

**GRAVITY VS CONFLICT:  
WHAT DETERMINES  
INTERNATINOAL TRADE?**

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(M. Sc. Thesis)  
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**GRAVITY VS CONFLICT:  
WHAT DETERMINES INTERNATIONAL TRADE?**

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**MASTER OF SCIENCE THESIS**

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## JÜRİ VE ENSTİTÜ ONAYI

**Ilhom TEMUROV'un "Gravity vs Conflict: What Determines Internatinoal Trade?" başlıklı tezi 28 Kasım 2014 tarihinde, aşağıdaki jüri tarafından Lisansüstü Eğitim Öğretim ve Sınav Yönetmeliğinin ilgili maddeleri uyarınca toplanan İktisat (İngilizce) Anabilim Dalında, yüksek lisans tezi olarak değerlendirilerek kabul edilmiştir.**

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## **Yüksek Lisans Tez Özeti**

### **ÇATIŞMAYA KARŞI ÇEKİM: ULUSLARARASI TİCARETİ NE BELİRLER?**

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Bu araştırma, mesafenin, çatışmanın ve bunların birbirleri ile olan ilişkilerinin dış ticaret dinamikleri üzerindeki etkilerini Türkiye'nin karşılıklı ticaret verilerinden yararlanarak incelemeyi amaçlamaktadır. Uluslararası ticarete mesafenin önemli olduğu varsayımını kabul ediyoruz. Bununla birlikte, uluslararası ticaretin çekim modeli yalnızca çatışmanın olmadığı durumlarda işlerlik kazanmaktadır. Dolayısıyla bu çalışma, uluslararası çatışmaları dış ticaret çekim modeli ile bir araya getirmektedir. Uç temel soru bu çalışmanın yapılmasını gerekli kılmıştır: (1) Ticaret performansının belirleyicisi nedir? (2) Çatışma uluslararası ticarete rol oynar mı? (3) Ticaret partnerleri arasında yaşanan çatışma Çekim Model'ini etkiler mi? Ticari ilişkiler üzerine farklı çatışma türlerini açıklamak için diplomatik ve güvenlik olmak üzere iki çeşit çatışma tanımlanmış ve ölçülmüştür. Analizlerde ayrıca "Arap Bahar"ının Türkiye'nin ticari ilişkileri üzerindeki etkisinin varlığını araştırılmıştır. Dinamik panel veri modellerinin, yani Genelleştirilmiş Momentler Metodu (GMM)'nin esas alındığı, 1990 ile 2003 yılları arasında Türkiye'nin Birleşmiş Milletler COMTRADE verilerine dayanan analiz sonuçları ticaret modelimizin Türk dış ticaretinin ele alındığı durumda çekim yaklaşımına iyi uyum sağladığını göstermektedir. Tahmin sonuçları ayrıca Diplomatik Çatışmalar durumlarda ticaret üzerinde negatif etkiye sahipken Güvenlik Çatışmaları ve Arap Baharının ticari ilişkileri olumsuz etkilediğini de işaret etmektedir. Dahası, Güvenlik Çatışmaları durumunda coğrafi yakınlığın ticari ilişkiler üzerindeki pozitif etkisi ortadan kaybolmaktadır.

**Anahtar Kelimeler:** Çatışma, Çekim, Arap – Baharı, GMM, Türkiye

## **Abstract**

### **GRAVITY VS CONFLICT: WHAT DETERMINES INTERNATIONAL TRADE?**

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**Department of Economics**

**Anadolu University School of Social Sciences, November 2014**

**Adviser: Assoc. Prof. Dr. Yılmaz KILIÇASLAN**

This research aims to examine the impact of distance and conflict and their interrelations on the dynamics of foreign trade by using Turkish bilateral trade data. We accept the presumption the distance matter in international trade. However, the gravity model of international trade works only if there is no conflict. This study, therefore, incorporates international conflicts into gravity model of foreign trade. Three main questions have motivated this study: (1) What is the determination of trade performance? (2) Does conflict impacts international trade? (3) Does conflict between trading partners affect Gravity Model? In order to explain different types of conflict on trade relations we defined and measured two types of conflict: Diplomatic, and Security. In our analysis, we also checked the impact of Arab-Spring on trade relation of Turkey. The results based dynamic panel data models, Generalized Methods of Moments (GMM), based on UN COMTRADE data for Turkey from 1990 to 2013 show that our trade model fits well with gravity approach in the case of Turkish foreign trade. The estimation results shows that Diplomatic Conflicts have negative impact on trade in specific cases but also Security Conflicts and Arab Spring effects trade relation negatively. Moreover, in the case of Security Conflicts the positive impact of geographical proximity on trade relations disappears.

**Keywords:** Gravity, Conflict, Arab-Spring, GMM, Turkey.

## **Plagiarism**

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

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Signature

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## **List of Abbreviations**

- AS** – Arab Spring
- BEC** – Broad Economic Categories
- CES** – Constant Elasticity of Substitution
- DC** – Diplomatic Conflict
- DPRK** – Democratic People Republic of Korea
- ECU** – European Customs Union
- EU** – European Union
- GAFTA** – Great Arab Free Trade Area
- GATT** – General Agreement on Tariffs and Trade
- GMM** - Generalized Methods of Moments
- IDL** – International Division of Labour
- ISIC** – International Standard Industrial Classification
- IMF** – International Monetary Fund
- NATO** – North Atlantic Treaty Organization
- NBR** – Neighbour Countries
- NIO** – National Intelligence Organization
- OECD** – Organization for Economic Co-operation and Development
- RER** – Relative Exchange Rate
- RLFAC** – Relative Factor Endowment
- RTA** – Regional Trade Agreement
- SC** – Security Conflict
- TRK** – Turkic Countries
- TURKSTAT** – Turkish Statistical Institute
- UN** – United Nations
- UNCOMTRADE** – United Nations Commodity Trade
- US (USA)** – United States of America
- WDI** – World Development Indicators
- WFC** – World Financial Crisis
- WTO** – World Trade Organization



## **Introduction**

In today's World Economy the process of globalization and deep interdependency among countries are occurring much faster. Moreover, foreign relations are taking much more important role among countries. One of the most important form of foreign relations is international trade.

Foreign trade has an additional impact on the development of any economy in varying degrees. Therefore, all countries are participating in international division of labour and foreign trade with different rate of incorporation. Foreign trade theories permit to develop science-based trading strategy tailored to individual circumstances and objectives of a particular country and have considerable impact on international business; develop an intuitive ability to identify favourable markets.

Taking into account current integration processes and current World Economic conditions, not only basic market rules are regulating trade but also other factors such as politics, cultural aspects, similarities among countries, physical distance, and trade regulation in partner country. This research thereby focuses on the well-known Gravity Model of international trade and conflict and seeks to find evidence whether Gravity Model fits to Turkey's trade relations in the presence of conflict. Specifically, this research analyses the impact of conflict issues on the gravity approach to international trade of Turkey.

In addition, in order to define other factors determining trade performance, we investigate the impact of country similarity, exchange rate and factor endowment between trading partners matters for the trade growth.

In spite of the fact that the Gravity Model is not new strategy and it is widely used after 1970's, to the best of our knowledge, this is first attempt investigating the impact of conflict and distance relation on trade. This research, therefore, expected to contribute to the literature on Gravity approach to international trade by incorporating conflict.

In this research, we use a variety of data from different sources. The main data used in the analysis is derived from United Nations Commodity Trade Database (UNCOMTRADE, 2013) and Turkish Statistical Institute (TURKSTAT), World Bank's World Development Indicators (WDI, 2013). The data covers the period from 1990 to 2013. We used bilateral trade data of 60 countries that accounts for 95% of total Turkish trade.

The results based on dynamic panel data models, Generalized Methods of Moments (GMM), show that our trade model fits well with the gravity approach in the case of Turkish foreign trade. The estimation results also show that security conflicts have statistically significant negative impact on foreign trade of Turkey. Arab-Spring defined as another indicator of security conflict has also negative and statistically significant impact on trade relations of Turkey.

This thesis is organized as follows: Chapter 1 reviews the theoretical background for international trade from the classical to modern trade theories. There is a subsection related to the review of gravity approach and its evolution. This chapter, then, investigates and reviews related literature on the impact of distance and conflict on trade. This chapter also gives us a historical outlook to international trade relations and the importance of Gravity model on analysis of modern trade relations.

Chapter 2, first, studies the current Turkish foreign trade policy. Second, we provide a descriptive analysis of Turkish trade relations. This chapter also presents the structure of the trade of Turkey with respect to different industries and country groups from 1990 to 2013. We then examine the relationship between both distance and trade and cultural imminence and trade. Cultural imminence, divided in two different categories in terms of religion and language, also has a significant impact on trade. Furthermore, this chapter investigates the impact of crisis (conflict) on trade.

The link between the distance, trade and conflict is studied in Chapter 3. In order to do so, we first tested the presumption that the distance matters for international trade. Second we construct a conflict index. We then test the suitability of Gravity Model to

Turkish trade relations by controlling the other determinants of foreign trade such as exchange rate, country similarity, and factor endowment. Finally, we examine the impact of conflict and its interaction with distance on trade.

The summary of the main findings, conclusions and a few policy implications derived from this study are presented in the last chapter.

## **Chapter I**

### **International Trade Theory, Gravity and Conflict: Theoretical Background**

International trade is the oldest form of international economic relations. It has existed long before the formation of the current world economy and industrial revolution and increased exponentially. Therefore, the development of international trade is one of the sources of global economic growth by triggering the innovations and expanding markets in the long run. In this process, political stability and distance between countries are very important for further development of international trade. This chapter shortly discusses the trade theory and reviews the literature on this topic. In this chapter, we discuss i) evolution of trade theories and ii) what is done before, iii) how politics affect trade and iv) what is the role of gravity approach to explain the relationship between international trade and politics.

#### **1. Evolution of International Trade Theory**

In this section we will briefly define the concept of international trade and summarize international trade theories, from classical to contemporary. The review of the evolution of trade theories shows that, starting from macroeconomic definitions in classical international trade, new trade theories are based more on micro evidences. Furthermore, these trade theories are getting more important in the process of globalization when the economies in the World integrates more in global economy.

##### **1.1. Concept of International Trade**

International trade is the system of international money, commodity and capital and services exchange across international borders and territories. It is one of the central elements in a complex system of international relations, mediating practically all types of international division of labour and linking all countries into a single world system. Thus, trade is the mean by which countries can develop specialization, improve productivity of their production factors and hence total production. The structure and

volume of trade differ depending on regions and specific country, but has a relatively stable structure. Steady growth of international trade has been influenced by a number of factors<sup>1</sup>:

- Stabilization of international relations in the world;
- Development of international division of labour and the internationalization of production and capital;
- Technological change and innovation which allows to discover new economic goods and services;
- Strengthening the role of international corporations on the world market;
- Emergence of international and regional trade agreements and unions.
- Regulation of international trade by RTA (Regional Trade Agreement) adopted under the GATT (General Agreement on Tariffs and Trade)/WTO (World Trade Organization) and by WTO itself;
- The activities of international financial and economic organizations;
- Policies and activities of international institutions such as World Bank, IMF (International Monetary Fund) in the global economy;
- Transition of many countries to the liberalization, including the abolition of quantitative import restriction and a significant reduction in customs dues and formation of "free economic zones" etc.;

## **1.2. Classical Theories of International Trade**

Classical theory, which is firstly developed by Adam Smith<sup>2</sup> in 1770's, argues that free trade provide welfare gains to the nations. He, therefore, advocates the requirement of liberalization of trade and expansion of import by reducing customs tariff barriers. In this sense, exchange of commodities will be favourable for each country and they will find an absolute advantage in one commodity that specializes through division of labour. Later, D. Ricardo<sup>3</sup> supplemented and developed the ideas of Adam Smith. He

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<sup>1</sup> Y. F. Avdokushin, (1997). *International Economic Relations*. Moscow State University Publications p.33

<sup>2</sup> A. Smith (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. [http://www.gumer.info/bibliotek\\_Buks/Econom/smit/smit\\_1.pdf](http://www.gumer.info/bibliotek_Buks/Econom/smit/smit_1.pdf) (Access Date: 14.14.2013)

<sup>3</sup> D. Ricardo (1817). *Principles of Political Economy and Taxation*. <http://ek-lit.narod.ru/ricsod.htm> (Access Date: 14.14.2013)

described the reason of trade between nations, highlighted the criteria of international specialization, and introduced the idea of comparative advantage in trade.

Generally the classical theory of international trade is the comparative cost theory which states that a country, in the long run, will tend to specialize in the production of and to export that commodity in whose production it experiences comparative cost advantage and import that commodity in whose production it experiences comparative cost disadvantage. The classical theory of international trade has the following assumptions<sup>4</sup>:

- i. Labour is the only factor of production and the value of a commodity is proportional to the quantity of labour required in its production.
- ii. All labour units are homogeneous, i.e., all the workers are equally efficient.
- iii. Since there is a single factor of production, commodities are produced at constant costs.
- iv. Under the constant cost conditions, prices are determined by supply and the changes in demand have no effect on them.
- v. Factors of production are perfectly mobile within the country but completely immobile among countries.
- vi. There is free trade and government does not interfere in trade.
- vii. There are no transportation costs.
- viii. There is perfect competition in both commodity and factor markets.
- ix. The theory is based on two countries - two commodity model.
- x. The two countries have common monetary standard and the quantity theory of money is considered valid.

Looking to the details to classical theory, we can define two different directions of ideas: absolute advantage and comparative advantage. Further two subsections are related to review of the general basis for these two theories. Moreover, these two theories were complete and fully running international relation strategies at the moment of origin.

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<sup>4</sup> [http://studme.org/18131012/ekonomika/dopuscheniya\\_teorii\\_sravnitelnyh\\_preimuschestv](http://studme.org/18131012/ekonomika/dopuscheniya_teorii_sravnitelnyh_preimuschestv) (Access Date: 16.14.2013 )

### **1.2.1. Absolute advantage theory of international trade**

The theory of absolute advantage says - that for any country, it is reasonable to import those goods for which it has higher production costs in that country than in the foreign countries, and export goods for which it has lower production costs in that country than in the abroad; i.e. have an absolute advantage<sup>5</sup>. Simply it says that if any country can produce more and cheaper particular product compared to other countries, then it has absolute advantage.

Based on the theory, foreign trade is always beneficial to both parties. Until in the ratios of domestic prices remain differences between countries, each country will have a comparative advantage, i.e., it always exists a commodity whose production is more profitable at the current cost ratio than other production. Profit from the sale of the products will be greatest when this item will be made by the country in which opportunity costs is low<sup>6</sup>.

### **1.2.2. Comparative advantage theory of international trade**

D. Ricardo<sup>7</sup> in his "Principles of Political Economy and Taxation" proved that the principle of absolute advantage is a special case. Therefore he developed the theory of comparative advantage. According to this theory, if each country specializes in those products in the manufacture of which it has the greatest relative efficiency, or relatively lower costs, the trade will be mutually beneficial for both countries from the use of productive factors increase, in both cases<sup>8</sup>.

Serious disadvantage of reviewed theories is static nature of them. Besides, these theories ignore any fluctuations in prices and wages; they are abstracts from any inflationary and deflationary gaps in the intermediate stages and from all sorts of

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<sup>5</sup> T. A. Frolova (2010). *World Economy*. Taganrog TTI SFU publications [http://www.aup.ru/books/m215/2\\_2.htm](http://www.aup.ru/books/m215/2_2.htm) (Access date 16.14.2013)

<sup>6</sup> T. A. Frolova (2010). op. cit.

<sup>7</sup> D. Ricardo (1817). Op. cit.

<sup>8</sup> T. A. Frolova (2010). op. cit.

balance of payments problems<sup>9</sup>. Theories assume that if the workers leave one industry and go into another industry, they do not become long-term unemployed. Not surprisingly, these abstract theories strongly compromised themselves during the "Great Depression". Nevertheless these theories are slim and a logical and still have importance and to our opinion these theories are on the base of all modern and post-modern theories.

### **1.3. Theory of Heckscher-Ohlin-Samuelson**

Heckscher–Ohlin model was firstly introduced in the late 1930's. By this time, there had been great changes in the international division of labour and international trade. The role of difference in natural resources as a factor of international specialization was significantly reduced. Moreover, developing countries started to export manufactured products. The factors of international specialization are not associated with natural resource differences in individual countries in the Heckscher–Ohlin model. This model makes the following core assumptions<sup>10</sup>:

- Labour and capital flow freely between sectors;
- The amount of labour and capital in two countries differ (difference in endowments);
- Technology is the same among countries (a long-term assumption);
- Tastes are the same.

According to Heckscher–Ohlin model, each country tends to specialize in the production of goods requiring more factors, which the country is relatively better endowed. Countries export factors that are abundant and import factors that are less. Therefore, the movement of goods from one country occurs to compensate low mobility of production factors<sup>11</sup>.

Later, Heckscher - Ohlin model of international trade was improved by the Paul

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<sup>9</sup> T. A. Frolova (2010). op. cit.

<sup>10</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m215/2\\_3.htm](http://www.aup.ru/books/m215/2_3.htm) (Access date 16.14.2013)

<sup>11</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m215/2\\_3.htm](http://www.aup.ru/books/m215/2_3.htm) (Access date 16.14.2013)



Samuelson<sup>12</sup>, and named as Hecksher–Ohlin–Samuelson model. This model introduces the mechanism of factor-price equalization. The mechanism of levelling is that the original price of production factors, such as wages, interest rates and rent, will be relatively low for those who are in abundance and high on the ones that are missing. Specialization of a country in the production of capital goods leads to the increase of demand for capital following price increase and transfer of capital-intensive export industries. Conversely, for another country, the production of labour-intensive goods causes significant movement of labour resources and wages increase<sup>13</sup>. Gradually, the initial benefits of both countries would be lost, and each of them will be forced to look for new opportunities to export their products, for which it is necessary to improve production.

### 1.3.1. Leontief paradox

V. Leontief<sup>14</sup> in the mid 1950's attempted to verify the main empirical findings of Heckscher–Ohlin model and came to paradoxical conclusion. Using "Input - Output" model built on the basis of U.S. data for 1947, Leontief proved that American exports were relatively more labour-intensive goods, while imports were capital-intensive<sup>15</sup>. This empirical result contradicts the fact presented by Heckscher–Ohlin model and therefore called "Leontief paradox". Furthermore, Leontief implemented his empirical study to other countries and the results have confirmed the existence of this paradox in the post-war period not only for the U.S. but also in other countries such as Japan, India, and etc.

Numerous attempts to explain this paradox is allowed to develop and enrich the Hecksher–Ohlin model by taking into account additional circumstances affecting international specialization. These are:<sup>16</sup>

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<sup>12</sup> P. A. Samuelson (1948). International Trade and the Equalization of Factor Prices, *Economic Journal*, 58 (230), 163-184

<sup>13</sup> V. I. Vidyapina. *Bachelor in Economics*. <http://lib.vvsu.ru/books/Bakalavr02/page0060.asp> (Access date 16.14.2013) p. 60

<sup>14</sup> W. Leontief (1953). Domestic Production and Foreign Trade - The American Capital Position Reexamined, *Proceedings of the American Philosophical Society*, 97(4), 332-349

<sup>15</sup> [http://studopedia.ru/view\\_mirekonomika.php?id=8](http://studopedia.ru/view_mirekonomika.php?id=8) (Access date: 17.14.2014)

<sup>16</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m215/2\\_4.htm](http://www.aup.ru/books/m215/2_4.htm) (Access date 16.14.2013)

- Heterogeneity of the factors of production, especially labour, which may vary significantly in skill level. From this perspective, exports of industrialized countries may reflect the relative redundancy of a highly skilled workforce and professionals, while developing countries export products requiring large expenditures of unskilled labour;
- State's foreign trade policy, which may restrict imports and stimulate domestic production and export sectors where intensively and relatively used scarce factors of production.

#### **1.4. Alternative Trade Theories**

##### **1.4.1. New trade theories**

Supporters of new trade theories mostly based on technology introduce technological factors on international trade. The main advantages are associated with the monopoly position of the company and innovator. These theories argue that the state should support the production and exports of high technology intensive products.

The most popular new trade models are the model of the technological gap and product life-cycle developed by M. Posner<sup>17</sup> and Vernon<sup>18</sup>, respectively. According to Posner<sup>19</sup>, technological gap between countries is occurring because of technological innovations. This gap will gradually shrink, because other countries will imitate the innovation of innovator country. Moreover both trading countries will benefit from innovation. With the spread of new technology, less developed countries continue to benefit more from these new innovations, and developed country will lose its advantages. Thus, even if the level of factor endowments are the same, there will be international trade among countries<sup>20</sup>.

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<sup>17</sup> M. V. Posner (1961). International Trade and Technical Change, *Oxford University Press. New Series*, 13 (1), 323 – 341

<sup>18</sup> R. Vernon (1966). International Investment and International Trade in the Product Cycle, *The Quarterly Journal of Economics*, 80 (2), 190 – 207

<sup>19</sup> R. Vernon (1966). op. cit.

<sup>20</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m215/2\\_7.htm](http://www.aup.ru/books/m215/2_7.htm) (Access date 16.14.2013)

According to R. Vernon's<sup>21</sup> theory, world trade is based on product life cycles. The product life cycle includes 4 stages<sup>22</sup>:

1. Introduction. At this stage, new product is developed in response to the new demand. Generally production has low volume, because it requires both new skills and technology.
2. Growth. The growth in demand leads to production growth and product becomes familiar in the market.
3. Maturity. Production volumes become large-scale and price factor starts to be dominant in competition among producers. Innovator country loses its initial benefits and moves to less developed countries with low production costs.
4. Decline. Innovator country cuts production, because of high cost and becomes an importer of its own product.

#### **1.4.2. Linder theory**

This theory deals with strengthening the role of individual firms and corporations in international trade, because not the nation but the individual firm - exporter of product benefits from trade. Only after the expansion of production and saturation of the domestic market, the firm begins to enter the foreign market. To sell products, firm needs to find a country - the buyer, in which the structure of demand in the domestic market would be as close as possible to the demand structure of the exporter country. This gives the opportunity to trade between countries. In other words, Linder theory argues that the countries with the similar level of economic development trade more<sup>23</sup>.

In accordance with the Linder concept, real demand is based on high level of income that allow you to purchase high quality products. Thus, the greatest demand structure in partner countries is the key to a more intensive bilateral trade. Later followers justified the need that firms in developed countries merge with newly industrialized countries, because integration with industrializing countries brings about the convergence

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<sup>21</sup> R. Vernon (1966). op. cit.

<sup>22</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m175/1\\_5.htm](http://www.aup.ru/books/m175/1_5.htm) (Access date 16.14.2013)

<sup>23</sup> S. B. Linder (1961). An Essay on Trade and Transformation, Stockholm: *Almqvist & Wicksell*

scientific and technological knowledge, more production and trade.

### **1.4.3. Krugman's theory**

International trade theory by P. Krugman<sup>24</sup> is called “international trade based on monopolistic competition”. This theory differs from the ones discussed above and gives an explanation why there is a trade between countries that are equally endowed with the factors of production. Accordingly, as scale of production due to the increase in monopolistic competition, the cost of production of each unit of production will decrease.

