082	1.437.303.856	1.600.296.212	2.269.175.473	2.466.316.097	2.833.355.270	3.600.865.335	3.861.052.429	2.414.790.409	2.328.511.821
Colombia	10.827.302	7.827.441	16.620.184	26.292.794	45.371.075	51.663.734	79.221.437	74.614.339	36.043.914	32.862.445	111.367.021	152.130.618	124.631.657	183.110.414	185.914.277	183.125.290
Hungary	170.229.861	200.844.303	284.644.771	349.937.664	379.091.861	484.439.550	775.636.344	684.087.504	445.669.313	440.766.141	506.647.650	517.973.220	652.241.545	699.581.733	711.388.620	831.854.575
India	74.373.323	72.723.869	71.365.460	136.317.405	219.869.435	221.244.425	348.238.767	547.729.876	409.202.201	606.080.888	756.081.773	791.720.122	886.927.237	586.388.922	650.318.858	651.724.661
Indonesia	35.281.019	132.297.968	227.269.501	52.452.918	57.250.321	59.928.918	82.810.460	98.224.208	139.109.723	224.842.788	182.387.046	165.473.751	272.073.248	315.023.834	357.082.883	321.565.630
Malaysia	51.773.082	76.674.470	40.421.689	150.607.569	163.671.931	140.778.329	196.750.471	152.163.312	93.022.866	145.500.222	144.986.169	203.999.886	238.712.460	311.978.094	344.056.546	443.738.248
Mexico	8.888.642	14.526.910	7.336.491	6.933.569	7.211.062	9.356.071	15.305.415	124.652.317	61.947.040	119.271.981	286.800.098	246.410.402	275.565.438	287.976.161	197.099.412	86.248.538
Philippines	12.787.221	15.298.249	27.402.047	36.115.042	30.371.005	43.487.875	40.246.495	97.422.684	84.132.874	70.802.745	100.612.176	144.196.316	135.609.630	138.095.212	103.873.813	106.682.654
Poland	241.233.698	342.646.545	486.046.338	697.671.151	830.482.767	1.060.078.456	1.436.402.381	1.586.771.648	1.322.218.428	1.504.280.239	1.738.231.720	1.853.699.805	2.058.817.556	2.401.689.387	2.329.176.378	2.650.896.002
Russia	894.106.727	1.173.038.590	1.367.590.908	1.859.186.551	2.377.049.944	3.237.611.322	4.738.633.152	6.483.003.396	3.189.607.392	4.628.153.963	5.982.633.393	6.880.771.245	6.964.209.480	5.948.014.110	3.388.330.986	1.733.023.234
South Africa	77.870.741	87.643.677	121.527.865	190.113.321	315.738.879	598.488.644	653.785.223	1.238.631.579	866.733.764	569.234.704	510.523.365	381.771.970	619.717.535	545.231.690	488.162.168	405.949.732
Thailand	37.300.623	45.100.295	108.483.385	123.615.664	51.475.413	61.486.153	63.021.015	100.300.335	131.632.333	220.004.632	125.189.498	176.940.354	223.993.747	210.538.231	174.099.131	163.945.179
EM-EJ TOTAL	1.985.901.954	2.553.063.472	3.376.009.167	4.168.859.613	5.236.763.472	6.905.169.476	9.905.398.389	11.372.511.662	9.054.090.570	11.637.522.331	14.246.056.817	16.570.903.401	17.139.835.720	15.698.231.023	12.398.942.785	10.713.881.721

GDP Per Capita (USD)