Even though many countries have similar endowments of production factors, they will be able to gain profit by trading with each other because of specialization in industries characterized by the effect of mass production and reducing costs. Because benefiting from the economies of scale requires larger market.<sup>25</sup>

According to this trade model briefly mentioned above, countries become profitable to specialize and share even technologically homogeneous but differentiated products (so-called intra-industry trade). Core assumptions<sup>26</sup> of this model are the followings:

- It is easier to move goods than technologies;
- Countries differ in their factor endowments;
- Motive for trade: endogenous differences in technology;
- Incomplete specialization;
- Trade alone may equalize factor prices.

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<sup>24</sup>P. R. Krugman (1988). Strategic Trade Policy and the New International Economics, *Journal of Economic Literature*, 26(1), 122-124

<sup>25</sup>Y. S. Yadgarov (2006). op. cit.

<sup>26</sup>P. R. Krugman (1988). op. cit.

#### **1.4.4. Theory of international trade by M. Porter**

M. Porter<sup>27</sup> came to the conclusion that the status quo of each country and its specific manufacturers in the global market is defined by four basic conditions: the quantity and quality of production factors, domestic demand and the availability of related service industries, the company strategy, and internal competition. He claimed that availability of production factors is essential in ensuring comparative advantages. One of the main assumptions is that factors are not limited by natural factors or switched from previous generations. He explained the rapid development of Japan industry, based on materials and energy conserving technology and brought to life by the country's limited resources<sup>28</sup>.

To sum up, international trade is the exchange of goods and services, through which countries satisfy their unlimited needs. Even though the existing trade theories cannot give an appropriate answer to all the issues of foreign trade relations, they indicate the conditions of the benefits for countries.

From the classical to contemporary theories, there were attempts to test these theories by practice. Although, econometric methodologies were different, the findings mostly confirm the theoretical hypothesis. Moreover, these empirical applications gave several new approaches such as “Leontief paradox”, “Gravity model” and etc. Thus, our following section reviews the literature on evolution of gravity approach.

## **2. Gravity Model and Trade**

This section examines the concept of gravity approach, its evolutions and importance while evaluating modern international trade relations. Generally, gravity approach is very useful econometric tool for analysing and even sometime forecasting trade activities and is widely used when drawing trade strategies in particular country. This section can help us deeply understand the underlying arguments of the gravity model.

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<sup>27</sup> M. E. Porter (1990). Competitive Advantage of Nations, *Harvard Business Review* <http://kkozak.wz.cz/Porter.pdf> (Access date: 22.02.2014)

<sup>28</sup> T. A. Frolova (2010). op. cit. [http://www.aup.ru/books/m215/2\\_7.htm](http://www.aup.ru/books/m215/2_7.htm) (Access date 16.14.2013)

Our review has showed that the approach is effective in explaining the international trade relations.

## 2.1. The Concept of Gravity Model

The gravity equation first started in the 1960's as a purely empirical proposition to explain bilateral trade flows, without little or no theoretical underpinnings. At the end of the 1970's, the gravity equation was "legitimized" by a series of theoretical articles that demonstrated that the basic gravity equation form was consistent with various models of trade flows. Thus, for a long time, however, gravity equation was a child without a father in the sense that it was thought to have no theoretical support. Currently the gravity equation knows as Gravity Model. Gravity Model is widely using to explain paradoxes of international trade and its reflections by other factors. Empirical applications of gravity equation expanded to cover a variety of issues, such as the impact of geographical distance, regional trade agreements, national borders, currency unions, wars, disputes and conflicts on trade, as well as the use of the equation to sort out the relative merit of alternative trade theories.

Gravity models utilize the gravitational force concept as an analogy to explain the volume of trade, capital flows, and migration among the countries of the world. Gravity models establish a baseline for trade-flow volumes as determined by gross domestic product (GDP), population, and distance. The effect of policies on trade flows can then be assessed by adding the policy variables to the equation and estimating deviations from the baseline flows. In many instances, gravity models have significant explanatory power, leading Deardorff<sup>29</sup> to refer to them as a "fact of life."

The gravity equation is an empirical model for analysing bilateral trade flows based on geographical characteristics. The gravity model for trade is analogous to the Newtonian physics function<sup>30</sup> that describes the force of gravity. The model explains the flow of

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<sup>29</sup> A. V. Deardorff (1998). Determinants of bilateral trade: does gravity work in a neoclassical world? *University of Chicago Press*, 7–32;

<sup>30</sup> [https://simple.wikipedia.org/wiki/Newton%27s\\_law\\_of\\_universal\\_gravitation](https://simple.wikipedia.org/wiki/Newton%27s_law_of_universal_gravitation) (Access Date: 29.11.2014)

trade between pair of countries as being proportional to their economic “mass” ( $GDP_i$  and  $GDP_j$ ) and inversely proportional to the distance between them ( $Dist_{ij}$ ). The model can be specified by simply equation as follows (equation 1.):

$$Trade_{i,j} = \alpha \frac{GDP_i^\beta GDP_j^\gamma}{Dist_{i,j}^\delta} \quad (1)$$

where  $Trade_{i,j}$  is the value of the bilateral trade between country  $i$  and  $j$ ,  $GDP_i$  and  $GDP_j$  are country  $i$  and  $j$ 's respective national incomes mostly reflected by GDP.  $Distance_{i,j}$  is a measure of the bilateral distance between the two countries and  $\alpha$  is a constant of proportionality.

Gravity Model is estimated in terms of natural logarithms, denoted “ln”. When we transform equation 1 into linear and take natural logarithm of variables we will have the equation 2:

$$\ln Trade_{i,j} = \alpha + \beta \ln GDP_i + \gamma \ln GDP_j - \delta \ln Dist_{i,j} \quad (2)$$

In general, the expected signs here are  $\beta$  and  $\gamma > 0$ . In the second alternative, mass in equation 2 is associated with both GDP and population (POP). In this case, equation 2 becomes (equation 3):

$$\ln Trade_{i,j} = \varphi + \beta_1 \ln GDP_i + \beta_2 \ln POP_i + \gamma_1 \ln GDP_j + \gamma_2 \ln POP_j - \delta \ln Dist_{i,j} \quad (3)$$

With regard to the expected signs on the population variables, these are typically interpreted in terms of market size and are therefore positive ( $\beta_2, \gamma_2 > 0$ ). In the third alternatives, mass in equation 3 is associated with GDP per capita. In this case, equation 3 becomes (equation 4)

$$\ln Trade_{i,j} = \varphi + \beta_1 \ln \frac{GDP_i}{l_i} + \gamma_1 \ln \frac{GDP_j}{l_j} - \delta \ln Dist_{i,j} \quad (4)$$

After being introduced by Tinbergen<sup>31</sup>, the gravity model was considered to be a useful physical analogy with fortunate empirical validity. Subsequently, however, connections have been made to key elements of trade theory.

Anderson<sup>32</sup> was the first to do this, employing the product differentiation by country of origin, commonly known as the “Armington assumption”. By specifying demand in these terms, Anderson helped to explain the presence of income variables in the gravity model, as well as their multiplicative (or log linear) form. This approach was also adopted by Bergstrand<sup>33</sup>, who more thoroughly specified the supply side of economies. The monopolistic competition model of New Trade Theory has been another approach to provide theoretical foundations to the gravity model. Here, the product differentiation by country-of-origin approach is replaced by product differentiation among producing firms, and the empirical success of the gravity model is considered to be supportive of the monopolistic competition explanation of intra-industry trade.

## 2.2. Evolution of Gravity Approach

The gravity model is a rather successful econometric approach that has been adopted to analyse spatial interactions among different kinds of variables. “The general idea behind it comes from the gravity theory in physics, from which it also derives its name”<sup>34</sup>. Tinbergen and Poyhonen<sup>35</sup> were the first authors to apply the gravity equation to analyse international trade flows. They apply such concept to explain impact of geographic dimensions to international trade relations and simply include this proxy to empirical analysis. Since then, the gravity model has been successfully applied to flows of varying types of international trade flows.

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<sup>31</sup> J. Tinbergen (1962). *Shaping the World Economy: Suggestion for an International Trade Policy*. Twentieth Century Fund

<sup>32</sup> J. E. Anderson (1979). A Theoretical Foundation for the Gravity Equation. *American Economic Review*, 69, 106-116

<sup>33</sup> J. H. Bergstrand (1989). The Generalized Gravity Equation, Monopolistic Competition and the Factor Proportions Theory in International Trade. *The Review of Economics and Statistics*, 7 (1), 143-153

<sup>34</sup> D. Antonucci and S. Manzocchi (2004). Does Turkey have a special trade relation with the EU? A gravity model approach. *Economic Systems*, 30, p. 159

<sup>35</sup> P. Poyhonen (1963). A Tentative Model for the Trade between Countries. *Weltwirtschaftliches Archiv*, 90 (1), 93-100



As it mentioned above, the theoretical support for the gravity model was originally very poor, from the early 1960's to second half of the 1970's, but further number theoretical developments have filled this gap. Anderson made the first formal attempt to derive the gravity equation from a model that assumed product differentiation. Bergstrand<sup>36</sup> also explored the theoretical determinants of bilateral trade in a series of papers, in which gravity equations were associated with simple monopolistic competition models. There is also note that the gravity equation characterizes many models and can be justified from standard trade theories. Gravity model has been used on the base of manipulation of the Constant Elasticity of Substitution (CES) system that can be easily estimated and helps to solve the so-called border puzzle. According to researches, multilateral trade resistance factors should be added into the empirical estimation to correctly estimate the theoretical gravity model. A simple and intuitive way to do this in cross-section studies is to proxy these terms with variables or in a panel data framework, with bilateral fixed effects.

While reviewing literature related to gravity model we define that there are many researches covering gravity model or implying gravity equation on analysing trade relations and geographical dimensions, moreover, this model has been used in explaining trade and cultural issues, political disputes and conflict, wars and even governmental issues such as impact of democracy regime, kingdom and etc.

### **2.3. Impact of Geographical Distance on International Trade Using Gravity Model**

First, gravity model has been a popular discussion topic while implying on distance and trade relationship. The empirical results of many researches showed negative correlation between geographic distances and trade volumes. Similarly, empirical estimation of gravity models finds that the distance between countries is inversely related to international trade. According to Polachek, Solomon and Chang<sup>37</sup>, the negative correlation between bilateral trade and distance is considered by Leamer and

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<sup>36</sup> J. H. Bergstrand (1985). The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence. *Review of Economics and Statistics*, 67 (3), 474-481

<sup>37</sup> R. J Polachek, W. Solomon and Y.C. Chang (1988).Geographic proximity, trade and international conflict/cooperation. Working Paper. IZA Discussion Papers [www.ftp.iza.org/dp1988.pdf](http://www.ftp.iza.org/dp1988.pdf) (Access Date: 25.11.2013)

Levinsohn<sup>38</sup> to be one of the most robust empirical findings in economics. While widening the implication of gravity model, variables involved in gravity model also changed. One of the most popular topics in recent researches is the existing relationship among distance, trade and conflict in the gravity model approach.

“The estimated coefficient of distance on the volume of trade is generally found to increase rather than decrease through time using the traditional gravity model of trade”<sup>39</sup>. This paradoxical result was initially investigated by number of researches in a traditional gravity model framework. Leamer and Levinsohn<sup>40</sup>, reviewing the literature on international trade and distance, noted that the effect of distance on trade patterns is not diminishing over time. They conclude that dispersion of economic mass is the answer, not a shrinking globe for this result. For instance, Brun, Carrere, Guillaumont and Melo in their research: “Has Distance Died? Evidence from a Panel Gravity Model”, concluded that:

“Adding an augmented trade barrier function (real price of oil, index of infrastructure, and share of primary exports in total bilateral trade) that corrects for the misspecification inherent in the standard representation of transport costs by distance yielded plausible estimates of the expected death of distance”<sup>41</sup>.

There are substantial independent literatures addressing the role of distance in determining trade and conflict. Some of them are pointing out that many arguments used to support an inverse relationship between distance and trade also apply to the relationship between distance and conflict. Some other argues that the greater contact of contiguous countries leads to more conflict.

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<sup>38</sup> E. E. Leamer and J. Levinsohn (1995). *International trade theory: The evidence*. Handbook of International Economics, in: G. M. Grossman & K. Rogoff (ed.), 1 (3), chapter 26, 1339-1394

<sup>39</sup> J. F. Brun, C. Carrere, P. Guillaumont and J. de Melo (2005). Has Distance Died? Evidence from a Panel Gravity Model. *The World Bank economic review*, 19 (1), p. 99

<sup>40</sup> E. E. Leamer and J. Levinsohn (1995). op. cit.

<sup>41</sup> J. F. Brun, C. Carrere, P. Guillaumont and J. de Melo (2005). op. cit., p. 114

“Since not all contiguous countries that interacting exhibit conflict, Vasquez argues a theory that attributes conflict to interstate interaction. Vasquez supports these arguments by noting that over time as technology and economic interdependence makes the world smaller, more interactions should occur between non-contiguous dyads, because transaction costs of interactions are falling<sup>42</sup>”.

Rocco<sup>43</sup> on his paper “Distance and trade: Disentangling unfamiliarity effects and transport cost effect”, provides evidence supporting Grossman’s<sup>44</sup> claim that not only transport costs but also other factors such as uncertainty or unfamiliarity can be the reason of the negative correlation between geographic distances and trade volumes. Grossman argues that only transport costs are too low to explain the magnitude of the distance effects, particularly after taking into account his assumption. He conjectures that distance between two trade partners is not only geographical closeness/farness and it should also be proxy for unfamiliarity (informational barriers/frictions). “Toward this end, he suggests that we need a model with imperfect information, where familiarity declines rapidly with distance”<sup>45</sup>.

Rocco<sup>46</sup> on his paper “employs a gravity model that allows for distance effects to vary across countries endowed with different levels of uncertainty tolerance, so as to disentangle the effects of unfamiliarity from the effects of transport costs in bilateral trade volumes”<sup>47</sup>. “This is done by including in the regression uncertainty-aversion indicators of both exporters and importers, interacted with geographic distances of the trade routes”<sup>48</sup>. “The modelling shows that uncertainty-tolerant countries are better in

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<sup>42</sup> Y. C. Chang, R.J. Polachek and Robst J. (2004). Conflict and trade: the relationship between geographic distance and international interactions. *Journal of Socio-Economic*, 33, p. 494

<sup>43</sup> R. H. Rocco (2004). Distance and trade: Disentangling unfamiliarity effects and transport cost effects. *European Economic Review* 51, 161–163

<sup>44</sup> G. M. Grossman (1996). Comment on: Determinants of Bilateral Trade: Does Gravity Works in a Neoclassical World? *The Regionalization of the World Economy*, University of Chicago press, 29-31

<sup>45</sup> R. H. Rocco (2004). op.cit., p. 162

<sup>46</sup> R. H. Rocco (2004). op. cit.

<sup>47</sup> R. H. Rocco (2004). op.cit., p. 162

<sup>48</sup> R. H. Rocco (2004). op.cit., p. 165

capitalizing on exporting opportunities, and thus have become richer in the long-term”<sup>49</sup>.

Information (barrier) is very important in bilateral trade. In the search models of Casella and Rauch<sup>50</sup>, the difficulty of searching for matched buyers in an unfamiliar foreign country can create informational frictions and barriers for international trade, particularly for differentiated products. Empirically, Rauch finds that common language and/or colonial ties can overcome informational barriers in international trade and increase bilateral trade, particularly for differentiated products. Among many others there is also the role of immigrants in exchanging information and promoting bilateral trade between their host countries and their origin countries.

A group of researches we define among the many studies using the gravity to predict trade potentials on a country, mostly export growth or decline. Number of researches estimated trade potential using panel data approach with economic factors like openness, exchange rates etc. Some other estimated trade potential using ordinary least square estimation on cross section data. Batra<sup>51</sup> estimated trade potential of India using gravity approach with panel data analysis.

### **3. Political Determinants of International Trade Relationship from the Perspective of Gravity Model**

This section analyses interrelationship between international trade and conflict. During the review of related literature we would try to analyse this relationship and answer to question why trade and conflict should be correlated. Considering last decade in global economic world we are seeing many conflicts both diplomatic and security. Many of reviewed researches based in “cold war” evidences but now in sometimes we can conclude that some of them have not lose their actuality.

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<sup>49</sup> R. H. Rocco (2004). op.cit., p. 162

<sup>50</sup> J. E. Rauch and A. Casella (2001). Overcoming Informational Barriers to International Resource Allocation: Prices and Ties. *Economics Working Paper Series*, San Diego: University of California

<sup>51</sup> A. Batra (2004). India’s Global Trade Potential: The Gravity Model Approach. *Working paper № 151, Indian council for research on international economic relations*  
<http://dspace.africaportal.org/jspui/bitstream/123456789/21168/1/Indias%20Global%20Trade%20Potential%20The%20Gravity%20Model%20Approach.pdf?1> (Access Date: 05.01.2014)

### 3.1. Conflict and International Trade

The relationship between international political conflict and trade has long attracted substantial interest and remains the subject of various researches and analysis. Paper on conflict examines the interactive effect of distance and trade on international conflict and cooperation. Polachek, Solomon and Ching<sup>52</sup> conclude that “the effect of geographic distance depends on trade, while the effect of trade varies with geographic distance. Trade reduces conflict when partners are geographically close, but has a greater effect on cooperation when countries are more distant from each other. Geographic proximity increases conflict and cooperation more among non-trading countries.

Neoliberals argue that trade reduces conflict between countries. This argument can be traced to Immanuel Kant, Adam Smith, David Hume, Cobden, John Bright, John Stuart Mill and Baron de Montesquieu who discuss similar themes. The issue received more close attention when Polachek in 1998 examine how trade influences conflict using an expected utility model. On his papers he tested the conflict–trade relationship. Further based on these researches made Chang et al. concluded that: “if conflict leads to a cessation or at least a diminution of trade (perhaps through tariffs or quotas), then countries with the greatest gains from trade face the highest costs of conflict and hence engage in the least conflict and the most cooperation<sup>53</sup>”

Later Dorussen<sup>54</sup> develops a multi-country model to show that trade is most important when there are few barriers to trade, when countries will not trade post-conflict and when there are more countries in the system. And one of the famous works related to conflict and trade issue is Morrow’s<sup>55</sup> “How Could Trade affect Conflict”. On his paper Morrow examined the logic of a common argument, that international trade prevents conflict because the possible loss of trade reduces the willingness of both sides to fight. The examination of this argument made in the light of game–theoretic models of

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<sup>52</sup> R. J. Polachek, W. Solomon and Y.C. Chang (1988). op. cit., p. 1-2

<sup>53</sup> Y. C. Chang.; R. J. Polachek, and W. Solomon, (2004). Conflict and trade: the relationship between geographic distance and international interactions, *Journal of Socio-Economics* 33, p. 493

<sup>54</sup> H. Dorussen (2001). Trade Coalitions and the Balance of Power, *Jahrbuch für Handlungs- und Entscheidung stheorie*, 153-180

<sup>55</sup> J. D. Morrow (1999). How Could Trade Affect Conflict? *Journal of Peace Research*, 36 (4), 481–482

conflict, Morrow presents a game theoretic model that examines how trade influences the relative resolve of both initiators and targets of disputes. “Trade reduces the initiator’s willingness to fight, but also reduces the target’s willingness to fight”<sup>56</sup>.

Pollins<sup>57</sup> presents a model and empirical tests where trade is endogenous and conflict is an exogenous variable. He argues that trade is determined by politics and that friendly countries trade more than hostile countries. Both models are similar, yet it is important to determine the direction of causation. Several different approaches are used to look at causation. Polachek and McDonald<sup>58</sup> present simultaneous equations tests where both trade and conflict are considered to be endogenous variables. These studies provide support for trade causing conflict, but find little evidence that conflict reduces trade.

The relationship between trade and conflict has received substantial empirical investigation as well. On one side, some studies argue that bilateral trade increases between conflicts. On the other side, numerous studies have found that trade reduces conflicts. Morrow<sup>59</sup> discusses the possibility of indirect effects of conflict on trade, presented by Pollins<sup>60</sup>, and which have not been explicitly tested. Results indicate that “states, whose interests are closest to those of the United States, as measured by similarity of voting in the United Nations, have higher levels of trade with the United States than other states”<sup>61</sup>.

A number of studies have focused more specifically on the impact of war on trade, and here too, there has been some debate. Barbieri and Levy<sup>62</sup> argue that wars do not necessarily undermine trade. The authors examine seven partners, each of which experienced a single war in the time under consideration, and find that war was associated with a serious disruption in trade in only one of these cases. However, as the

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<sup>56</sup> R. J. Polachek, W. Solomon, C.Y. Ching (1988). op. cit., p. 4

<sup>57</sup> B. M. Pollins (1989). Conflict, Cooperation, and Commerce: The Effect of International Political Interactions on Bilateral Trade Flows. *American Journal of Political Science*, 33(3), 737-761

<sup>58</sup> S. Polachek and J. McDonald (1992). *Disarmament, Economic Conversion and the Management of Peace*, Praeger Publishing

<sup>59</sup> J. D. Morrow (1999). op. cit.

<sup>60</sup> B. M. Pollins (1989).op. cit.

<sup>61</sup> J. D. Morrow, R. M. Siverson and T. E. Tabares (1998). The Political Determinants of International Trade: The Major Powers, 1907-90. *The American Political Science Review*, 92 (3), p. 650

<sup>62</sup> K. Barbieri and J.S. Levy (1999), Sleeping with the Enemy: The Impact of War on Trade. *Journal of Peace Research*, 36 (4), 463-479

authors themselves acknowledge, the small sample makes generalization difficult. Indeed, Kastner<sup>63</sup> consider a larger number of cases and find that: “wars, and in particular long wars, do tend to have a negative impact on trade”<sup>64</sup>.

The trade–conflict literature has been extended to examine other questions, one of them as is well known, and democracies fight each other less than non-democracies. Polachek<sup>65</sup> documented that democratic countries trade more than non-democracies because they exhibit less conflict and more cooperation. He is extended this analysis by incorporating simultaneous equations approaches. Other researchers are interstate conflict between democracies in the post-World War II time period. The brief empirical results of each of researches generally support the developed hypotheses.

### **3.2. How Could Politics Affect Trade?**

As already mentioned above the global economy is suffering from serious government regulation. We can indicate the following types of international trade regulation:

- One-sided - when the tools of regulation used by the government to unilaterally without the consent of or consultation with its trading partners. Usually unilateral measures applied in response to similar moves by other countries and give rise to political tensions between trading partners;
- Bilateral - when trade policy measures agreed between the countries that are trading partners (e.g., countries may agree on the technical requirements for labelling, packaging, negotiate mutual recognition and so on.)
- Multilateral - when trade policy is coordinated and regulated multilateral agreements (such as the GATT).