		GDP PER CAPITA (USD)															
	COUNTRIES	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Brazil	3.150	2.833	3.063	3.623	4.768	5.860	7.313	8.776	8.553	11.217	13.148	12.280	12.204	12.021	8.738	8.643
2	Chile	4.593	4.461	4.793	6.214	7.617	9.481	10.531	10.765	10.275	12.863	14.705	15.438	15.934	14.783	13.730	13.969
3	China	1.041	1.137	1.279	1.496	1.747	2.087	2.672	3.424	3.788	4.462	5.498	6.236	7.021	7.555	7.962	7.991
4	Colombia	2.395	2.352	2.245	2.741	3.385	3.712	4.677	5.432	5.152	6.251	7.228	7.885	8.028	7.914	6.035	5.806
5	Hungary	5.139	6.501	8.212	9.991	10.832	11.466	13.952	15.790	13.131	13.183	14.216	12.962	13.746	14.270	12.565	12.899
6	India	488	493	546	658	721	862	953	1.020	1.129	1.390	1.538	1.729	1.500	1.574	1.724	1.714
7	Indonesia	754	921	1.162	1.193	1.281	1.618	1.870	2.115	2.251	2.925	3.412	3.522	3.449	3.481	3.338	3.570
8	Malaysia	3.915	4.167	4.463	4.955	5.376	5.991	7.016	8.200	6.988	8.780	10.098	10.447	10.517	10.816	9.644	9.515
9	Mexico	7.346	7.391	6.898	7.308	8.092	8.855	9.411	9.741	7.795	9.017	9.899	9.952	10.406	10.566	9.276	8.433
10	Peru	1.965	2.046	2.191	2.446	2.715	3.144	3.611	4.246	4.173	5.039	5.671	6.267	6.473	6.556	6.131	6.150
11	Philippines	962	1.004	1.015	1.084	1.201	1.400	1.682	1.923	1.837	2.137	2.358	2.588	2.716	2.855	2.895	3.028
12	Poland	4.945	5.164	5.661	6.662	7.980	8.992	11.202	13.929	11.484	12.503	13.793	13.071	13.688	14.234	12.474	12.338
13	Russia	2.100	2.376	2.977	4.103	5.318	6.910	9.082	11.598	8.536	10.652	14.170	15.025	15.522	14.282	9.444	8.926
14	South Africa	2.617	2.464	3.687	4.752	5.276	5.505	5.996	5.680	5.843	7.277	7.965	7.480	6.821	6.431	5.739	5.282
15	Thailand	1.890	2.093	2.356	2.657	2.890	3.366	3.972	4.373	4.206	5.070	5.492	5.862	6.171	5.942	5.814	5.909

Source: Business Monitor International Database

Gross domestic product (GDP) is the value of final goods and services produced annually at current or nominal prices minus intermediate consumption. The value of final goods and services can be defined as expenditure or spending on the following components: consumption (C), investment (I), government (G) and net imports = exports (X) - imports (M). Formally, $GDP = C + I + G + NX$.

Currency: USD. Units: per capita.

Distance to Turkey (KM)

DISTANCE TO TURKEY		
	COUNTRIES	DISTANCE (KM)
1	Brazil	10769.28
2	Chile	13726.60
3	China	5956.54
4	Colombia	11362.53
5	Hungary	1567.42
6	India	4636.36
7	Indonesia	9097.27
8	Malaysia	7721.16
9	Mexico	11799.37
10	Peru	12410.08
11	Philippines	8825.23
12	Poland	1904.73
13	Russia	1877.56
14	South Africa	7843.71
15	Thailand	6831.72

Source: <http://www.distancefromto.net/>

Export Price Index

EXPORT PRICE INDEX																
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 TURKEY	54,20	55,10	61,6	73,2	77,5	82,4	92,4	108,2	93,7	100	103,5	100,6	102	99	85,7	82,6

Source: Business Monitor International Database

The exports deflator equates the real value (in 2010 prices) of exports to the nominal value and provides a price index for goods and services exports.

Population (mn)

POPULATION (million)																
COUNTRIES	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 Brazil	178,4	181	183,6	186,1	188,5	190,7	192,8	194,8	196,7	198,6	200,5	202,4	204,3	206,1	207,8	209,6
2 Chile	15,4	15,5	15,7	15,9	16,1	16,3	16,5	16,6	16,8	17	17,2	17,4	17,6	17,8	17,9	18,1
3 China	1277,2	1284,3	1291,5	1298,6	1305,6	1312,6	1319,6	1326,7	1333,8	1341	1348,2	1355,4	1362,5	1369,4	1376	1382,3
4 Colombia	41	41,6	42,2	42,7	43,3	43,8	44,4	44,9	45,4	45,9	46,4	46,9	47,3	47,8	48,2	48,7
5 Hungary	10,2	10,2	10,1	10,1	10,1	10,1	10,1	10,1	10	10	10	10	9,9	9,9	9,9	9,8
6 India	1071,9	1090,2	1108,4	1126,4	1144,3	1162,1	1179,7	1197,1	1214,2	1231	1247,4	1263,6	1279,5	1295,3	1311,1	1326,8
7 Indonesia	214,4	217,4	220,3	223,3	226,3	229,3	232,3	235,4	238,5	241,6	244,8	248	251,3	254,5	257,6	260,6
8 Malaysia	23,9	24,4	24,9	25,3	25,8	26,3	26,7	27,2	27,7	28,1	28,6	29	29,5	29,9	30,3	30,8
9 Mexico	104,2	105,6	106,9	108,3	109,7	111,4	113,1	115	116,8	118,6	120,4	122,1	123,7	125,4	127	128,6
10 Peru	26,3	26,6	26,9	27,3	27,6	27,9	28,3	28,6	29	29,4	29,8	30,2	30,6	31	31,4	31,8
11 Philippines	79,6	81,3	83	84,6	86,1	87,6	89	90,3	91,6	93	94,5	96	97,6	99,1	100,7	102,3
12 Poland	38,5	38,5	38,5	38,5	38,5	38,5	38,5	38,5	38,6	38,6	38,6	38,6	38,6	38,6	38,6	38,6
13 Russia	145,8	145,2	144,6	144	143,6	143,3	143,2	143,1	143,1	143,2	143,2	143,3	143,4	143,4	143,5	143,4
14 South Africa	45,6	46,3	47	47,7	48,4	49	49,7	50,3	51	51,6	52,2	52,8	53,4	54	54,5	55
15 Thailand	63,4	64,1	64,8	65,4	65,9	66,2	66,4	66,5	66,5	66,7	66,9	67,2	67,5	67,7	68	68,1