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<sup>63</sup> S. L. Kastner (2007). When Do Conflicting Political Relations Affect International Trade? *Journal of Conflict Resolution*, 51 (4), p. 666 – 688

<sup>64</sup> S. L. Kastner (2007). op. cit., p. 666

<sup>65</sup> S. W. Polachek (1997). Why do democracies cooperate more and fight less: The relationship between international trade and cooperation. *Review of International Economics*, 5(3), 295–309

Depending on the extent of government intervention in international trade there are three types of international trade policy:

1. Freedom (liberalization) trade - policy of minimum government intervention in foreign trade, which develops on the basis of free market forces of supply and demand;
2. Protectionism - public policy to protect the domestic market from foreign competition through the use of tariff and non-tariff trade policy instruments.
3. Fair trade policy combines elements of different proportions of free trade and protectionism.

Some studies result a correlation between trade and conflict: the main result was states would have relatively low militarized disputes when they have good trade relations. The obvious question is whether this correlation is spurious. Political relations between states can directly and indirectly influence their trade. When two trade partners are in political conflict issue and one have good economic position over another then it may consider restricting trade to advance its side of the conflict.

Morrow et al<sup>66</sup>., show that the relationship between two states strongly influences the trade flows between them. Generally, Morrow his researches mainly indicates that two partner countries with high trade relations have high politic relations than countries with low trade, which have relatively poor political relations. There is little difference in trade flows, however, between poor relations and actual conflict. The main finding which Morrow<sup>67</sup> made and which directly related to out topic the occurrence of a militarized dispute has no statistically significant effect on trade flows in the year of the dispute.

Morrow in further researches indicates:

“Because a dispute has no aggregate effect on trade flows, it appears that economic actors engaged in trade have already used the pre-existing state of political relations to judge the chance of a militarized dispute and reduced

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<sup>66</sup> J. D. Morrow, R. M. Siverson and T. E. Tabares (1998). op. cit.

<sup>67</sup> J. D. Morrow, R. M. Siverson and T. E. Tabares (1998). op. cit.



activities if poor relations indicate that a dispute may be in the offing. Consequently disputes themselves may have no direct impact on trade flows: their impact has been absorbed by economic traders' anticipation of such conflict"<sup>68</sup>.

"The existing literature suggests at least two broad mechanisms through which conflicting political interests could undermine trade between countries. First, commerce sometimes generates security externalities; state leaders may therefore wish to limit trade with an adversary or a potential adversary. Second, firms may view trade between countries with conflicting political objectives as more risky than it otherwise would be"<sup>69</sup>.

"Externalities are simply costs or benefits from a transaction that fall on third parties and that are not taken into account by those engaging in the transaction"<sup>70</sup>. Even when the security externalities of trade are limited, conflicting interests can have a disruptive effect on commerce because they can make trade more risky for those firms considering it<sup>71</sup>.

Conflicting interests can impact negatively on trade even when there is little potential for escalation to war or comprehensive trade sanctions, since states sometimes signal in ways that can harm trade even when bargaining over relatively low level disagreements. For example, after the 2001 spy plane incident between the United States and China, Beijing signalled its displeasure with US reconnaissance policy—and Washington's handling of the incident by suggesting it might purchase more Airbus planes and fewer Boeing planes in the future.

Since trade increases both states' wealth, if a state were to invest its gains from trade into increased military capability, then it would gain a military advantage over its trading partner. Trade then could create a "security externality." A state might impede

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<sup>68</sup> J. D. Morrow (1999). *op. cit.*, p. 488

<sup>69</sup> S. L. Kastner (2007). *op. cit.*, p. 667

<sup>70</sup> S. L. Kastner (2007). *op. cit.*, p. 667

<sup>71</sup> S. L. Kastner (2007). *op. cit.*, p. 668

trade with another for fear that the latter would use the benefits of the trade to build up its military and so pose a greater threat to the former. Enemies have good reason to fear what one another might do with their gains from trade, but allies presumably pursue similar ends and so could gain from increases in one another's military. Trade poses a negative externality between enemies and a positive externality between allies.

To finalize we would like to state few classical points:

“Blaine states: “The long peace that followed the Battle of Waterloo was increasingly explained as a result of the international flow of commodities and ideas”. Read says: “Cobden hoped that he had begun genuinely to persuade the peoples and Government of Europe that free trade could be not only a law of wealth and prosperity but a law of friendship ... a web of concord woven between people and people.”<sup>72</sup>

Short of war, conflict of interest diplomatic and security conflicts can seriously harm international trade, not only between conflicting partners but only for all World economic system. For example, last embargo to Islamic Republic of Iran (IRI), which fully cut trade relationship of IRI with US and Europe. It brought no serious damages on economic of IRI, we can state the same for Europe, but this was not so important because the total volume of Europe economic much higher and diversified than that IRI's economic. This is a sample of direct effect; political conflict leads to government policy to restrict trade. Conflict also can have an indirect effect on trade flows, since individual economic agents assess the possibility of political disruptions of their business when they consider establishing and continuing a trading enterprise. Such disruptions create a political risk for actors in trade. This effect of conflict is indirect; the threat of future government action to restrict trade leads to less international trade.

#### **4. Summary**

Stated above let us to make following short summaries and make statements that:

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<sup>72</sup> S.W. Polachek (1980). Conflict and trade. *Journal of Conflict Resolution*, 24 (1), p. 59

First, after review of related literature from classical international theory to model we defined that nowadays gravity model plays important role in analysing international trade relations and widely using in modern researches;

Second, gravity model equation first mentioned by Tinbergen in 1962, as a purely empirical proposition to explain bilateral trade flows, without little or no theoretical underpinnings. Thus, we mentioned that for a long time, however, gravity equation was a “child without a father” in the sense that it was thought to have no theoretical support;

Third, the gravity equation is an empirical model for analysing bilateral trade flows based on geographical characteristics. The model is analogous to the Newtonian physics function and describes the “force of gravity” in economics. The model explains the flow of trade between a pair of countries as being proportional to their economic “mass” represented by GDP and inversely proportional to the distance between them;

Forth, we reviewed the impact of geographical distance on trade relations and based on conclusions of reviewed works define that indeed distance is important for international trade relations;

Fifths, reviewing political bases on international trade relations indeed politics plays important role in formations and development of international trade especially in modern years;

Sixth, we defined no significant relations between political disputes, and international trade and negative relation between international trade and security type of conflicts, such as war and etc.

## Chapter II

### Turkish trade Structure and Impact of Conflict on Trade Relations

To point to the importance of foreign trade is difficult for any country. By the definition of J. Sachs:

“The economic success of any country is based on foreign trade. Yet no country has been able to create a healthy economy, isolated from the world economic system”<sup>73</sup>

Besides, international trade includes economic and political risks due to the geographical, political and national factors. This chapter investigates the importance of international trade in the modern economy; look over the current state of Turkey's foreign policy, as well overviews their problems and outlooks; makes an analysis of trade relations of Turkey with developed and developing countries, considering detailed structural analysis of Trade Balance, Export and import for the period 1990-2013; and the last but not least we give descriptive examination of the relationship between trade and conflict on example of Turkey's bilateral trade data.

#### 1. International Trade and Current World Economy

The share of international trade accounts for about 80% of the total volume of international economic relations. Modern international trade involves various entities corporations, their associations, states and separate individuals. It is also means by which countries can develop a specialization, to improve the productivity of their resources and thus increase the total production. As we mentioned above, international trade is a central factor in a complex system of global economic relations. In its historical evolution, it laid from individual trade transactions to long-term and large-scale economic cooperation. Moreover, in the process of globalization and innovation trade is becoming increasingly important. Developed foreign trade relations will bring

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<sup>73</sup> J. Sachs (1994). *Market Economy and Russia*. Moscow State University Press, p. 244

several advantages to a country, such as use available resources more efficient, join the world of science and technology, define and implements structural changes in domestic production and etc.

Modern international trade is dynamic. The structure and volume of export and import of different countries and regions of the world is continuously changing. The analysis shows the exceptionally rapid growth of trade after the World War II: from 1947 to 1973. World exports volume growth is about six percent annually. There is "explosion" of exports, during the post-war period: its volume, when converted into constant current prices, has increased from less than \$25 billion in 1939 to \$2500 billion approximately at the end of the 1990's. Besides, world trade in the late 1990's, taking into account changes in prices, increased by 2.5 times; of world exports increased by 2 and imports by 2 times.

The intensity of trade relations among countries varies widely. Share of industrialized countries accounts for about only 70% of international trade and more than 3/4 of the total trade, including services. This ratio also largely consists of trade by among themselves. For example, the share of trade among developing countries produced only a quarter of their exports. Such rapid growth of international trade has positive impact on the level and quality of economic development. In most countries, the share of GDP is highly determined by foreign trade.

### **1.1. Limitations of Modern International Trade, Types and their Application**

Benefits of free trade are undeniable. The basic principle of comparative advantage is forcing the country that has different capabilities and factor endowments to produce goods and services. At the same time free trade encourages competition and restricts monopoly. Thus, cumulative effect of all these factors stimulates economic growth.

Despite the justified criticism of restriction policies in foreign trade, they are periodically using in different countries. These are implemented in the following main areas:

1. **Tariffs.** They -systematic list of customs duties- levy on goods while importing them. There are two main types of tariffs. Fiscal tariffs used by the state to increase the flow of financial resources. Protectionist tariffs used by the state to protect domestic industries from foreign competition.
2. **Non-tariff measures.** According to the classification adopted by the UN, these include measures aim to protect certain sectors of national economy. These include: licensing and import quotas, anti-dumping and countervailing duties, import deposits, "voluntary export restraints", system of minimum import prices.

License is the resolution issued by the public authorities gives right to a particular activity. System of licenses dates back to the period of mercantilism and used to regulate the trade balance. The value of licenses increased during the global crisis of 1929-1933 and during the World War II. In the post-war years there has been trade liberalization, which led to the weakening of the role of licenses in regulation of trade relations. Currently, some governments are still using licensing to regulate their foreign trade. For example, Russia is using licenses, mostly in last few years, to restrict trade relations and decrease import, but these are not adequate to WTO regulations.

Along with the licensing, there is also quantitative restriction can be applied as trade quotas. Quota is a tool to quantitative restriction of import of specific goods and services. Likewise protective tariff, quotas reduce foreign competition in the domestic market in a particular industry.

The embargo is another type of non-tariff restriction. Governments use embargo to completely close trade flow from a specific country. Nowadays, it became “popular” to use embargo in political relations. Existing embargoes are Iranian embargo by USA and EU, Syrian embargo by USA and EU, North Korean embargo by USA and etc.

Anti-dumping duties as a non-tariff import regulation tool have been used in the import of the goods offered at prices below their production costs. In some cases, countries use the compensating duties where it is established that the exporter of goods received government subsidies for its production.

## 2. Turkish foreign Trade Policy

First decade of New Millennium is marked by the several big World crises such as September 11<sup>th</sup>2001, 2008 EU Financial Crisis and current Ukrainian conflict. In such conditions Turkey's new political position has both an ideational and a geographical basis. "This transformation was underpinned by the strategic vision of Prime Minister Ahmet Davutoğlu, who pledged to establish Turkey as an important player in international diplomacy"<sup>74</sup>.

"In terms of geography, Turkey occupies a unique space. As a large country in the midst of Afro-Eurasia's vast landmass, it may be defined as a central country with multiple regional identities that cannot be reduced to one unified character. Like Russia, Germany, Iran, and Egypt, Turkey cannot be explained geographically or culturally by associating it with one single region. Turkey's diverse regional composition lends it the capability of manoeuvring in several regions simultaneously; in this sense, it controls an area of influence in its immediate environs"<sup>75</sup>.

The structure of Turkish foreign policy based on the above mentioned views and includes well-defined targets. Its main goal is to look benefits from geographical position and historical assets. There are five main principles that could be mentioned on the basis of which Turkey's foreign policy is making process. All they are the logical outcome and supplement of each other. First, if there is unbalanced security and democracy in a country, the chances to establish influence on environs are minimal. Second, "zero problem policy with neighbours" is implementing for the past years. The third principle is to develop new relations with the neighbour regions and beyond. The fourth principle is adherence to a multi-dimensional foreign policy. The fifth principle in this framework is rhythmic diplomacy.

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<sup>74</sup> S. Ülgen, (2010). A Place in the Sun or Fifteen Minutes of Fame? Understanding Turkey's New Foreign Policy. *Carnegie Europe for international Peace*.<http://carnegieeurope.eu/2010/12/15/place-in-sun-or-fifteen-minutes-of-fame-understanding-turkey-s-new-foreign-policy> (Access Date: 22.05.2014)

<sup>75</sup> A. Davutoğlu (2007). Turkey's Foreign Policy Vision: An Assessment of 2007, *Insight Turkey*, 10,(1), p.78

**Balance between Security and Freedom:** State need to guarantee security for the own people by means of domestic security cautions and eradicating possible external threats. This responsibility requires a careful balance between two extreme cases: security and freedom. Davutoğlu emphasis sensitive issue that if security for freedom would be ignored that country will have anger and chaos. If country will ignore freedom for security, they it will have an authoritarian, autocratic society. Thus, neither of them should be ignored.

**Zero-problems with the Neighbours:** “Zero-problems” policy offers a peaceful territorial among between neighbour countries and peaceful settlement of any arising disputes. Under the “zero problems” policy, Ankara is establishing new sets of relationships with its neighbour countries, with the main goal to encourage trade and tourism and to make political cooperation closer. Davutoğlu noted that it is difficult and sometimes almost impossible to have well established environment with neighbour which is experiencing conflicts. Relations between these countries should be established from the perspective of the long and difficult process involving polities.

The “Arab Spring” was perhaps the single most important development that violated Turkish assumptions and forced it to change its prospected results. However, it was the protest movements that engulfed Libya and Syria that placed Turkey at the serious dilemma; Turkey struggled in its role as the promoter of democracy and another choice is who to support the Gaddafi and Assad regimes or support the protesters.

After the onset of the “Arab Spring,” Davutoğlu re-evaluated the “zero problems” policy as Turkey’s “most important goal” in the region. He clarified that Turkey “never claimed that there are no problems” but was rather concerned that “relations with other countries in order to create a new political climate cannot help solve problems and create new ones... [The] main objective...is reintegration”<sup>76</sup>. In the meantime, there were growing concerns among the conservative Turkish business elites that the “zero problems” policy, combined with the destabilizing effect of the “Arab Spring,” is negatively affecting the Turkish regional trade. These businessmen are especially

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<sup>76</sup> A. Murinson (2012). Turkish Foreign Policy in the Twenty-First Century”, *Mideast Security and Policy Studies* 97, p 19



worried about the trade networks they established in Syria, which served as a Turkey's gateway to the Arab markets in the last decade.

In the case of Libya (and more lately in case of Syria), there were strong business which were strategically reinforced by Turkish direct investment, participation in multi-million dollar infrastructure projects, and the relief provided to chronic Turkish unemployment upon the hiring of Turkish workers for these projects. As reported by the Turkish Ministry of Economy, Libya was among the “most significant market for Turkish contractors in Africa” until 2011. Until that year the report was that “Turkish firms held and are holding 544 projects in Libya with a total value of \$27.7 billion”<sup>77</sup>. When the civil war broke out in Libya, Turkey gave the priority to the trade and investment benefits the country enjoyed from its relationship with Libya's leadership.

According to Alexander Murinson:

“Perhaps the main problem with Davutoğlu's “zero problems” doctrine has been an undifferentiated notion of “problems” that lumps together the minor and major (i.e. strategic or geopolitical) issues with the short and long-term issues. As a result we are witnessing a multiplication of Turkey's problems with its neighbours as well as former allies, like Israel. Consequently there are signs of incoherence accumulating over the substance of Turkish foreign policy, such as the coincidence of economic interdependence with Iran coupled with a Turkey-Iran falling out on regional issues. Instead of “strategic depth,” a favourite term of Davutoğlu and his foreign policy team, Turkey may soon achieve the exact opposite result, deep strategic insecurity caused by mushrooming problems with various neighbours. Some of these problems can be attributed to Turkey's diplomacy on such issues as the proper response to the ongoing Syrian crisis”<sup>78</sup>.

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<sup>77</sup> Africa Regional Information, Republic of Turkey, Ministry of Economy <http://www.economy.gov.tr/index.cfm?sayfa=countriesandregions&country=LY&region=0> (Access Date: 02.06.2014)

<sup>78</sup> A. Murinson (2012). *op. cit.*, p 24

**Developing Relations with the Neighbour regions and beyond:** Developing relations with neighbours and beyond offer a global perspective in foreign policy making. It is an extended “zero problem” principle which suggests “no geographical frontier” to limit foreign policy activities. From this point of view, Turkey tends to develop intensive relations beyond its neighbour countries. Turkey enters into relation with not only to EU or neighbour countries but also to Russia, the United States, Australia and etc. According to this premise, these relations are based upon rational calculations, not on ideological bases. This premise could be summarized as a globally scaled summary of the zero-problems principle.

**Rhythmic Diplomacy:** Generally current globalization process requires dynamic activities especially in foreign trade, policies and diplomacy. This takes start from the end of the Cold war and starts of the time to search for a new definition for Turkey’s international position and foreign policy vision. Pro-active diplomacy is offered as a conceptual reflection of this perspective. Rhythmic diplomacy refers a sustained pro-activism in the field of diplomacy, trying to achieve more active role in international organizations and opening up to new areas where Turkish contacts have been limited.

**Multi-dimensional Foreign Policy:** Multi-dimensional foreign policy refers identity-based and mono-dimensional foreign policy rather than security. Turkey’s relations with other global actors aim to be complementary, not in competition. According this principle, foreign policy dealings should diversify with wide ranges of issues from cultural considerations to economic, diplomacy to politics.

“Ankara’s new diplomatic activism represents a significant transformation of Turkish foreign policy that merits a more thoughtful analysis than the simplistic accusation that Turkey is moving away from the West”<sup>79</sup>.

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<sup>79</sup> S. Ulgen (2010). op. cit. title page

### 3. Dynamics and Structure of Turkey's Total Trade Indicators

Turkey, as active member of world trade, has volatile and developing trade relations. In the year 2013 Turkey's foreign trade relations had 1.34 percent<sup>80</sup> from the World trade volume. Since the beginning of the analysed period, international trade seems to have a relatively positive development. Dynamics of Turkish foreign trade activity compare to GDP is given in Table 1.

Based on the results of the analysis data of Table 1, we indicate that compared with 1990, in 2013 the Turkish economy grew by 241.31%, which seems nearly stable growth pattern. For comparison, GDP per capita, which is a measure of the welfare in 2013, increased about 174% compare to 1990 with the average annual growth rate 2.7 percent.

*Table 1. Trade Indicator of Turkey as GDP Percentage, 1990–2013*

<b>Year</b>	<b>GDP (billions USD)</b>	<b>Export (% of GDP)</b>	<b>Import (% of GDP)</b>	<b>Total Trade (% of GDP)</b>	<b>Trade balance (% of GDP)</b>
1990	270.67	13.37	17.58	22.22	-4.21
1991	272.62	13.84	16.63	21.78	-2.79
1992	286.35	14.39	17.35	23.01	-2.95
1993	308.26	13.67	19.34	26.03	-5.67
1994	293.87	21.36	20.38	25.79	0.98
1995	317.02	19.89	24.35	28.20	-4.46
1996	340.41	21.54	27.83	31.84	-6.28
1997	366.21	24.58	30.39	35.75	-5.81
1998	374.66	21.34	20.18	37.41	1.16
1999	362.05	19.44	19.29	35.90	0.15
2000	386.58	20.10	23.09	39.98	-3.00
2001	364.55	27.44	23.32	37.73	4.13
2002	387.02	25.22	23.58	40.18	1.63
2003	407.40	22.99	24.04	43.77	-1.04

**Source:** World Bank Database (WDI 2014), [http://data.worldbank.org/country/turkey#cp\\_wdi](http://data.worldbank.org/country/turkey#cp_wdi) (Access Date 28.11.2014)

Note: Data given in constant terms, base year 2005

<sup>80</sup> Calculated on the basis of [www.wikipedia.org](http://www.wikipedia.org) (Access Date: 02.06.2014) Data to the year 2013

*Table 1(Cont.). Trade Indicator of Turkey as GDP Percentage, 1990–2013*

<b>Year</b>	<b>GDP (billions USD)</b>	<b>Export (% of GDP)</b>	<b>Import (% of GDP)</b>	<b>Total Trade (% of GDP)</b>	<b>Trade balance (% of GDP)</b>
2004	445.55	23.55	26.19	46.46	-2.63
2005	482,98	21,86	25,35	47.21	-3.50
2006	516.27	22.67	27.58	47.15	-4.91
2007	540.38	22.32	27.48	49.15	-5.16
2008	543.94	23.91	28.34	48.33	-4.43
2009	517.69	23.32	24.42	45.74	-1.11
2010	565.09	21.21	26.76	46.98	-5.55
2011	614.67	23.98	32.65	47.24	-8.67
2012	628.43	26.30	31.46	49.52	-5.16
2013	656.08	25.71	32.28	49.47	-6.58

**Source:** World Bank Database (WDI 2014), [http://data.worldbank.org/country/turkey#cp\\_wdi](http://data.worldbank.org/country/turkey#cp_wdi) (Access Date 28.11.2014)

Note: Data given in constant terms, base year 2005

Turkish foreign trade growth dynamics does not change radically and trade balance remains negative during all analysing period. As seen in Table-1 above, export growth in 2013 compared to 1990 is 533.54%; import growth rate is 546.37%. The growth of exports and imports is almost the same. In 1990 the share of export in GDP was 13.37%, in 2013 it becomes 25.72%; in 1990 import held 17.58% of GDP and in 2013 32.28%. So, import growth is slightly higher than export

Total trade volume grew 540.25% in 2013 compare to 1990 and indicated 49.47% of GDP. Trade balance, as component of GDP, grew at 679.52% in 2013 compare to 1990. This growth rate does not seem significant when comparing changes in shares. While the trade balance was -4.21 percent of GDP in 1990, it is -6.58 percent in 2013.