Source: Business Monitor International Database

Real Effective Exchange Rate (Annually, Average)

REAL EFFECTIVE EXCHANGE RATE (ANNUALY, AVE)																	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
1	TURKEY	65,90	72,23	76,78	84,65	92,5	89,9	96,48	97,04	91,6	100	88,1	90,45	88,21	83,01	79,15	76,61

Source: Business Monitor International Database

Emerging Market Economic Risk Index

EMERGING MARKETS - ECONOMIC RISK INDEX																
COUNTRIES	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 Brazil	46,15	42,5	50,15	54,05	57,75	65,85	62,8	62,95	63,75	64,5	65,3	68,7	72,1	64,6	54,6	55,05
2 Chile	63,3	65,65	70,3	71,7	74,75	78,05	75,65	66,7	69,4	64,8	70,5	75,4	72,75	69,75	66,85	64,65
3 China	77	77,8	79,15	79,95	80,9	85,15	84	83,5	83,9	84,65	85,2	80,7	81,5	82,35	75,85	75,7
4 Colombia	56,05	53,45	60,1	63,3	64,9	68,6	60,9	60,25	55,8	58,05	59	65,05	67,2	67,3	62,45	61,2
5 Hungary	58,35	59,8	52,65	57,15	54,45	56,7	51,6	51	50,8	50	53,6	57,3	59,5	63,35	65,85	65,25
6 India	64	64,15	67,6	70,6	74	73,65	71	67,65	62,3	61,15	62,3	60	58,8	59,1	66,45	66,4
7 Indonesia	46,4	52,95	55,35	60,85	59,55	63,95	66,85	71,6	58,3	60,65	60,05	66,4	64,25	63,35	66,7	68
8 Malaysia	67,95	66,7	69,7	70,95	75,75	76,85	75,8	75,55	74,85	72,35	73,6	77,15	79,15	81,2	70,2	72,9
9 Mexico	59,75	62,25	63,7	67,95	74,9	74,85	76,25	67,05	62,65	63,25	68,05	71,6	69,55	68,1	66,25	61,75
10 Peru	51,6	53,25	56,75	59,05	65,7	76,15	77	74,65	70,05	74,45	75,65	73,65	71,75	69,85	64,6	67,2
11 Philippines	55,1	59,1	61,45	60	60,55	61,85	60	63,25	59,1	59,25	59,35	68,65	70,55	72,4	75,05	72,6
12 Poland	51,8	59,5	58,9	62,85	62,15	68,2	66,55	63,05	66	61,9	56,25	65,45	63,3	66,65	67,8	65,05
13 Russia	56,65	59,4	67	68,4	74,9	78,1	76,1	73,85	59,65	61,25	65,1	76,1	70,7	65,35	59,95	61,5
14 South Africa	54,4	57,5	55,2	57,45	63,7	58,95	58,3	52	50,55	51,15	52,8	60,9	55,95	55,4	54,9	54,3
15 Thailand	59,45	62,25	66,6	68,9	70,9	72,85	71,9	74,8	71,1	69,2	68,35	74,25	71,6	68,9	69,6	70,15

Source: Business Monitor International Database - Score is % of 100. 100 being best, 0 worst.