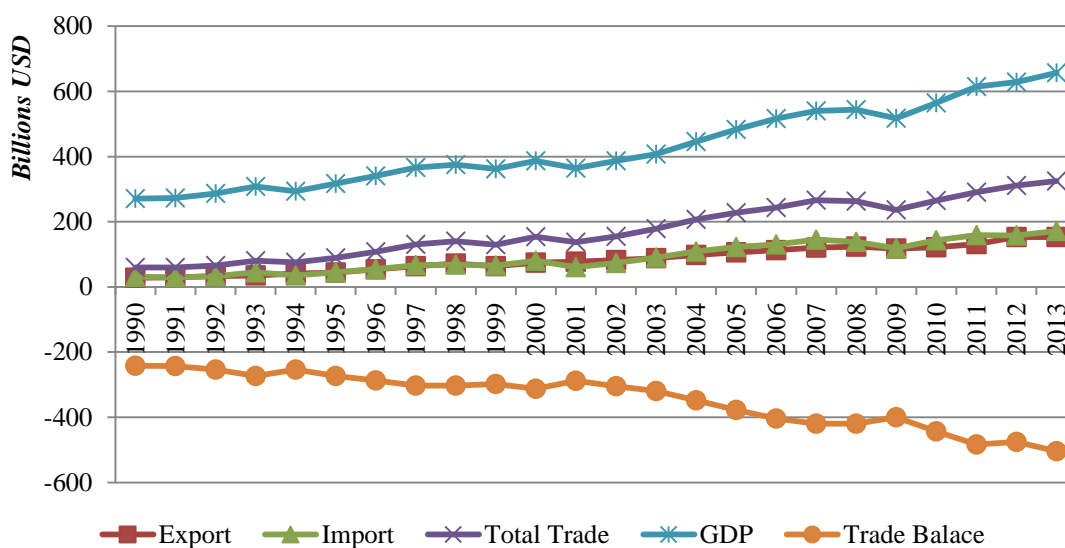


Figure 1. Trade and GDP Dynamics of Turkey, 1990–2013

Source: World Bank Database (WDI 2014), [http://data.worldbank.org/country/turkey#cp\\_wdi](http://data.worldbank.org/country/turkey#cp_wdi) (Access Date 28.11.2014)

We illustrate the analysis of Turkish international trade in Figure 1 in comparison with GDP curve. The indicators give the following results: the average annual growth of exports is 21.42%; average annual import growth rate is 24.58%. Trade balance was increasing at 3.37 percent annually on average during the period under consideration.

If we divide the analysis into two periods by taking account for 2001<sup>81</sup> Financial Crisis, we observed the some differences. First, average annual GDP growth rate before the Crisis, exports, imports and total trade amounted to 2.87 percent, 8.54 percent, 8.26 percent and 7.80 percent, respectively. Second, after the Crisis period the average annual growth rate of these indicators were 5.1 percent, 15.08%, 17.95% and 16.7%, respectively. Finally, trade deficit was increasing by 26.39% annually before Crisis period and 19.28% after Crisis period.

<sup>81</sup> The financial crisis in Turkey which cause significant decrease in real sector of economy. GNP in constant prices decreased at 9.5 percent. Value added in manufacturing decrease at 8,1 percent, in mining industry at 8,8 percent, in agriculture at 6,5 percent; decrease in services sector reached 6,1 percent, internal trade at 9,4 percent. Turkish lira, which was pegged to the U.S. dollar, had to be floated, and lost an important amount of its value. This financial breakdown reduced the number of banks to 31.

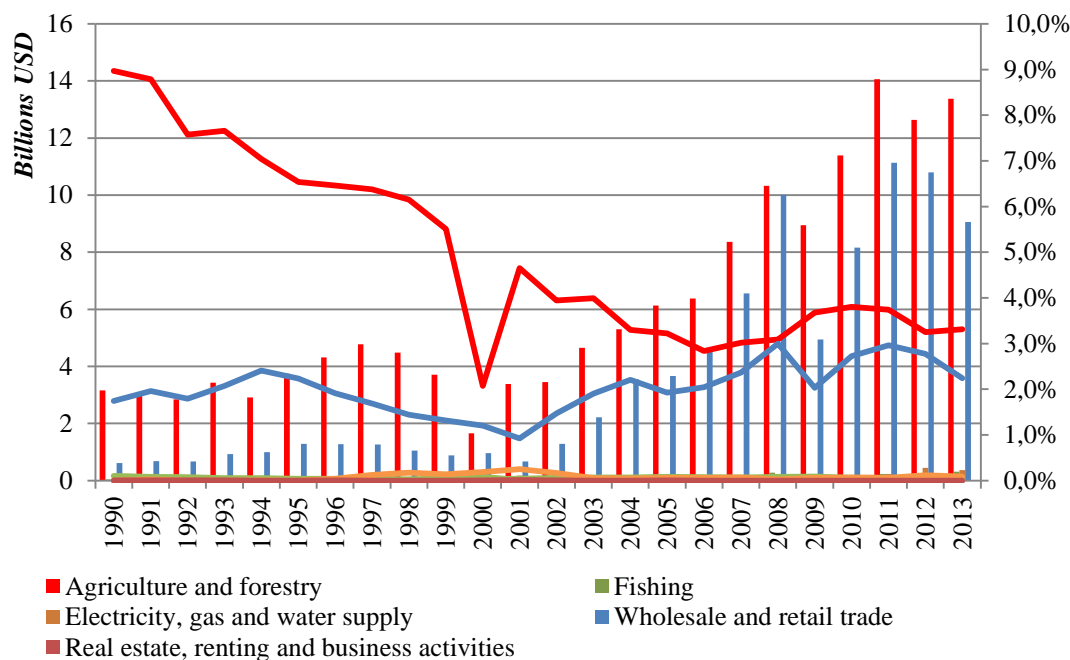


Figure 2. Total Trade Dynamics of Turkey by Product in ISIC rev. III Classification, 1990–2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the total trade of Turkey in given industry (charts), right axis refers to share of given industry in total trade of Turkey (lines).

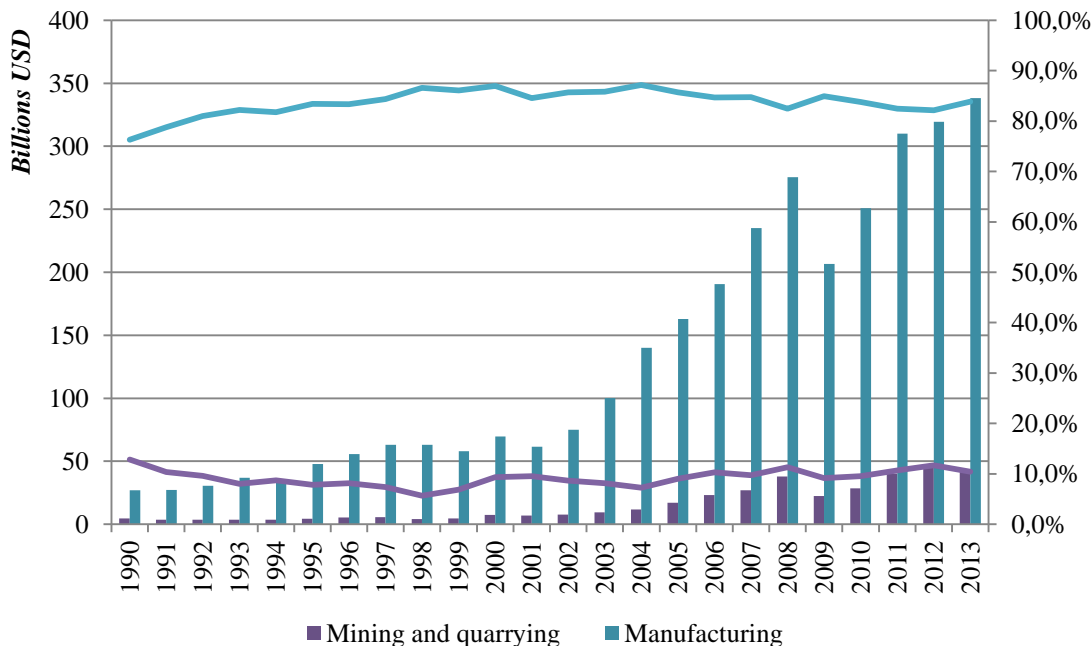


Figure 2. (Cont.). Total Trade Dynamics of Turkey by Product in ISIC rev. III Classification, 1990–2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the total trade of Turkey in given industry (charts), right axis refers to share of given industry in total trade of Turkey (lines).

We should also mention the fact that the WFC<sup>82</sup> has affected relatively specific for the Turkish economy. As shown in Figure all indicators, except the trade balance, have a negative slope in 2009 compared to 2008, whereas the trade balance increased during this period. Based on these facts, we can conclude that despite the WFC foreign trade of Turkey is important component determining the dynamics of entire economy.

Analysing the development of Turkish trade relations by main sectors, which is shown in Figure 2, we can see significant increase in the manufacturing and mining industries. Although almost all indicators had sharp decrease during the WFC, but as the illustration shows, in 2011 trade relations have reached the pre-Crisis period. Structural industry analysis shows that the manufacturing and mining industries are the main trade sectors for the Turkish economy. On average, during the analysing period, trade relations in manufacturing was at 85% share from total trade and 49% of GDP; for mining industry is seven percent from total trade, the rest of the industries have at total 3.5 percent share from total trade. Average annual growth rate of manufacturing reaching 12.84% and in comparison with 1990, the industry has grown by 12 times in 2013. In the mining industry, we are also seeing a stable and a high percentage of annual growth rates, which is 12.95% an average per year, and in comparison with 1990 the industry has grown to 9 times in 2013. It is important to note that rapid growth of these two industries started after Financial Crisis of 2001 in Turkey. Thus, the average growth rate in manufacturing before Crisis was 8.8 percent per year, after Crisis 16.5% per year, in the mining industry before the Crisis; the average growth rate was 6.2 percent and 19.4% after crisis.

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<sup>82</sup> World Financial Crisis of 2008

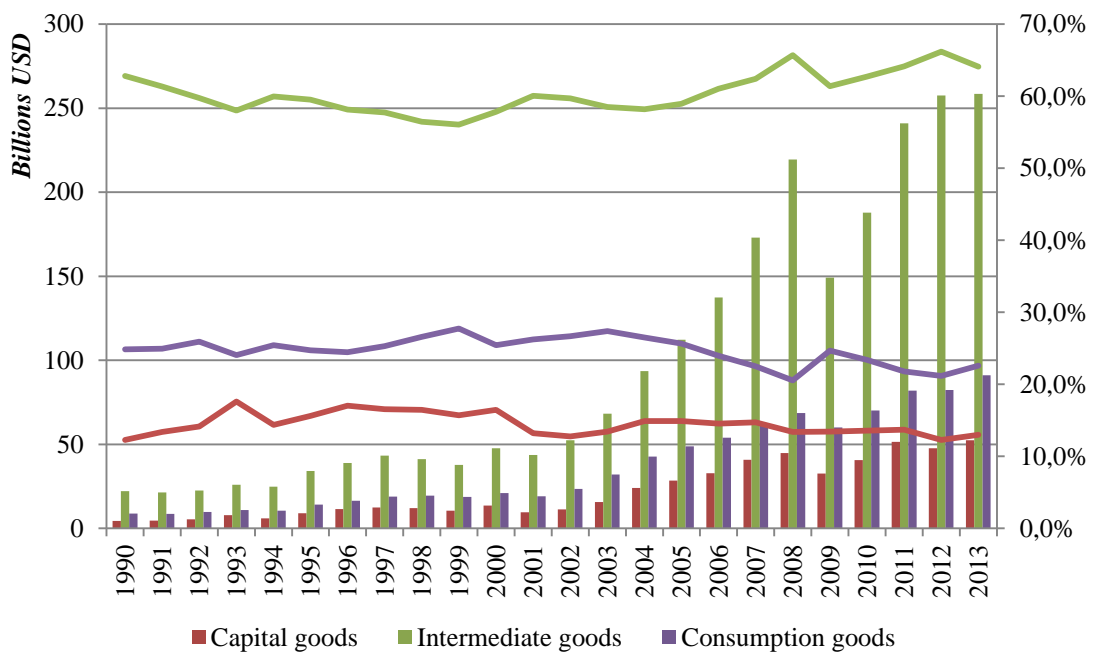


Figure 3. Total Trade Dynamics of Turkey by Product in BEC Classification, 1990–2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the total trade of Turkey in given product (charts), right axis refers to share of given product in total trade of Turkey (lines).

When analysing trade relations according to Broad Economic Categories (BEC) classification, chart given in Figure 3, we can observe rapid growth of intermediate goods after 2001. Looking to capital goods trade that have stable growth rate during the analysing period, we can conclude that after 2001 Crisis value adding industries have been growing faster. This is a positive sign in terms of welfare growth via increasing the consumption. Thus, noting some exact data average yearly capital goods growth rate is 13.9%, intermediate goods rate is 12.70% and consumption goods growth rate is 11.40% during the analysing period. The highest share had intermediate goods almost 63% on average. In the year 2013 compare to 1990 capital goods trade grew by 12 times, intermediate goods grew by 11.7 times and consumption goods grew by 10.41 times.

The analysis of the Figures 4 a–l shows that Turkey's main trading partners are the United States, Italy, Russia and Germany. Together, these countries account for an average of 34% of total trade in Turkey during the analysing period. The structure of



bilateral trade between Turkey and these countries is different according to BEC classification. For example, we observed that while transport and transport equipment is largely traded with U.S. and Germany, capital goods and energy trade is concentrated on Italy and Russia, respectively. Generally analysis of trade structure shows the positive and growing dynamics of trade relations with these countries. We also saw a sharp jump in the bilateral trade with Russia since 2003. This is due to the start-up of gas pipeline called as "Blue Stream", which is the project that provides gas directly from Russia to Turkey. During the whole period average annual aggregate bilateral trade growth rate is 9.2 percent for the U.S, 10.2% for Italy, 19.2% for Russia and 9.4 percent for Germany. Thus, Turkish trade volume with US, Italy and Germany increased by 6 times in 2013 compare to 1990, while it increased by 21 times with Russia.

Turkish trade relations with Kyrgyzstan, Tajikistan, Qatar and Jordan have the lowest share during the analysing period. These countries aggregately account for an average of 0.4 percent share from total Turkish trade. The structure of trade between Turkey and these countries is relatively the similar to each other. As we observed the large trade share is belong to food and beverages, according to BEC classification. Moreover, Turkey is mainly exporting to these countries, rather than importing. The dynamics of trade relations with these countries is positive and has relatively stable growing trend over the whole period under consideration. We also observe a sharp jump in bilateral trade with Qatar in 2008, but a sharp decline could be observed further, because of WFC. Nevertheless, the dynamics of trade maintains positive growing tendency. During the whole period average annual aggregate bilateral trade growth rate is 46% for Kyrgyzstan, 32% for Tajikistan, 49% for Qatar and 10% for Jordan. Thus, Turkish trade volume with Kyrgyzstan increased by 130 times, by 77 times for Tajikistan, by 91 times with Qatar and by 5 times for Jordan.

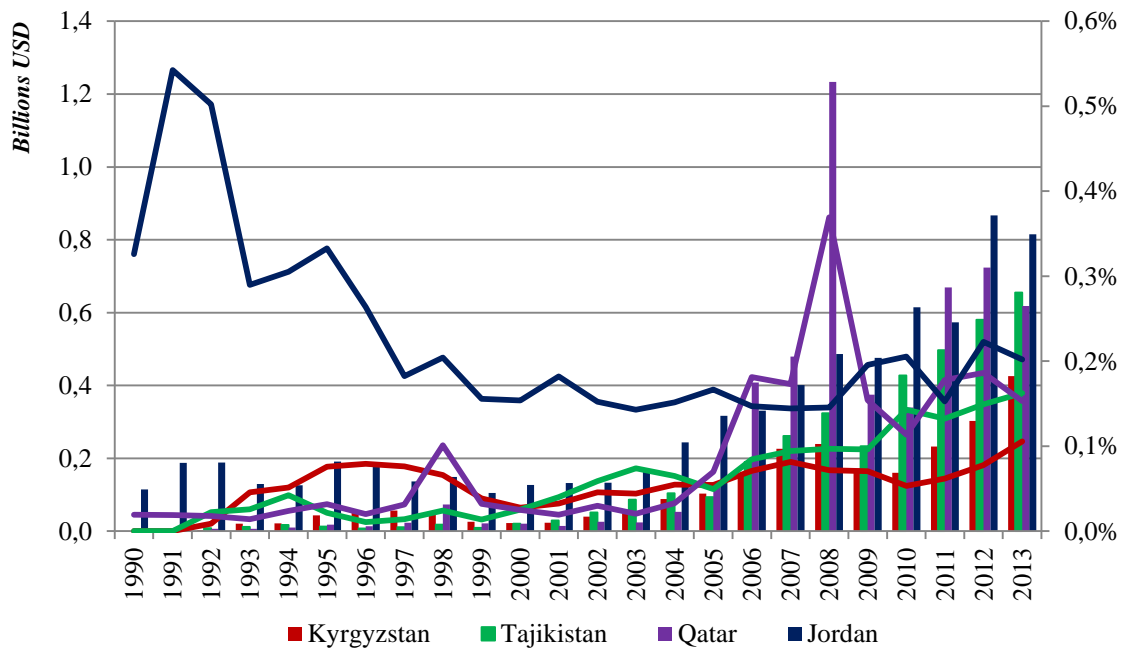


Figure 4.a. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

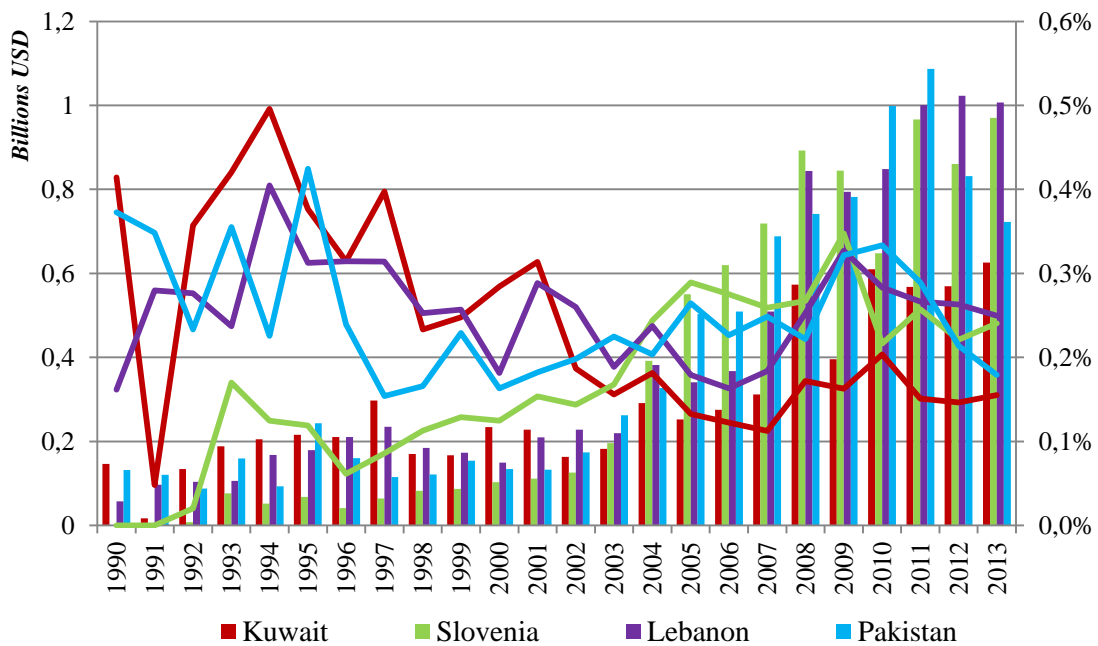


Figure 4.b. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

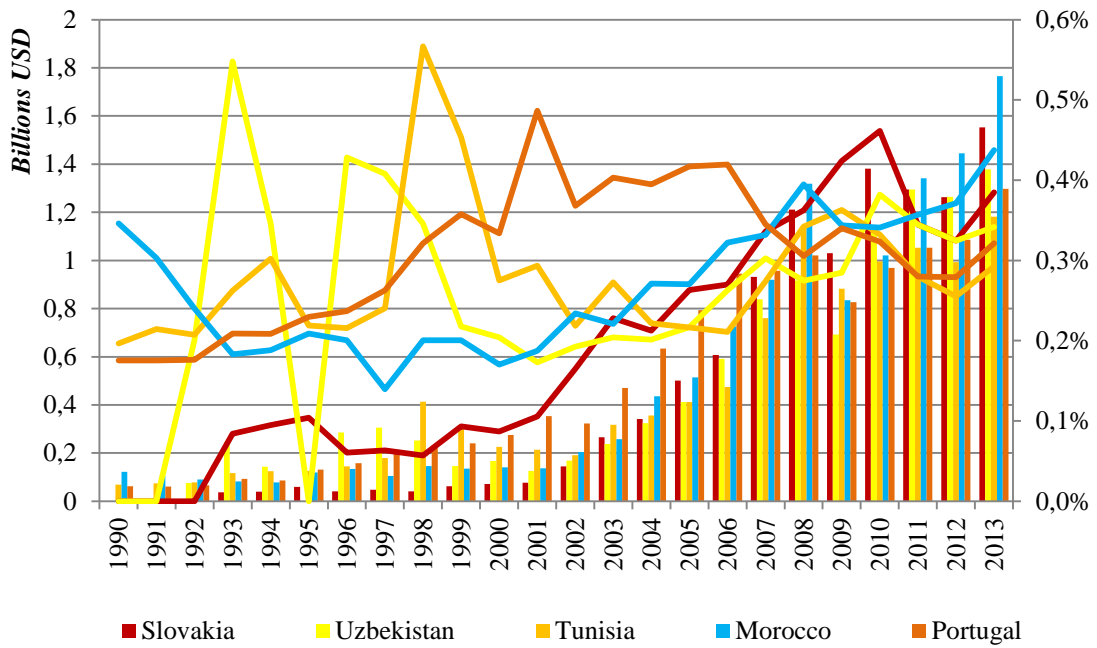


Figure 4.c. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

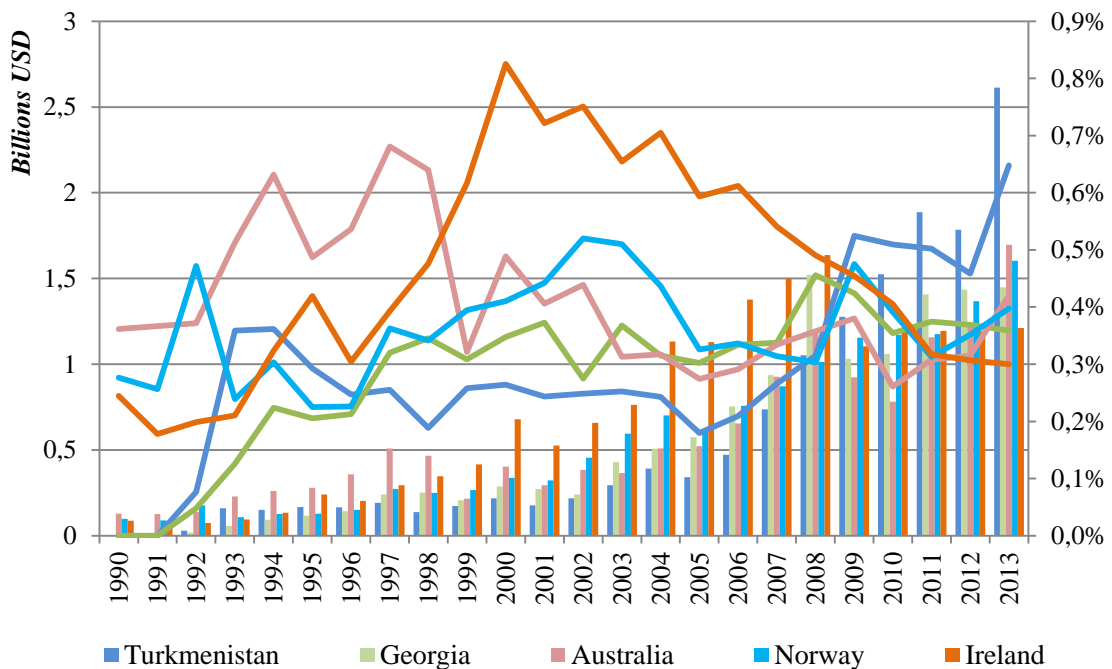


Figure 4.d. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

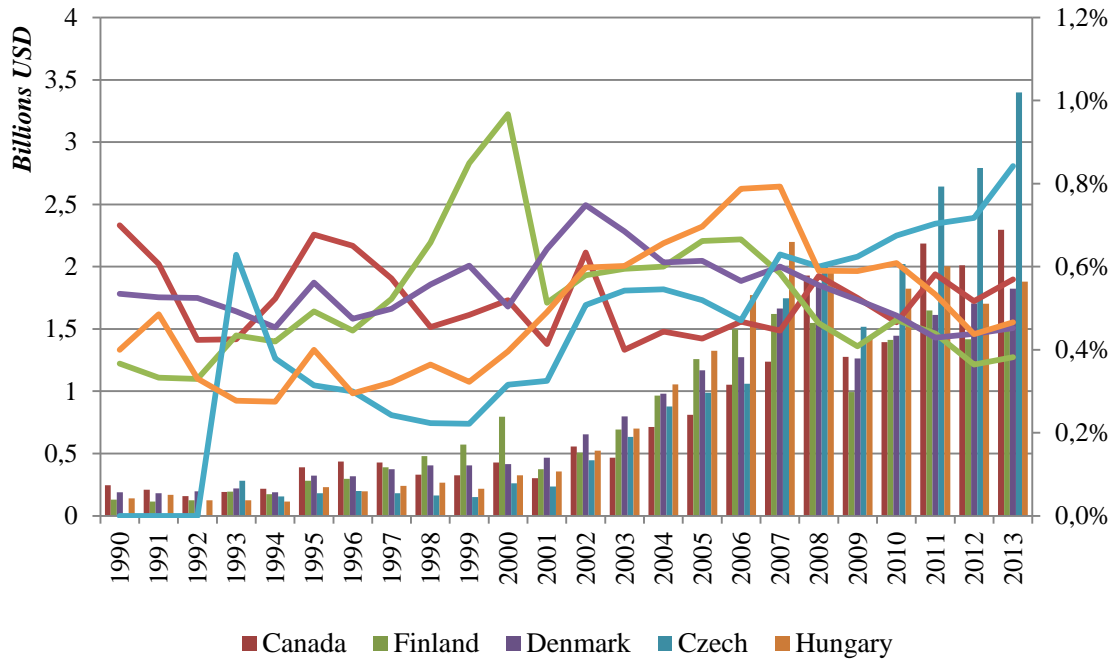


Figure 4.e. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

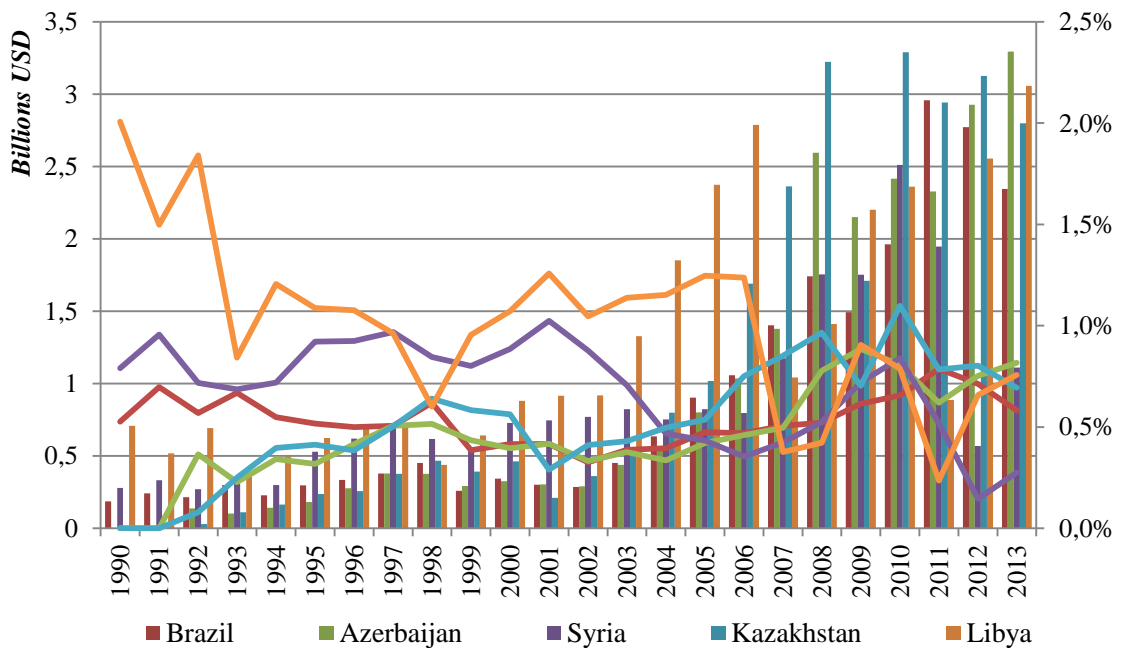


Figure 4.f. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

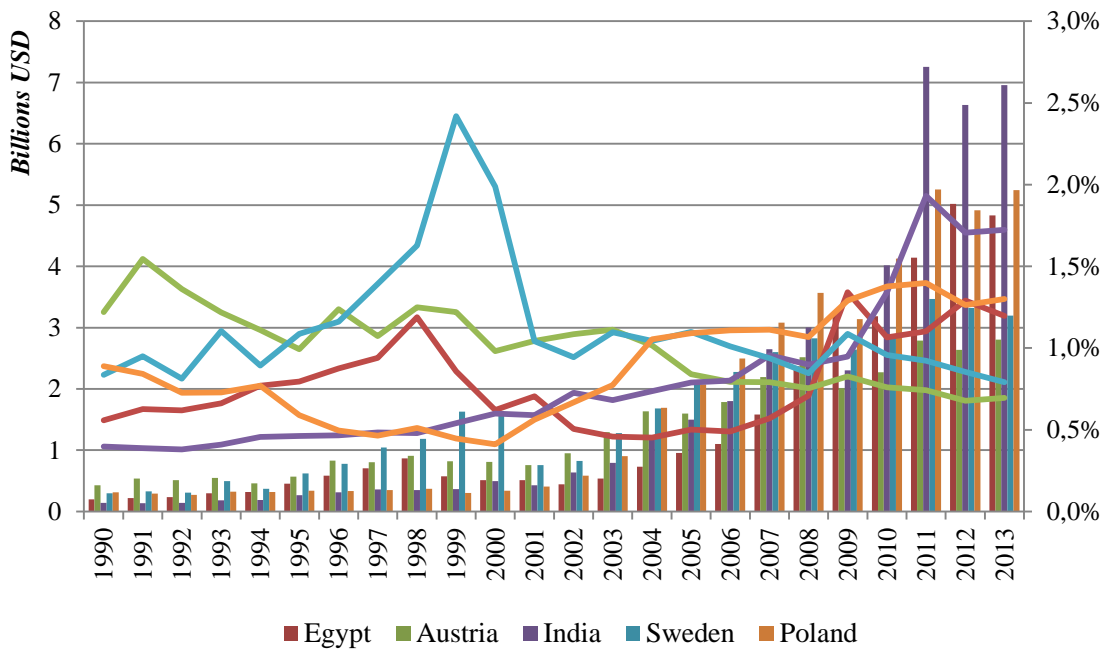


Figure 4.g. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

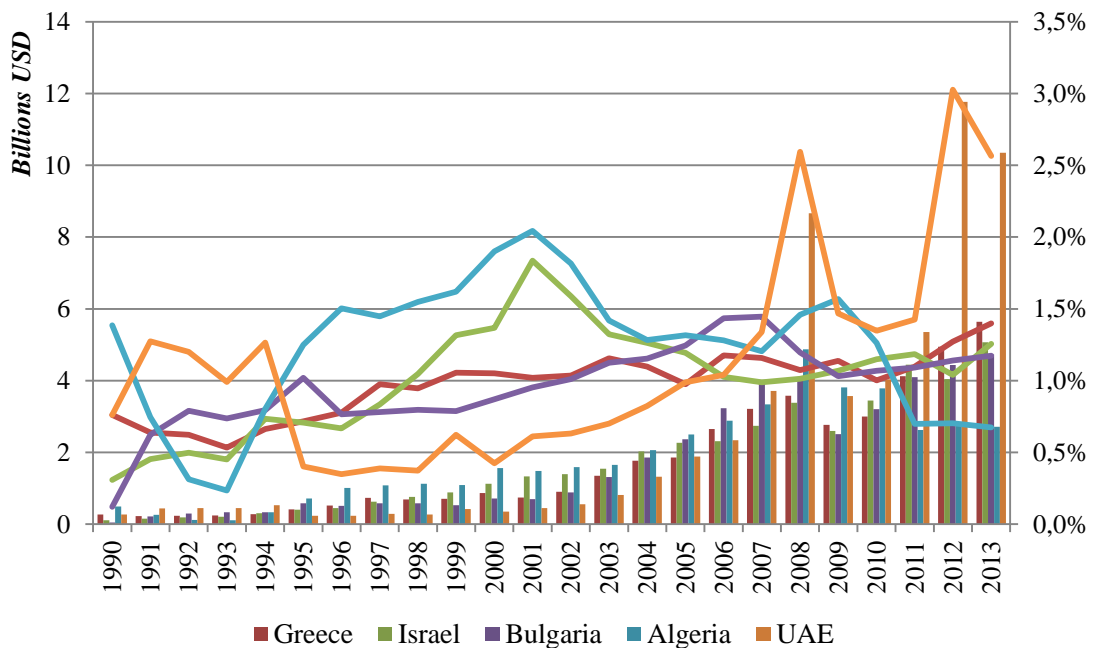


Figure 4.h. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

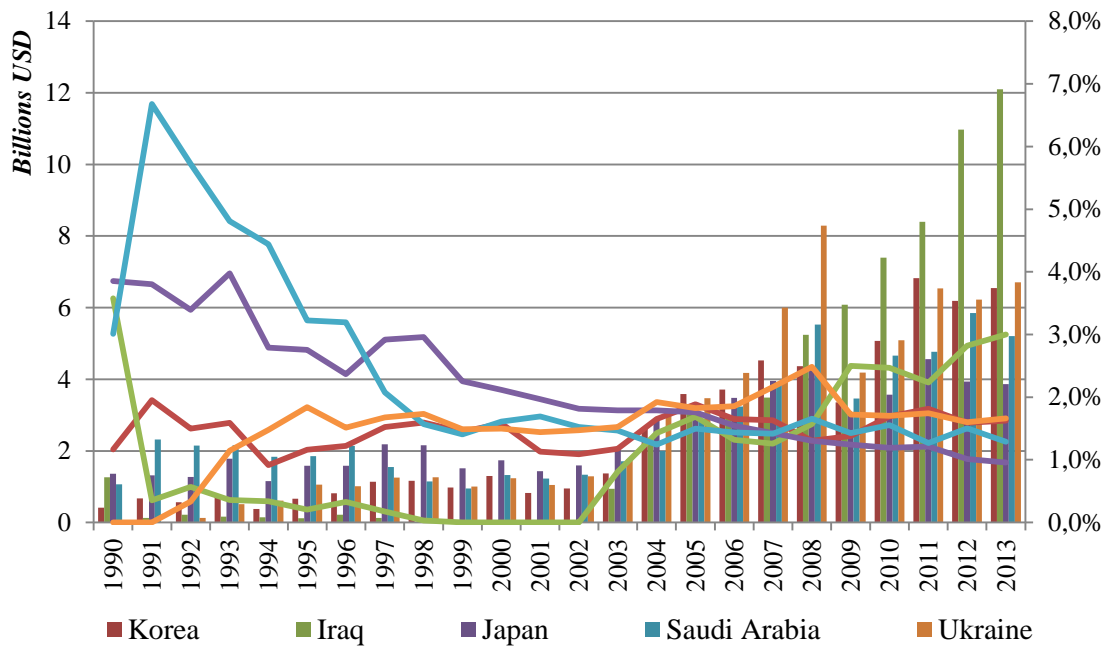


Figure 4.i. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

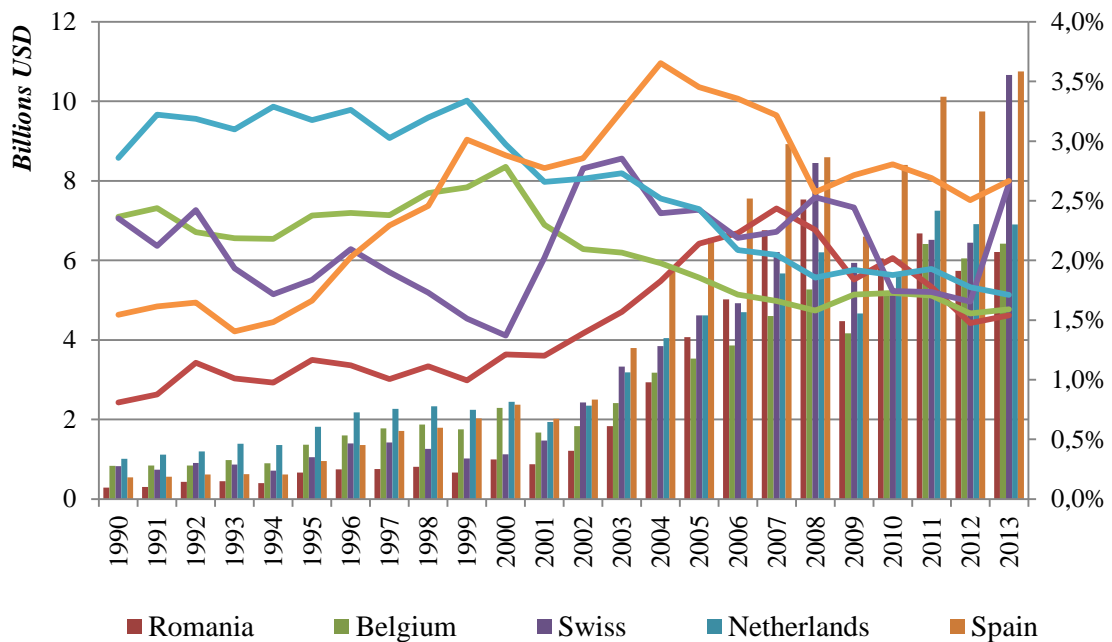


Figure 4.j. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

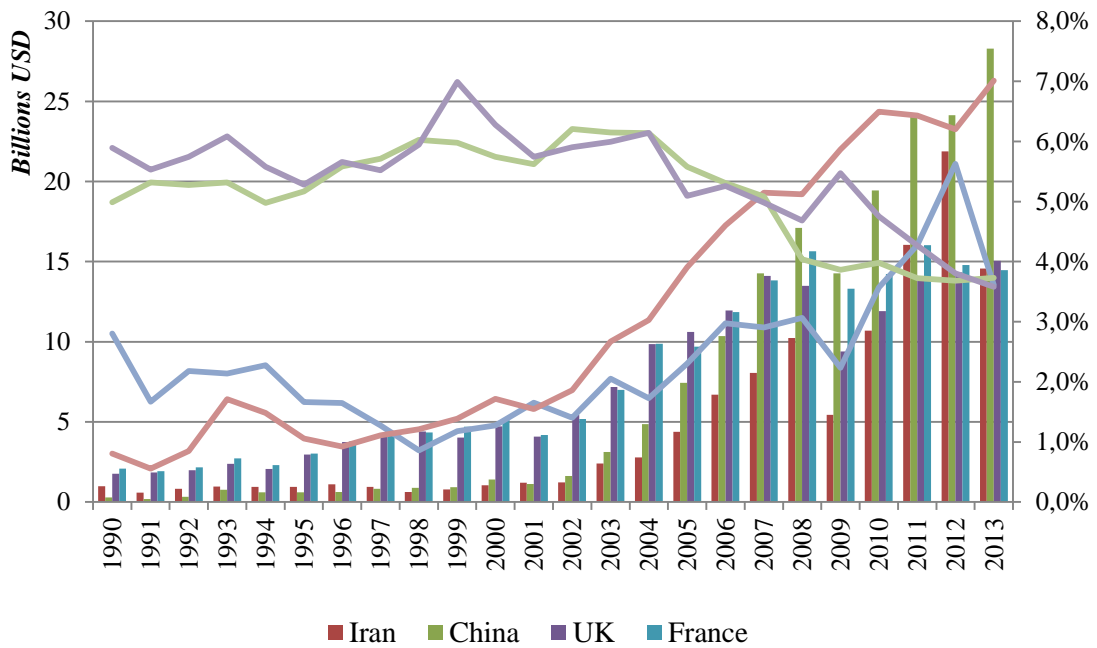


Figure 4.k. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

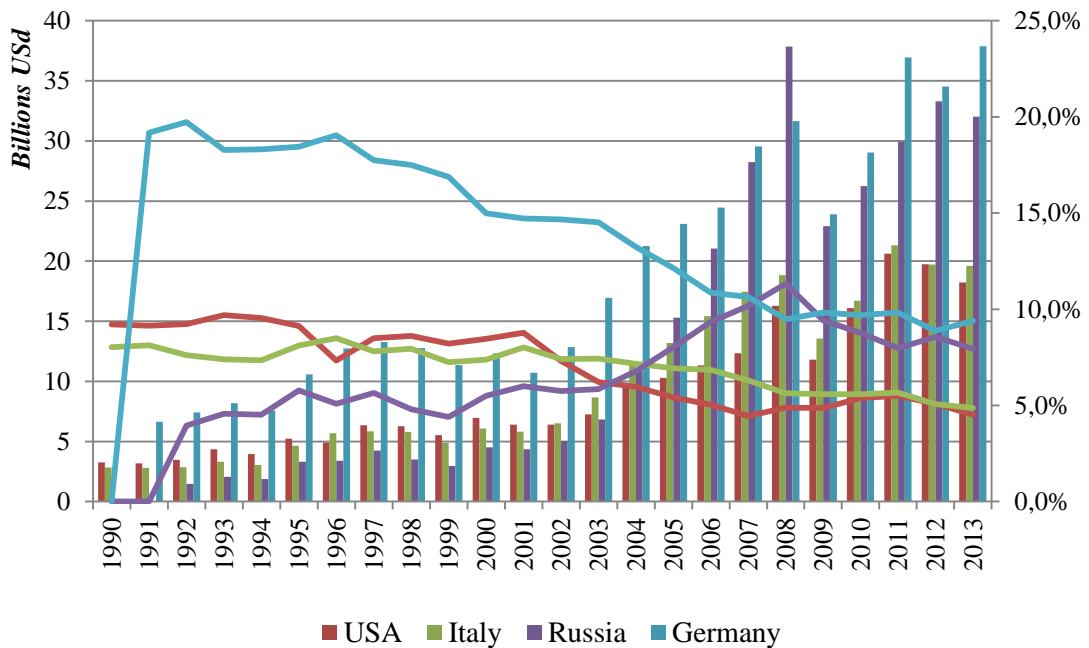


Figure 4.l. Total Trade Dynamics of Turkey by Countries, 1990 – 2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the total trade of Turkey with given country (charts), right axis refers to share of given country from total trade of Turkey (lines).

The trade with European Union countries has the largest share, which is about 50% of total trade. Among them, while Germany Italy and France are in the first place, Slovakia, Slovenia and Portugal are at last. The structure of trade relations between Turkey and the EU countries is very diverse for each member. Analysing the dynamics of trade relations with these countries, it is possible to track the growth dynamics and relatively stable growing trend over the whole period under consideration. The annual growth rate of total trade with EU countries was 17% on average, during the period under review. The most rapid growth is on the trade with Slovakia 60%, while the trade growth with Germany is 9.4 percent which is the lowest. Totally, Turkish trade volume with the EU countries has increased by 51 times, in 2013 compare to 1990.

Our further analysis will be related to the trade with Arab countries and Turkic countries. This kind of analysis also tests the impact of the similarity in culture and religious values on trade relations. Analysis of trade relations between Turkey and the Arab countries shows that the main trading partner is Saudi Arabia and Qatar has the smallest volume of trade with Turkey during the analysed period. The share of Saudi Arabia trade volume is average two percent of total trade, while the share of Qatar 0.1 is percent. The share of trade with Arab countries is average nine percent for the whole period. The trend for each country individually is growing, but taking the weighted average analysis, it shows that the growth is not significant. Illustratively, in 1990, the share of trade with Arab countries was 13%, and decreased to nine percent in 2013. The bilateral trade with Qatar is the most dynamic, but at the same time the most volatile among these countries. The average annual increase over the period was 44.7%. Thus, the Arab countries together are sixth largest trade partners of Turkey. In comparison with 1990 total trade among these countries and Turkey grew by almost 8 times. But as previously mentioned, weighted average analysis implies negative tendency.

According to Wikipedia, modern recognized independent Turkic Courtiers include only six states. These countries are Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan and Turkey. Analysis of trade relations between Turkey and Turkic countries shows that main trade partner is Kazakhstan, which accounts for about 0.5 percent share from total trade. Total trade volume with the Turkic countries is on



average 1.7 percent over the whole analysing period. Generally analysis of trade shows the positive and growing dynamics of trade relations with these countries. The share of trade with the Turkish countries was 0.7 percent in 1990, and this figure increased to 2.6 percent in 2013. Bilateral trade with Kyrgyzstan is the dynamic, which indicates about 46% average annual increase over the period under consideration. Figures indicate that the volume of trade with Turkic countries is insignificant for Turkey. To our opinion, the reason of such small trade volume is related to the fact that the market in these countries is relatively small and they have gained independence relatively recently. All of these countries, except Turkey, were part of the Soviet Union and they experienced deep structural and economic Crisis after the collapse of it. The total trade between these countries and Turkey increased by almost by 38 times in 2013 as compared with 1990. Nevertheless, as previously mentioned, if you have small market no matter how great performance you are showing. Thus, trade volume with these countries occupies the last position in trade partners list of Turkey, compare with other.

Our further analysis related to the trade with geographically close and far countries. We accept neighbour countries as close countries and far distance countries are the countries with the distance between capitals more than 5000 kilometres. This descriptive analysis is a kind of a test of the geographical distance impact on trade. The USA, Japan, South Korea, Brazil, Canada and Australia are accepted as geographically distant countries in this analysis. According to figures the Turkish main trading partner is the USA while Australia has the smallest volume of total trade among these countries, during the analysed period. The trade share with USA accounts for an average of seven percent, while the share of Australia is about 0.4 percent on average. Total volume of trade with these countries is on average 12% for the whole analysing period. Generally, the figures illustrate the positive and growing dynamics of trade with these countries. The weighted average analysis demonstrates the decrease of total trade volume from 16% in 1990 to nine percent in 2013. Thus, geographically distant countries together are 5<sup>th</sup> largest trade partner of Turkey and compared with 1990 the trade among these countries and Turkey increased by almost 6 times in 2013.