Turkey's insured export to emerging 15

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TURKEY'S INSURED EXPORT TO...																
Brazil	3,267,849	2,107,798	2,277,721	1,577,436	9,202,860	7,404,525	7,988,140	17,246,494	13,180,449	23,695,157	30,862,464	36,765,126	75,539,599	87,348,733	61,921,638	43,206,146
Chile	1,447,658	1,165,220	1,084,148	2,054,895	1,678,320	1,594,289	1,479,798	3,524,118	2,649,182	3,950,942	5,135,441	18,859,152	18,818,161	21,939,010	17,695,592	28,681,137
China	17,515,944	20,985,922	43,437,687	33,324,298	42,053,211	52,492,002	101,851,600	125,470,695	128,395,840	263,333,670	298,038,971	306,443,167	277,421,004	265,277,559	270,386,362	194,008,799
Colombia	311,864	1,377,906	1,307,076	903,493	996,405	1,691,547	1,992,887	2,569,413	3,532,289	3,896,968	5,225,140	13,692,950	13,033,940	18,685,007	26,959,265	24,271,545
Hungary	18,925,952	19,276,502	20,683,896	30,333,154	41,586,460	41,490,479	49,134,031	41,639,134	24,334,532	26,220,054	29,128,805	32,262,478	69,676,215	67,470,110	67,660,481	65,385,213
India	6,048,550	3,857,366	5,757,173	6,387,979	12,177,945	10,097,771	13,510,832	18,195,315	15,925,286	19,172,897	43,650,702	57,188,390	45,812,642	36,485,502	30,294,708	36,359,206
Indonesia	5,427,176	4,477,278	7,550,684	6,785,864	12,887,081	14,880,500	8,931,759	9,773,778	5,242,960	10,774,556	19,753,432	24,368,007	17,125,273	15,588,872	19,089,976	26,527,200
Malaysia	2,654,826	3,987,173	3,917,127	2,589,189	2,383,676	3,248,067	6,876,069	9,030,137	4,970,597	5,429,505	11,066,553	22,380,694	18,269,838	17,709,658	16,772,602	17,939,554
Mexico	5,707,828	2,775,889	3,138,186	4,870,703	3,491,948	5,399,031	2,907,350	2,418,369	1,604,027	3,998,739	4,986,254	9,522,771	19,576,894	28,655,179	36,844,989	33,490,423
Peru	543,153	695,148	578,488	1,081,627	995,460	1,042,680	1,255,949	2,482,268	1,665,231	2,560,138	2,645,720	8,093,019	5,216,047	7,695,576	8,640,308	9,575,708
Philippines	4,875,719	5,875,936	3,046,820	5,523,611	5,979,079	3,285,261	3,839,098	2,766,028	1,624,164	10,731,037	5,830,004	10,459,787	19,414,870	10,815,029	21,363,448	16,660,886
Poland	18,281,411	30,514,965	3,607,865	55,793,970	69,476,313	74,782,063	87,567,990	91,770,526	71,319,685	84,140,539	98,810,883	121,497,263	152,254,523	193,942,369	195,156,579	242,298,431
Russia	10,574,681	14,895,753	23,816,378	41,564,249	53,838,968	50,367,958	68,498,206	89,552,408	63,882,448	35,033,236	64,473,888	88,455,523	151,566,065	193,459,504	195,670,119	235,908,013
South Africa	7,566,514	5,192,484	8,369,495	13,215,764	14,679,763	19,476,593	14,704,308	17,110,087	13,778,427	19,635,315	22,422,762	28,328,748	35,249,619	43,485,729	34,610,983	45,272,665
Thailand	1,589,163	1,560,608	3,467,862	4,426,516	3,260,181	3,511,891	2,787,834	6,529,831	4,226,823	5,135,525	8,760,464	17,339,093	15,565,691	11,003,556	10,737,799	23,585,323
EM-15 TOTAL	104,720,289	118,747,950	165,042,609	210,434,752	274,689,675	290,766,663	373,327,858	440,080,609	356,333,949	517,710,288	650,793,494	797,658,180	932,542,394	1,019,564,007	1,013,807,064	1,043,171,865

APPENDIX C

Levin, Lin and Chun (LLC) Test

	Constant I(0)	Constant I(1)	Constant+ Trend I(0)	Constant+ Trend I(1)
lnexport	-6.281***	-	-1.764**	-
lngdpper	-5.785***	-	-1.937**	-
lnpop	-3.580***	-	-2.906***	-
lnreer	-4.836**	-	-14.426***	-
lnepi	-6.308***	-	4.162	-11.633***
lninsurance	-1.802*	-	-6.997***	-
lnrisk	-6.696**	-	-7.633***	-

Note: ***, **, * meaning that it is stable at %1, %5, %10 level of significance.