The analysis of geographically close countries includes neighbour countries which have land border with Turkey. These countries are Georgia, Iran, Syria, Iraq, Greece and Bulgaria. According to our analysis the main trade partner is Iran, among these countries, and the share of bilateral trade with Iran accounts for an average of 2.3 percent from total during the analysing period. Bilateral trade with Georgia has the lowest volume and indicates 0.3 percent on average. Total trade volume with neighbour countries is on average six percent for the whole period under consideration. Our analysis demonstrates that bilateral trade with these countries increased from 8 percent in 1990 to 9 percent in 2013. Despite the fact, that some of these countries have politically unstable conditions, the trade dynamics maintains positive and growing during the period under consideration.

### **3.1. Export Structure**

Analysis of export structure development of Turkey with respect to product classification ISIC rev. III is given in Figure5. We can see significant increase in the manufacturing and mining industries. Although these industries, along with both wholesale and retail trade and agricultural products, had sharp decrease during the WFC, but as the illustration shows, in 2012 export curve has reached its pre-Crisis period value. Structural industry analysis shows that the manufacturing and mining industries are the main export locomotive for the overall Turkish export. On average, during the analysing period, the share of manufacturing export was at 90% of total export. The rest of the industries have at total about 10% share. Despite the increase in agriculture and forestry export, the figure is illustrating decrease in share curve. The share of this industry significantly decreases to 3.72 percent in 2013 from 15.6% in 1990. Average annual growth rate of manufacturingreached12.68% and in comparison with 1990, the industry has grown by 13.5 times in 2013. In the mining industry product group, we are also seeing a stable and a high percentage of annual growth rates, which is 13.5% on average per year, and in comparison with 1990 the industry has grown almost by 12 times in 2013.

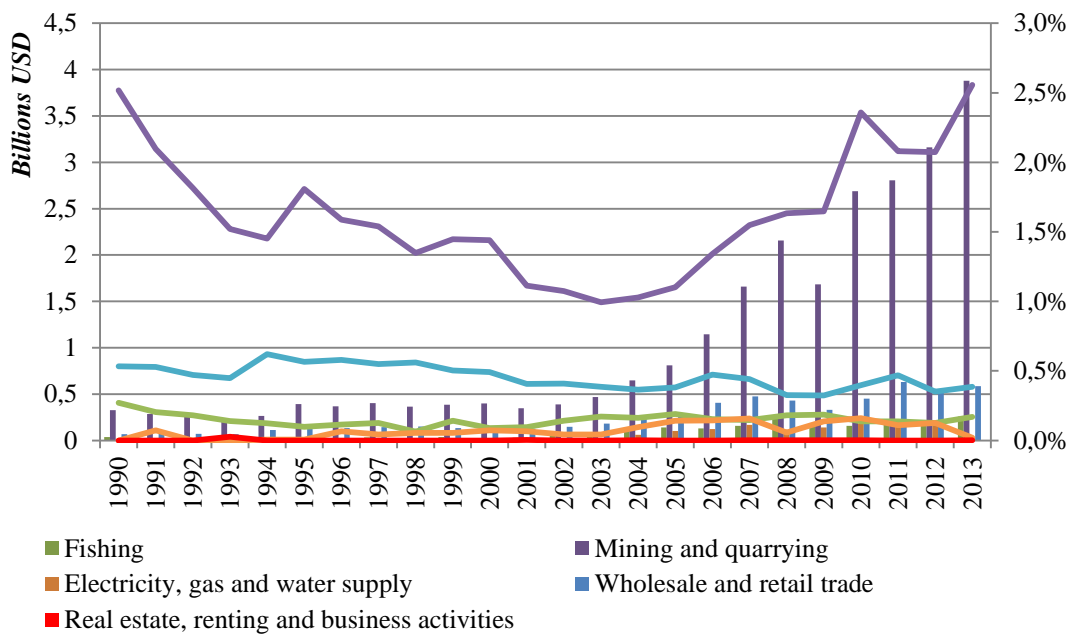


Figure 5. *Export Structure Dynamics of Turkey by Product in ISIC rev. III Classification, 1990–2013*

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the export of Turkey in given industry (charts), right axis refers to share of given industry in total export of Turkey (lines).

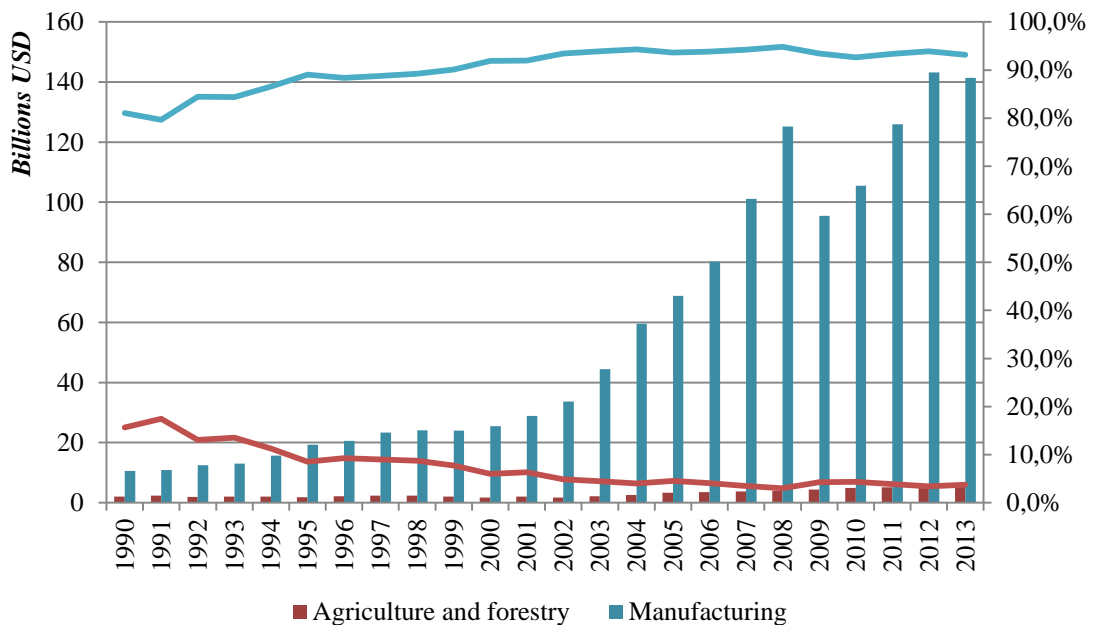


Figure 5. (Cont.) *Export Structure of Turkey by Product in ISIC rev. III Classification, 1990–2013*

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the export of Turkey in given industry (charts), right axis refers to share of given industry in total export of Turkey (lines).

When analysing export structure according to BEC classification, chart given in Figure 6, rapid growth of intermediate goods could be observed after 2003. The “lion share” of export is made by consumption goods until the year 2006. We can observe the identical share volumes of intermediate and consumption goods in the year 2006m which is 45% from total export. The share rate is on average 47% for consumption goods and on average 45% for intermediate goods during the period under consideration. The rest is the share of capital goods products. The average yearly growth rate is 20.3% for capital goods, 12.60% for intermediate goods and 10.50% for consumption goods during the analysing period. Thus, compare to 1990 in 2013 capital goods export grew by 51 times, intermediate goods grew by 12.5 times and consumption goods grew by 9.11 times.

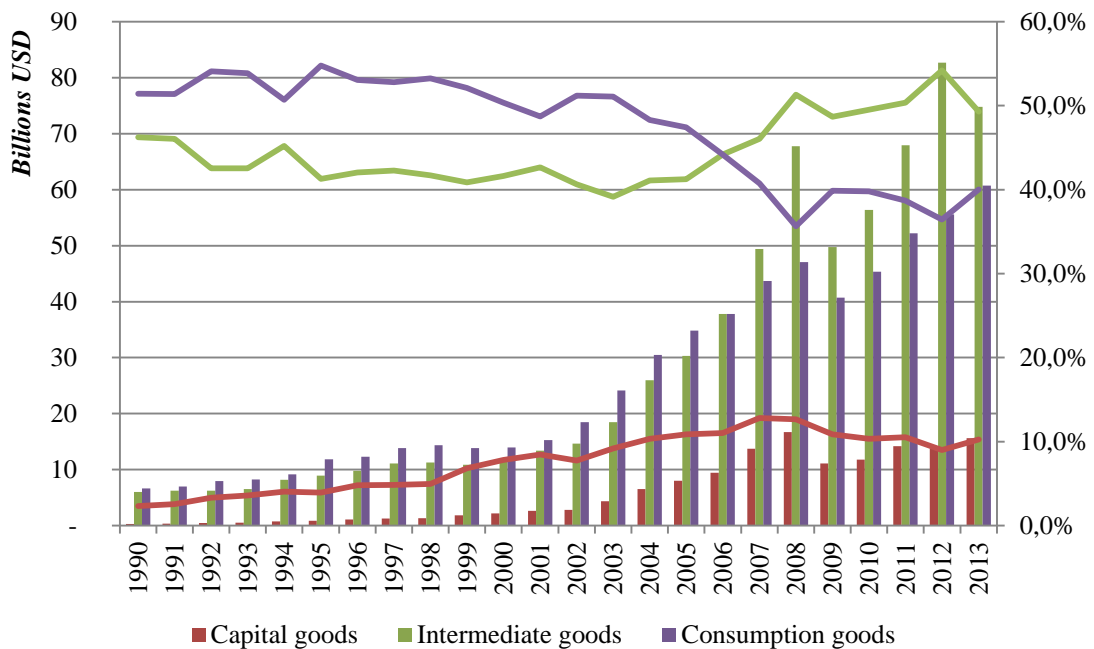


Figure 6. Export Structure Dynamics of Turkey by Product in BEC Classification, 1990–2013

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)  
 Note: Left axis shows the export of Turkey in given product (charts), right axis refers to share of given product in total export of Turkey (lines).

Figure 7.a. illustrates that Turkish export relations with Kyrgyzstan, Tajikistan, Pakistan DPRK and Cuba have the lowest share, among other reviewing countries, during the analysing period. These countries aggregately account for an average of 0.5 percent share from total Turkish export. The figure is almost the same comparing with total

trade analysis (see section above). As we notices in section above, the structure of export between Turkey and these countries is relatively the similar to each other. The largest export share belongs to food and beverages, according to BEC classification. Despite high volatility, the export dynamics has positively growing tendency. Moreover, high growth rates could be observed after Financial Crisis in 2001, but except DPRK. We also observe a sharp decrease after 1992 on export curve to DPRK, and sharp increase to Cuba in 2007. The export to DPRK didn't growth after that sharp decline in 1992 and were almost at the same volume during the period under consideration. During the whole period average annual growth rate is 61% for Kyrgyzstan; 67% for Tajikistan; 95% for Cuba, 16% for Pakistan and only five percent for DPRK. Thus, Turkish export, in 2013 compared with 1990, to Kyrgyzstan increased by 212 times, by 400 times for Tajikistan, by 36 times for Cuba and by 6 times for Pakistan and decreased by 0.24 time for DPRK.

The analysis of the Figures 4 a-l shows that Turkey's main trading partners are the United States, Italy, Germany and United Kingdom. Together, these countries account for an average of 35% share from total export of Turkey during the analysing period. We observed that while high technology items are largely exported to USA, capital goods and transport and transport equipment export directed to Italy and Germany respectively. Generally analysis of export structure shows the positive and growing dynamics of export relations with these countries, except slight decrease in 2009 resulted by WFC. During the whole period average annual export growth rate is 9.2 for the USA, 9.9 percent for Italy, 12.4% for the UK and 7.2 percent for Germany. Thus, in 2013 compared with 1990, Turkish export to the USA raised by 5.8 times, by 4 times to Germany, by 11 times to UK and by 6timesto Italy. Despite the high growth rate of export curves, we can observe decrease on share curves. The figure indicates a sharp decrease on German share curve. The share of export to Germany was 25% in 1991 while the figure illustrates 9.2 percent in 2013. To our opinion, this suggests that Turkey stared to diversify export markets and differentiate partners in New Millennium years.

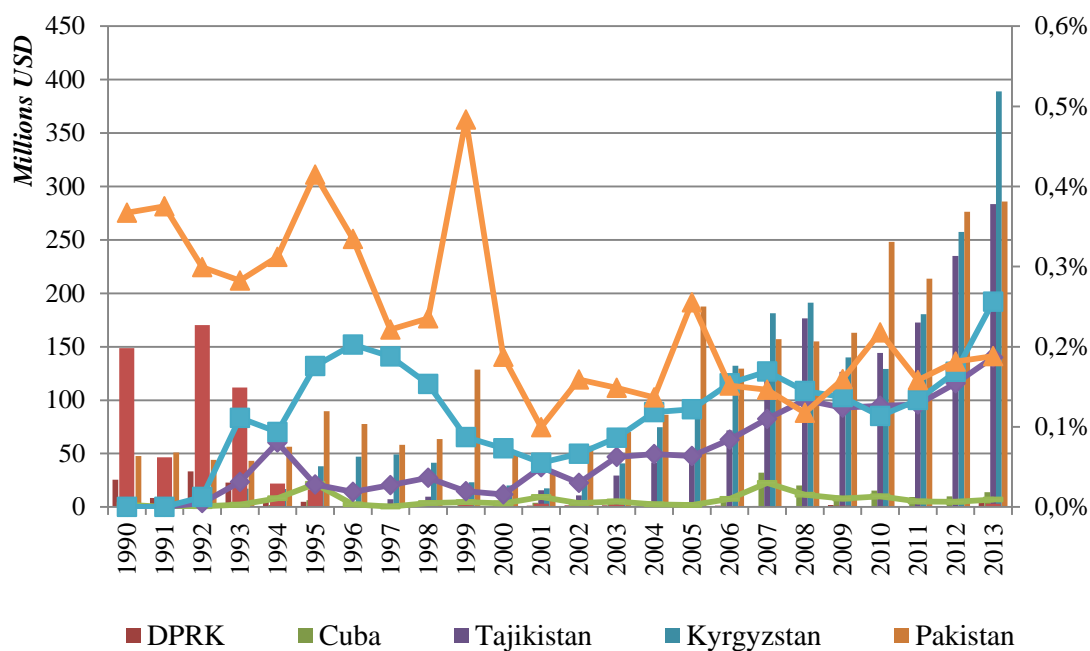


Figure 7.a. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

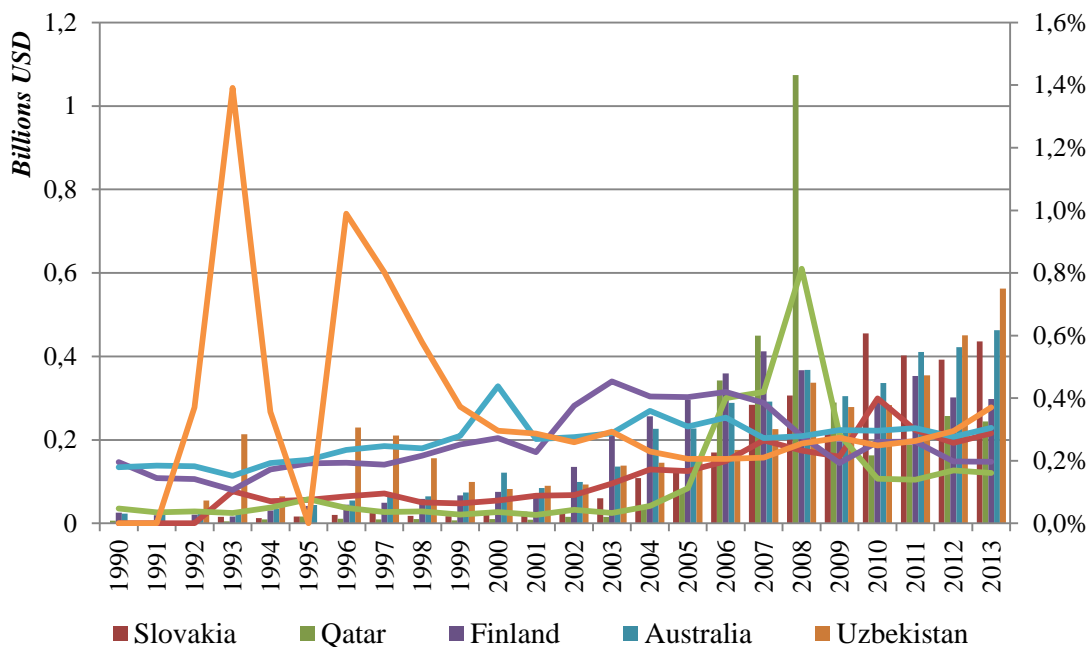


Figure 7.b. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

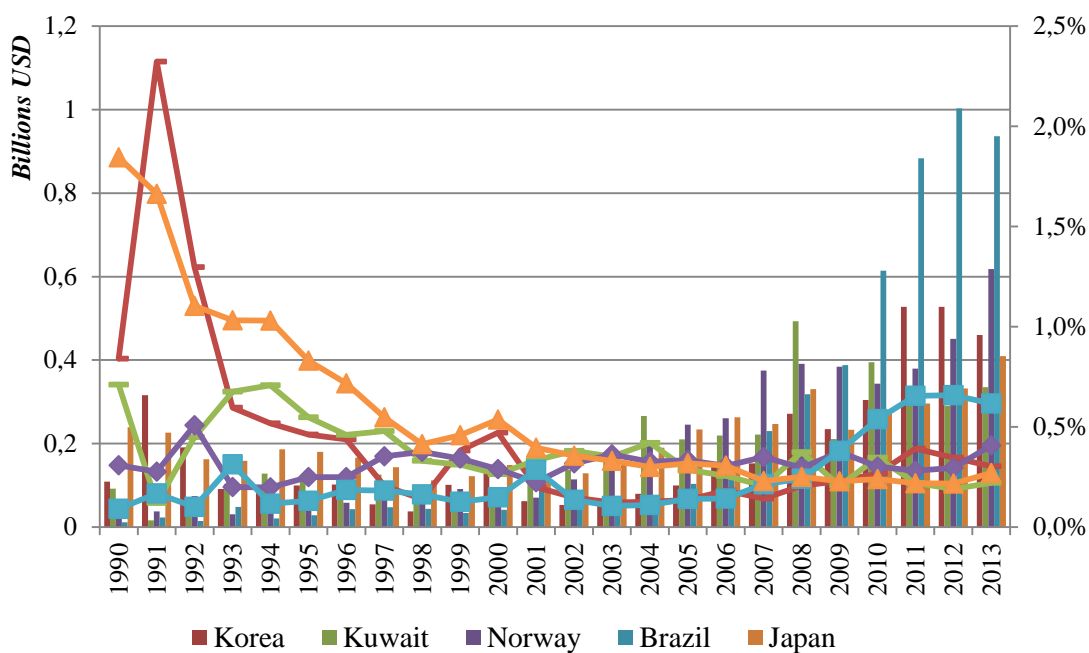


Figure 7.c. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

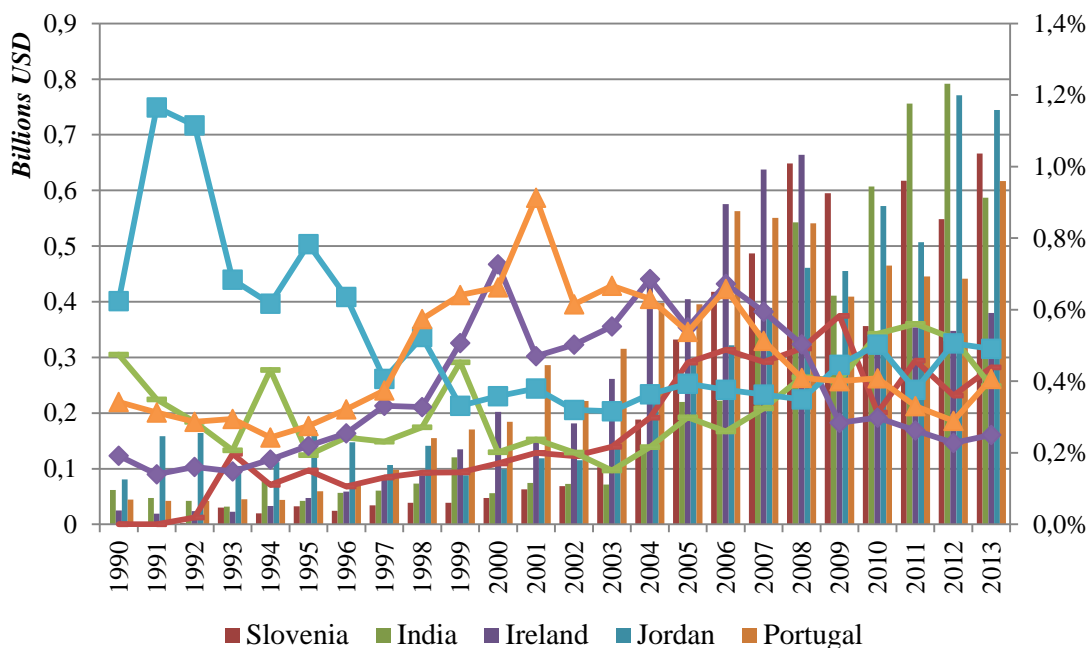


Figure 7.d. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

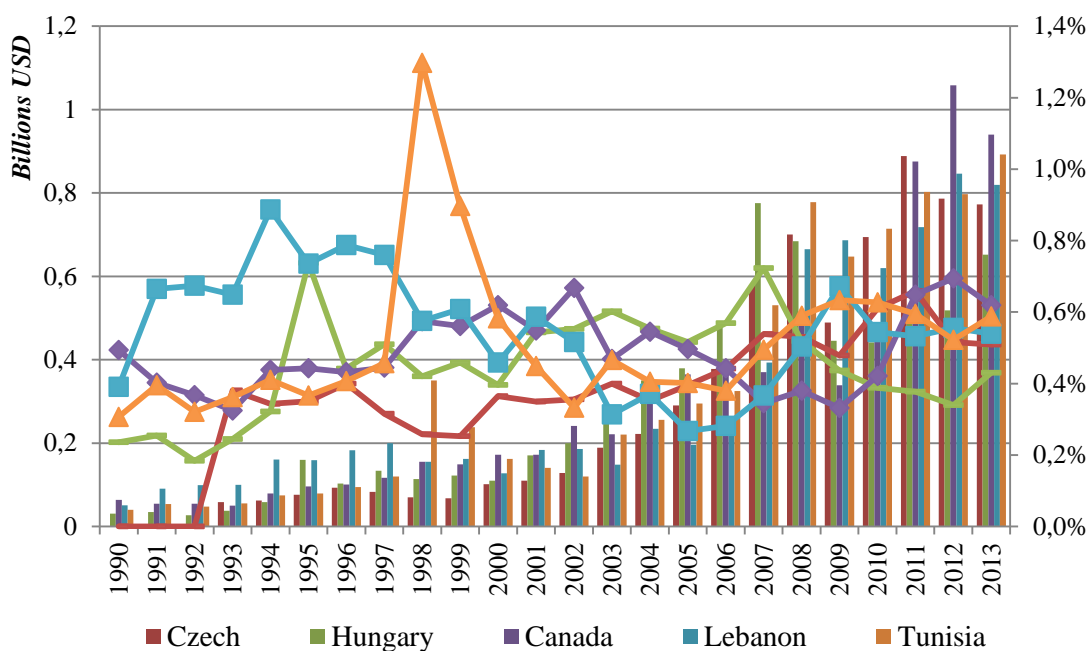


Figure 7.e. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

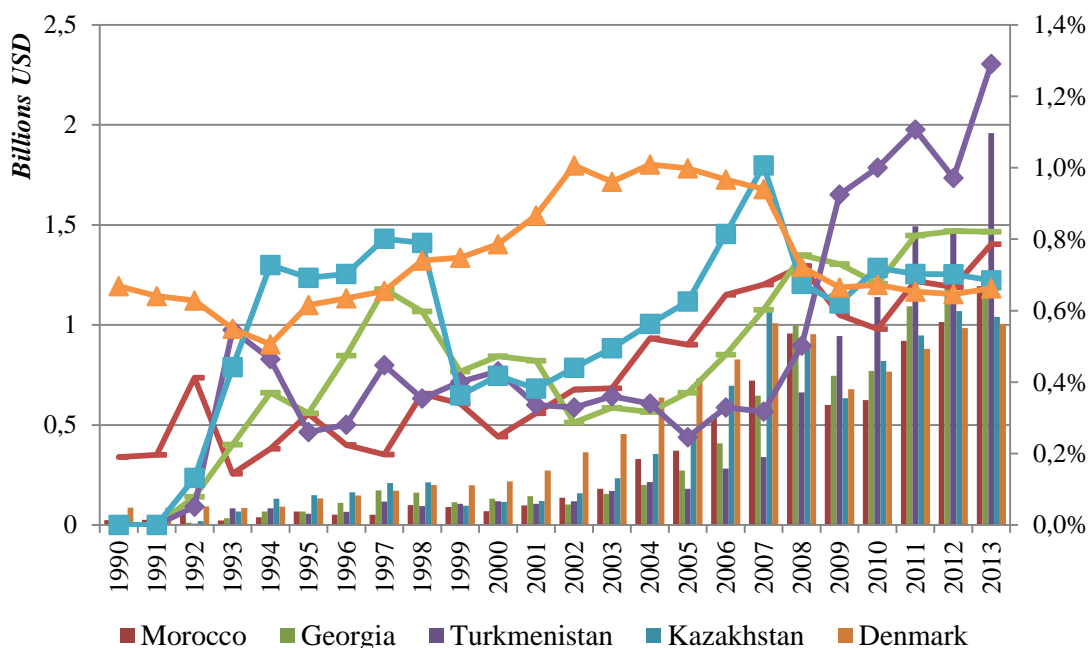


Figure 7.f. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).



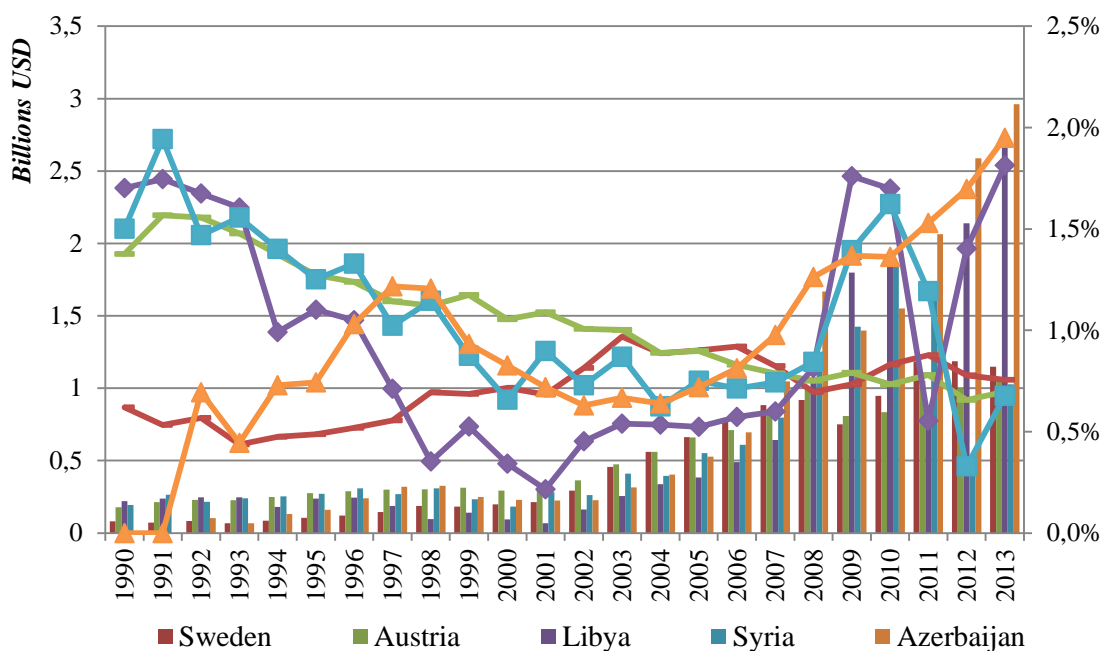


Figure 7.g. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

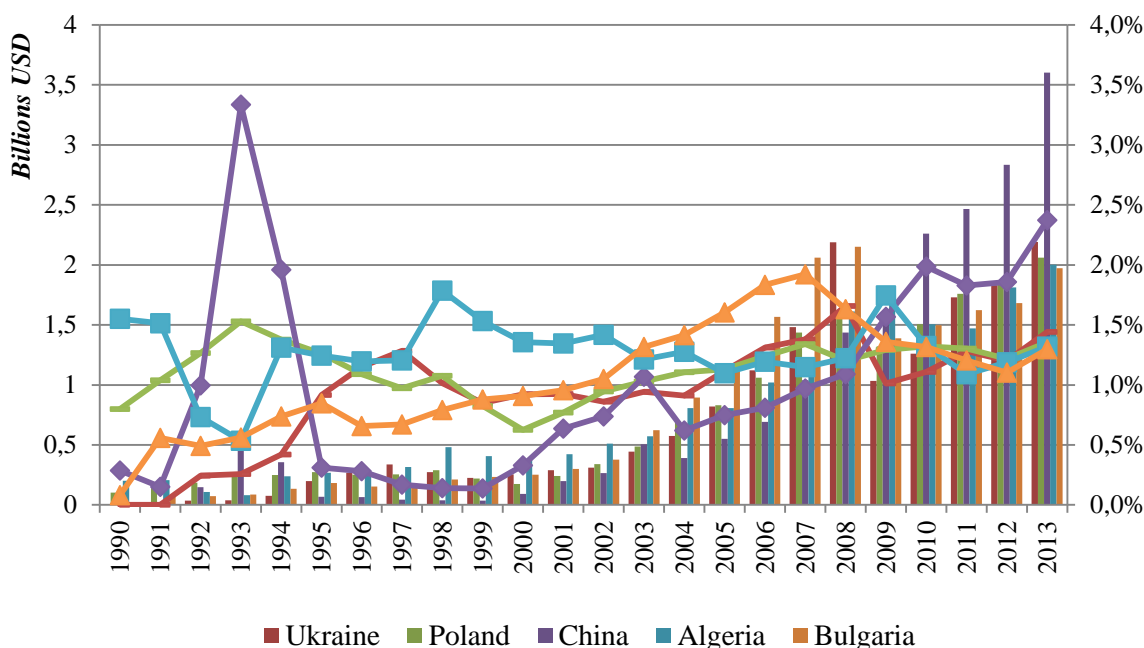


Figure 7.h. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

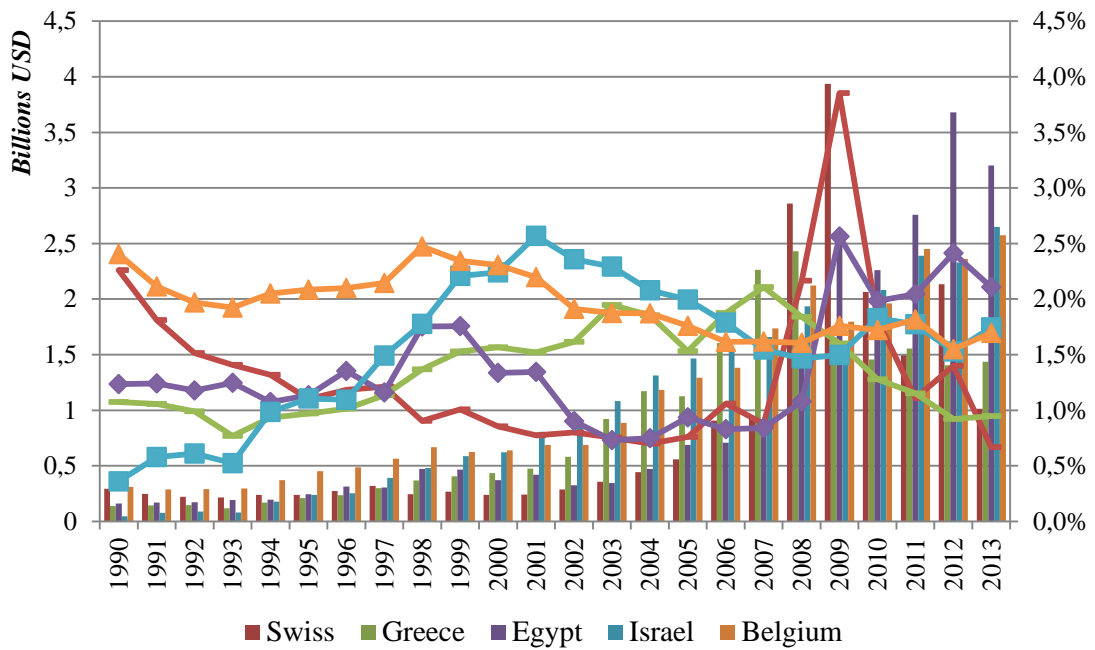


Figure 7.i. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

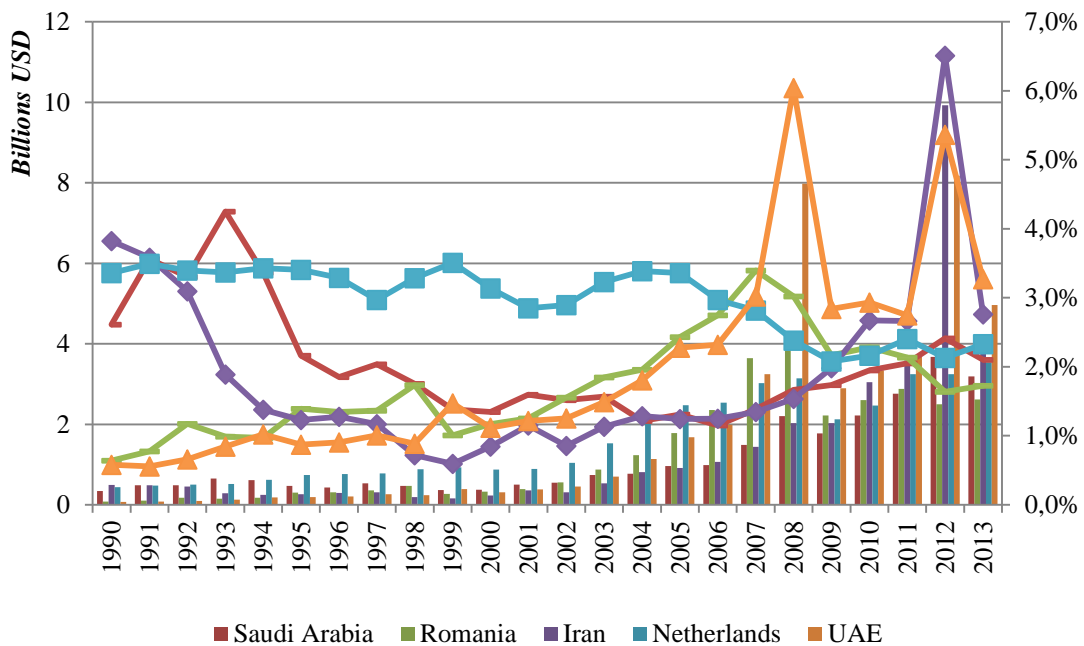


Figure 7.j. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

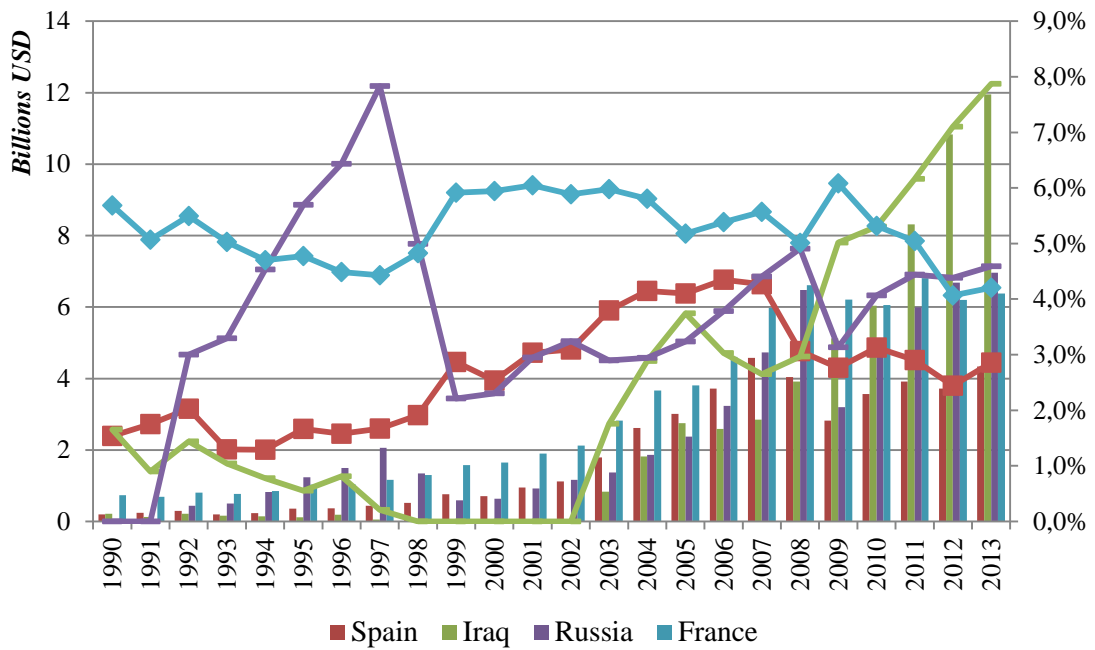


Figure 7.k. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

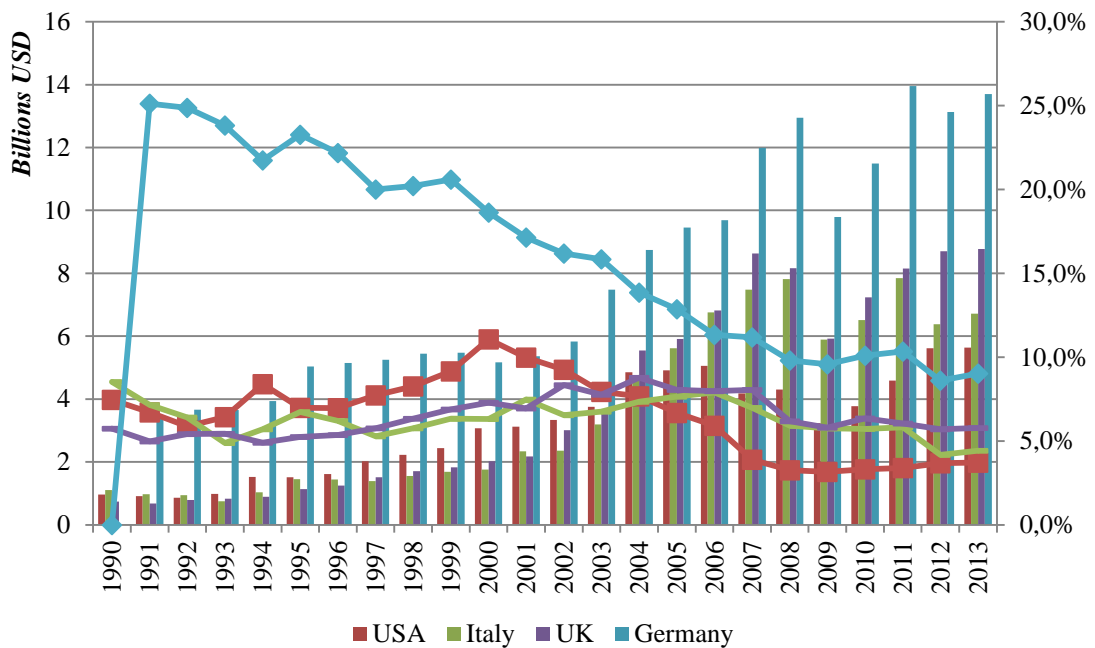


Figure 7.l. Export Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the export of Turkey to given country (charts), right axis refers to share of given country from total export of Turkey (lines).

Among Arab countries the main exporting trading partner is Saudi Arabia, while Qatar has the lowest share during the analysing period. The share of export to Saudi Arabia is on average one percent and to the Qatar about 0.1 percent from total export. Total export volume to Arab countries is an average of 20% from total export, while total trade volume was nine percent. Figure illustrates significant growth of export share to Arab countries, while in 1996 the share was 18% in 2013 it increased to 33%. Moreover, the average yearly growth rate is 18%, while when total export growth is 12% during the analysing period. Thus, the Arab countries together are third largest export partner of Turkey. The export to these countries in 2013 grew by almost 12 times in comparison with 1990, while total trade increased by 5 times.

Export to European Union countries has the largest volume and EU, on aggregate, main export partner to Turkey during period under consideration. On average 50% of Turkish export directed to EU countries. Among them, while Germany Italy and UK are in the first place, Slovakia, Slovenia and Portugal are at last. The structure of export to these countries is very diverse for each member. Analysing the dynamics of export to these countries, it is possible to track the growth dynamics and relatively stable growing trend over the whole period under consideration. Despite the observed growing tendency the share of export to EU countries is decreasing. While in 2004 the share was 58%, it decreased to 41% in 2013. On average, for the period under review, the annual growth rate of export to EU countries is 11%. The most rapid growth rate of export has Slovakia 60%; export to Germany has the lowest level 9.4 percent.

Export share to OECD countries account on average for almost 50% during the analysing period. The figure illustrates decrease on share curves, while the share of export to OECS was 63% in 1996; it decreased to 45% in 2013. Inversely, the volume of export has increasing trend with the 10% annual average growth rate. Turkey started to play an important role among Turkic countries and in Middle East region and to our mind this resulted to diversification of export. Taking into account political aspect, cultural convergences and geographical close distance Turkey started to increase export to African countries also.

According to the analysis of Turkish export to Turkic countries the main export partner is Kazakhstan. The same was identified in total trade analysis. Share of export to Kazakhstan is 0.56 percent from total export, while the total export volume to Turkic countries on average is 2.77 percent. Generally analysis of export shows the positive and growing dynamics with these countries. In 1990, the share of export to Turkic countries was 3.2 percent, and this figure increased to 4.5 percent export in 2013. Thus, the Turkic countries are 9<sup>th</sup> export partner of Turkey and as it was mentioned above Turkey has the most developed economy among them and year by year increasing trade with these countries.

According to the analysis of geographically far countries the main export partner is the USA and the USA is the 4<sup>th</sup> export partner for Turkey. At the same time export to Australia, has the smallest volume during the analysing period. These results are the same result as we noticed in total trade analysis. Moreover, the share of export to USA is seven percent, while to Australia is 0.2 percent. Total volume of export to far distance countries is on average eight percent during the analysing period. Generally analysis of export shows the positive and growing dynamics with these countries but weighted analysis illustrates decrease on share curves. Weighted analysis illustrates that the share of export to far distant countries decrease to 5 percent in 2013 while it was 9 percent in 1990. Thus, geographically distant countries together are 6<sup>th</sup> largest export partner of Turkey and in comparison with 1990, the export to these countries increased by almost 7 times which is almost the same results as total trade analysis.

Neighbour countries analysis illustrates that Turkish export is mainly going to Iraq, which accounts for an average of 2.3 percent share from total export. As illustrated in the Figure 7.k., during the period 1998-2002, there were no export to Iraq either and we think that the share could be higher than above noticed. Export to Georgia has the smallest volume which is about 0.19 percent on average during the period under consideration. Total volume of export to neighbour countries has on average eight percent share for the whole analysing period. Moreover, the volume of export to neighbour countries increased by 27 times in 2013 compared with 1990, and during the analysing period average annual growth rate of export is 18%. Thus, Turkey is

making high export to neighbour countries. Need to note that with Iran, which is under UN Security Council sanctions, Turkey has a high export growth rate and Turkey and Greece relation also have conflict, but these does not related to trade.

### **3.2. Import Structure**

The product structure analysis of development of Turkish import with respect to product classification ISIC rev. III is given in Figure 8. During the analysing period import volume curves are volatile but have growth tendency. The figure illustrates sharp decrease at almost all industries, except agriculture and forestry, further growth allows to pre-Crisis period in 2011. Manufacturing and mining industries are the main importing among the others. Moreover, import share of manufacturing was on average 79% and 16% of GDP during the analysing period. Mining industry accounts for 14% import share in total and on average three percent from GDP during the period under consideration. Rest of the industries have at total seven percent share. Average annual growth rate of manufacturing import is reaching 13.63% and in comparison with 1990, the import has grown by 12 times in 2013. Positive growth dynamics could be also observed in the mining industry, with average yearly growth rate 13.05% and total growth by 9 times in 2013 compare to 1990. It is point to note that rapid growth of these two industries could be observed Financial Crisis of 2001 in Turkey. Thus, the average yearly growth rate in manufacturing import was 9.2 percent before Crisis and 17.7% after Crisis. Mining industry was growing at the average rate of 6.6 percent before crisis and 18.9% after Crisis. To our opinion; we can state that economical and financial changes made after Crisis had positive impact on value added production and economic development.