Random Effect Model

	lnexport Random Model 1	lnexport Random Model 2	lnexport Poisson Rassal Effect model 1	lnexport Poisson Rassal Effect 2
lngdp	0.890*** [0.112]	0.596*** [0.106]	0.034*** [0.007]	0.005** [0.006]
lndistance	-0.684*** [0.145]	-0.524*** [0.177]	-0.039*** [0.010]	-0.020* [0.012]
lnpop	0.500*** [0.084]	-	0.021*** [0.005]	-
lnepi	0.298 [0.527]	0.144 [0.599]	0.048** [0.023]	0.035 [0.024]
lnreer	0.760 (0.411)	1.251*** [0.425]	0.0009 [0.037]	0.050 [0.033]
lnrisk	-0.502 [0.270]	-0.079 [0.287]	-0.017 [0.024]	-0.012 [0.020]
lninsurance	0.398*** [0.057]	0.543*** [0.053]	0.019*** [0.005]	0.037*** [0.002]
Dummy2009	0.205 [0.163]	0.228 [0.173]	0.005 [0.005]	0.013** [0.006]
Constant	5.742* [2.297]	4.612 [2.557]	2.439*** [0.123]	2.136*** [0.150]
R ²	0.88	0.78	-	-
Prob	0.000***	0.000***	-	-
F statistic	826.12	673.23	231.00	994893.31
N	225	225	225	225

Note: ***, **, * meaning that it is significant at %1,%5 ve %10 level of significance. The numbers in parentheses [] indicate the standard error.

According to the random effect model result; coefficient of lngdp, lnepi (lnexport Poisson Rassal Effect model1) lninsurance, lnpop, lnreer (lnexport Random Model 2), dummy2009 (lnexport Poisson Rassal Effect model 2) variables are positive and statistically significant, coefficient of lndistance variable is negative and statistically significant; coefficient of lnepi (lnexport Random Model 1-2 and lnexport Poisson Random Effect model 2), lnreer (lnexport

Random Model 1 and Lnexport Poisson Random Effect model 1-2), dummy2009 (Lnexport Random Model 1-2 and Lnexport Poisson Random Effect model 1), lnrisk variables are statistically insignificant.

Fixed Effect Model

	lnexport Fixed ¹⁰ Model 1	lnexport Fixed Model 2	Lnexport Poisson Fixed Effect model 1	Lnexport Poisson Fixed Effect model 2
Lngdpper	0.883*** [0.139]	0.969*** [0.179]	0.041*** [0.007]	0.046*** [0.010]
Lndistance ¹	-	-	-0.022* [0.060]	-3.165*** [0.078]
Lnpop	2.887* [1.419]	-	0.191** [0.080]	-
Lnepi	0.743** [0.337]	0.372 [0.266]	0.040** [0.017]	0.016 [0.013]
Lnreer	0.553 [0.449]	0.628 [0.495]	0.036* [0.022]	0.041* [0.024]
Lnrisk	-0.015 [0.299]	-0.042 [0.300]	0.003 [0.015]	-0.001 [0.015]
Lninsurance	0.328*** [0.063]	0.397*** [0.063]	0.017*** [0.003]	0.022*** [0.003]
Dummy2009	0.264* [0.144]	0.224* [0.136]	0.014** [0.007]	0.011* [0.006]
Constant	-8.895 [7.383]	1.870 [2.849]	-	-
R ²	0.24	0.56	-	-
Prob	0.000***	0.000***	-	-
F statistic	158.33	64.44	877.39	3481.37
N	225	225	225	225

Note: ***, **, * meaning that it is significant at %1, %5 ve %10 level of significance. The numbers in parentheses [] indicate the standard error.

According to the fixed effect model result; coefficient of lngdpper, lnepi (fixed model 1 and poisson fixed model 1) lninsurance, lnpop, dummy2009, lnreer (poison fixed model 1-2) variables are positive and statistically significant; coefficient of lnrisk ve lnreer (fixed model 1-2) variables are statistically insignificant. Coefficient of lndistance variable is negative and statistically significant.

¹⁰The Lndistance is automatically disabled by the program because it causes multicollinearity on fixed models.