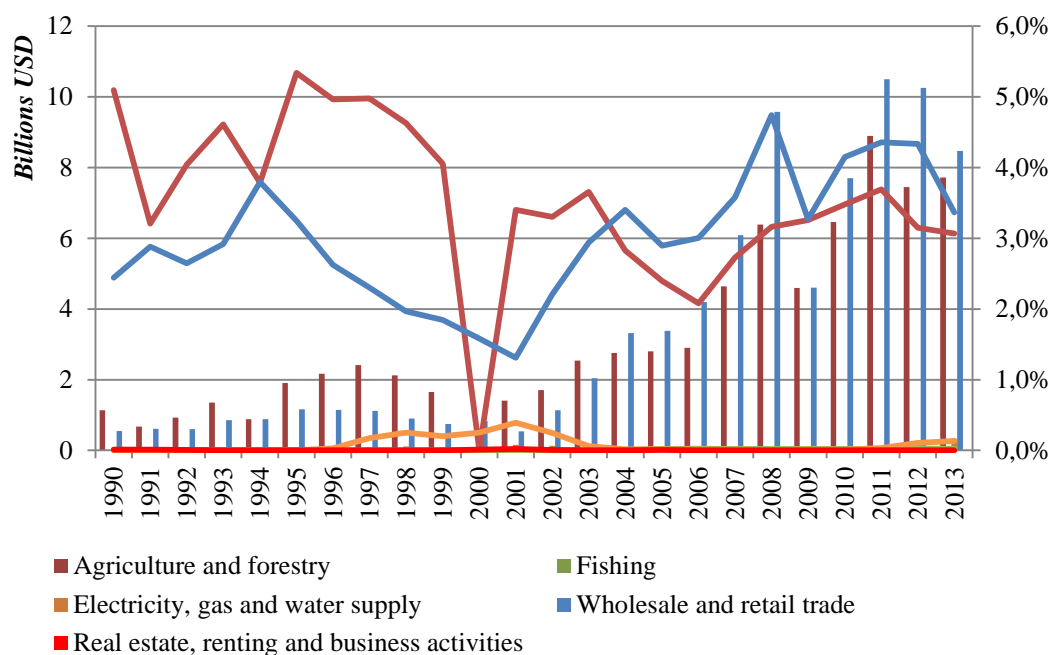


Figure 8. *Import Structure Dynamics of Turkey by Product in ISIC rev. III Classification, 1990–2013*

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the import of Turkey in given industry (charts), right axis refers to share of given industry in total import of Turkey (lines).

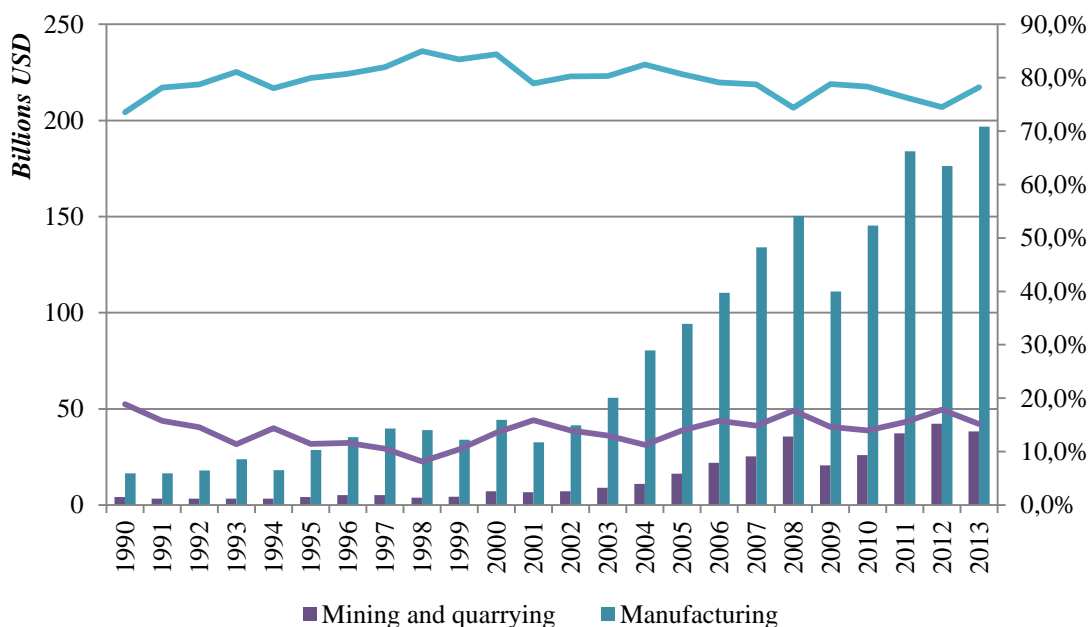


Figure 8. (Cont.). *Import Structure Dynamics of Turkey by Product in ISIC rev. III Classification, 1990–2013*

Source: UNCOMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis shows the import of Turkey in given industry (charts), right axis refers to share of given industry in total import of Turkey (lines).

When analysing import structure according to BEC classification, chart given in Figure9, rapid growth of intermediate goods could be observed after 2001. The figure is illustrating positive growth dynamics of all observing industries. The average yearly growth rate is 13% for capital goods, 13% for intermediate goods and 17.1% for consumption goods during the analysing period. Compare to 1990 in 2013 capital goods import grew by 9 times, intermediate goods grew by 11 times and consumption goods grew by 14.4 times. Another significant point is that in 1993 intermediate goods import was six percent of GDP in 2013 this number reached to 28%. To our opinion, one of the reasons for such rapid growth of intermediate goods import is the active production in TOFAS, i.e. automobile production assembling. TOFAS stated active production after 2001, when financial situation in Turkey got stable. Turkey automobile factory mainly based in Bursa. This factory is producing and assembling car under such world brands as “Ford”, “Peugeot”, “FIAT” and etc. Thus for assembling, it needs to be import intermediate goods and which ended with high average growth rate.

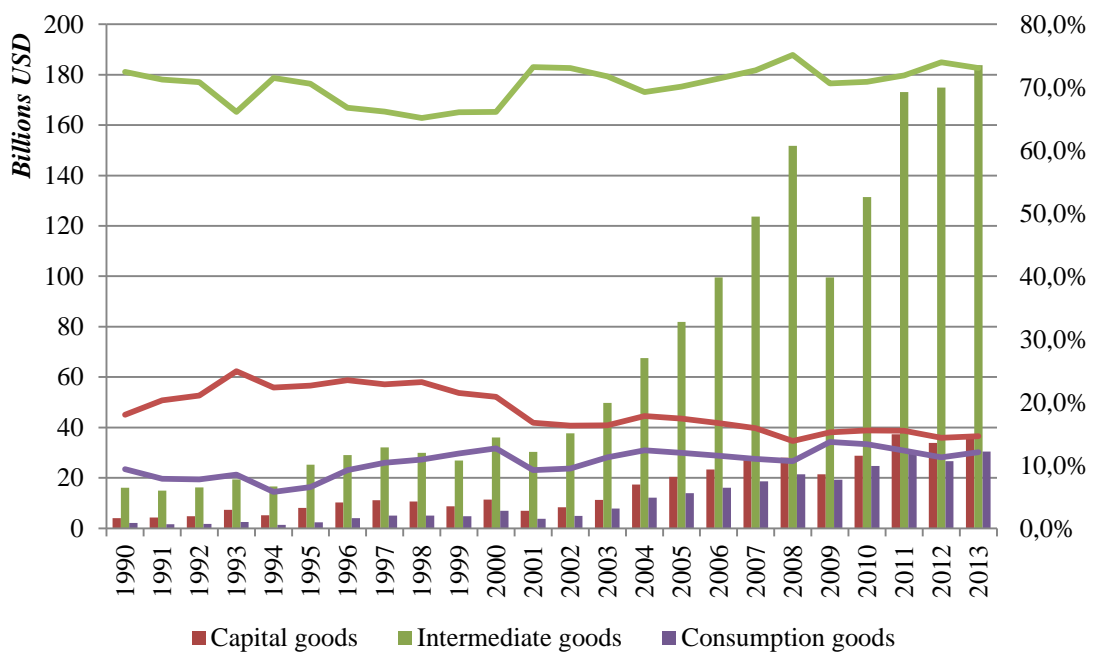


Figure 9. Import Structure Dynamics of Turkey by Product in BEC Classification, 1990–2013

Source: Turkey Statistical Institute database, 2014, <http://www.tuik.gov.tr> (Access Date: 25.02.2014)

Note: Left axis shows the import of Turkey in given product (charts), right axis refers to share of given product in total import of Turkey (lines).



According to the Figures 10 a–l Turkey's main import trading partners are the China, Italy, Russia and Germany. Together, these countries account for an average of 32% share of Turkish total import, during the analysing period. We observed that while high transport and high technology equipment are largely imported from Germany and China, capital goods energy imported from Italy and Russia respectively. Generally analysis of import structure shows the positive and growing dynamics except some volatilities resulted by WFC. While the import volume from with China, Germany and Italy has relatively stable dynamics, import carver of Russia has a sharp jump since 2003. As stated above, this jump is due to the start-up of "Blue Stream" gas pipeline. During the whole period average annual import growth rate is 27% percent for the China, 11.43 percent for Italy, 20.78% for the Russia and 11.5 percent for Germany. Thus, in 2013 compared with 1990, Turkish import from China raised by 100 times, by 7 times from Germany, by 7 times from Italy and by 24 times from Russia. The figures for Germany, Italy are almost identical while the figure from China is dramatically different. Chinese growth explained by logical outcome from global Chinese expansion which we can observe in first decade of XXI century.

Import from European Union countries has the largest volume and EU, on aggregate, main import partner to Turkey during period under consideration. On average 40% of Turkish import comes from EU countries. Among them, while Germany Italy and Switzerland are in the first place, Poland, Netherlands and Romania are at last. The structure of import to these countries is very diverse for each member. Analysing the dynamics of import from these countries, it is possible to track the growth dynamics and relatively stable growing trend over the whole period under consideration. On average, for the period under review, the annual growth rate of import from EU countries is 10%. The most rapid import growth is from Slovenia 56%, while import from Germany has the lowest level 11.7%. The reason of such high growth rate is almost absence of trade relations with Slovenia before 1997 and followed impetuous growth after. Compare to 1990 import of Turkey from EU countries increased only by 3 times while total trade increase was 51 times and export was 45 times.

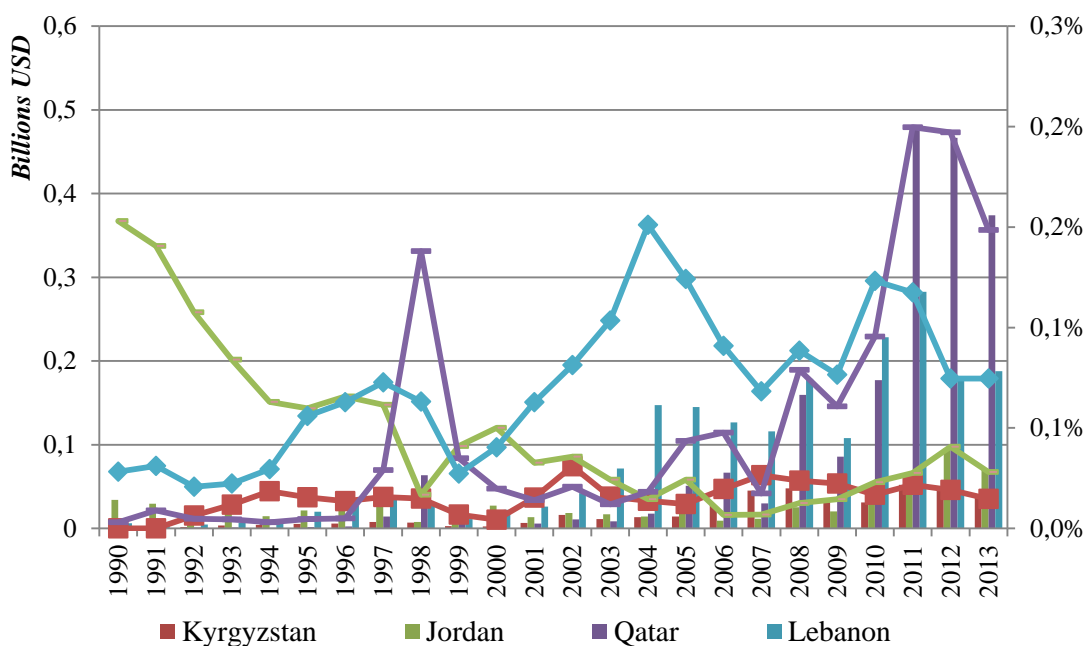


Figure 10.a. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

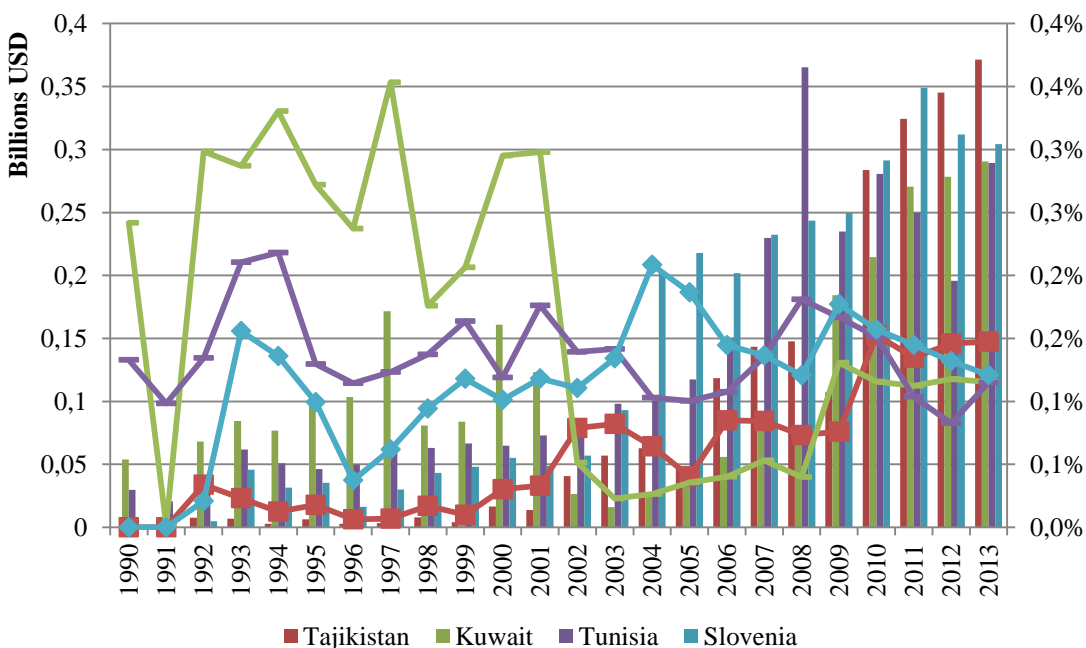


Figure 10.b. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

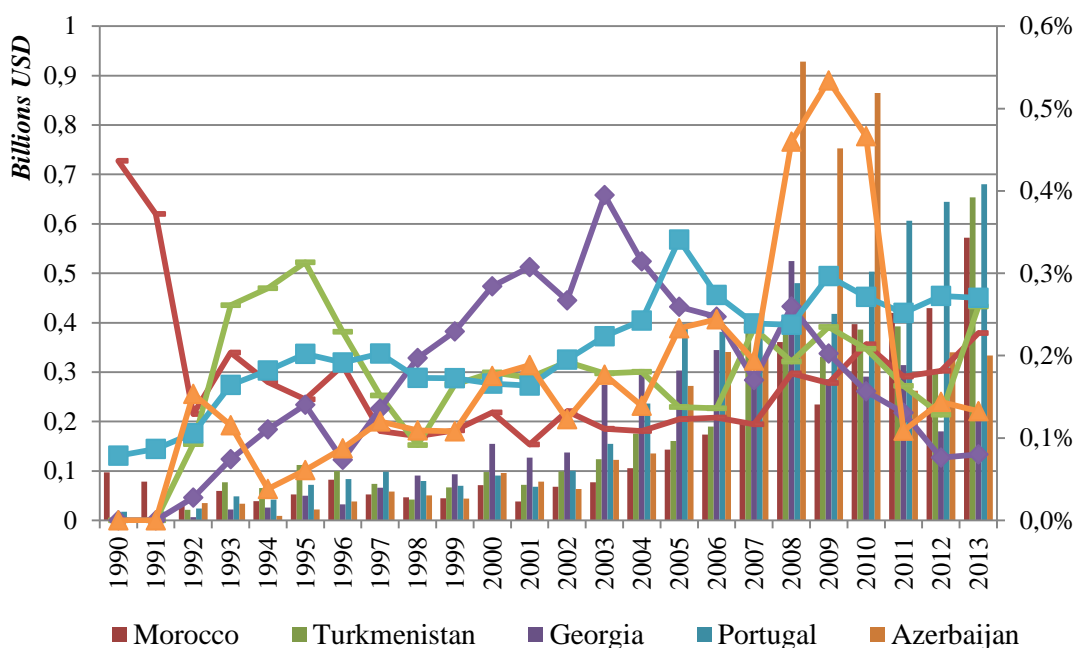


Figure 10.c. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

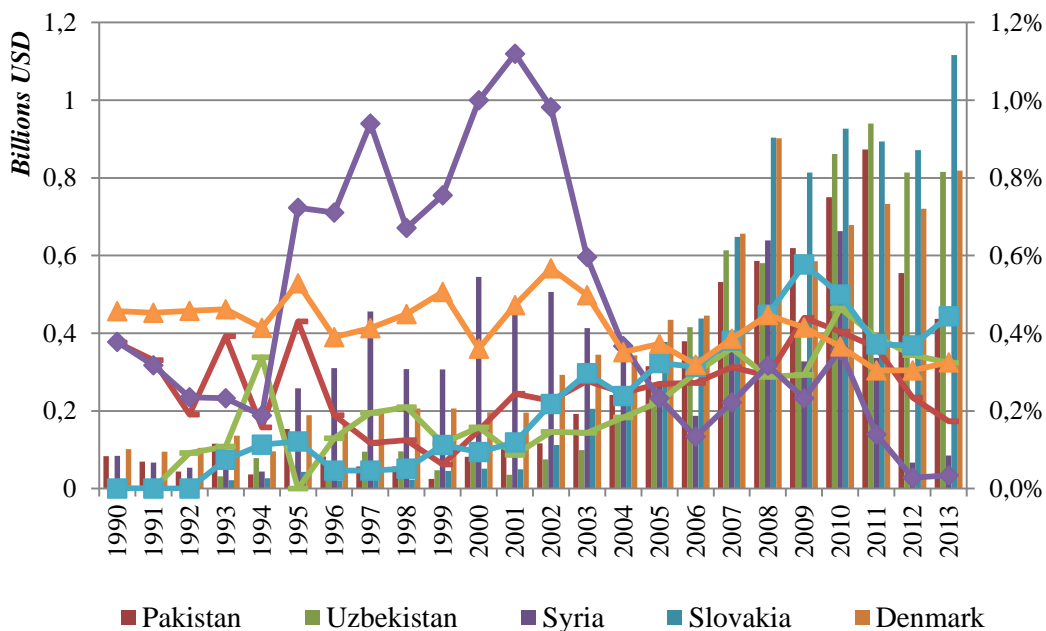


Figure 10.d. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

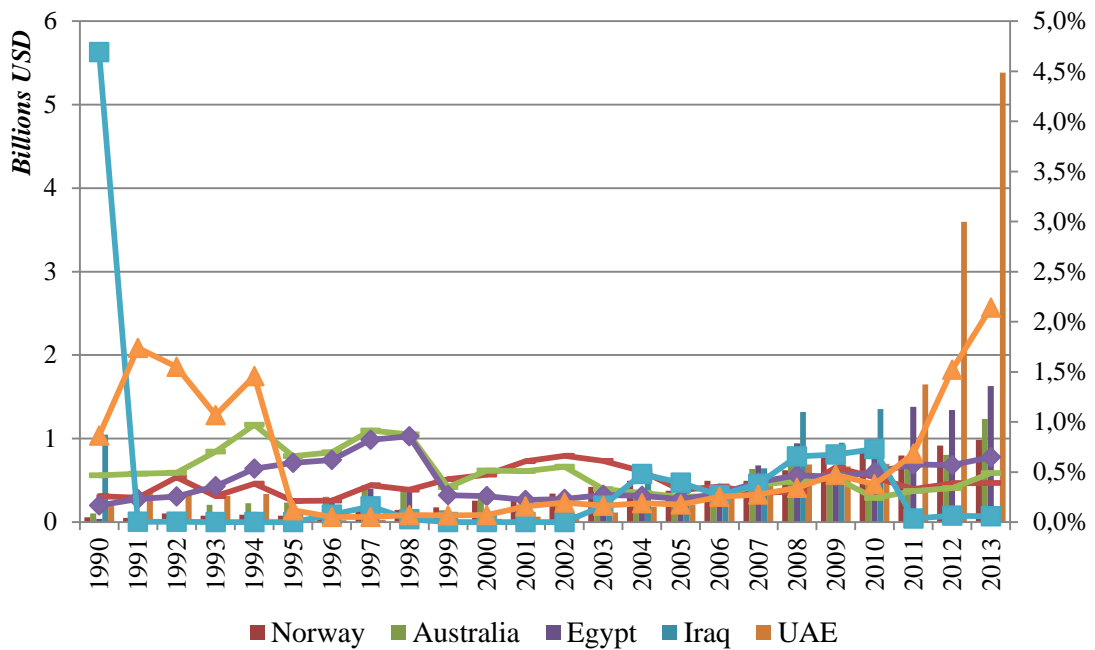


Figure 10.e. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

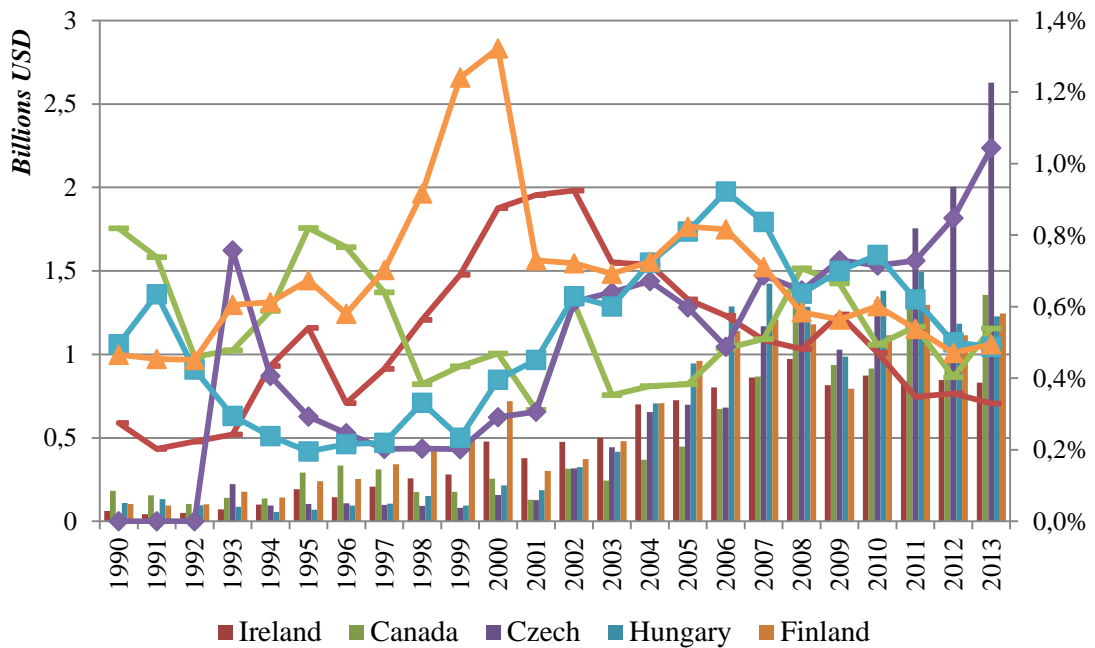


Figure 10.f. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

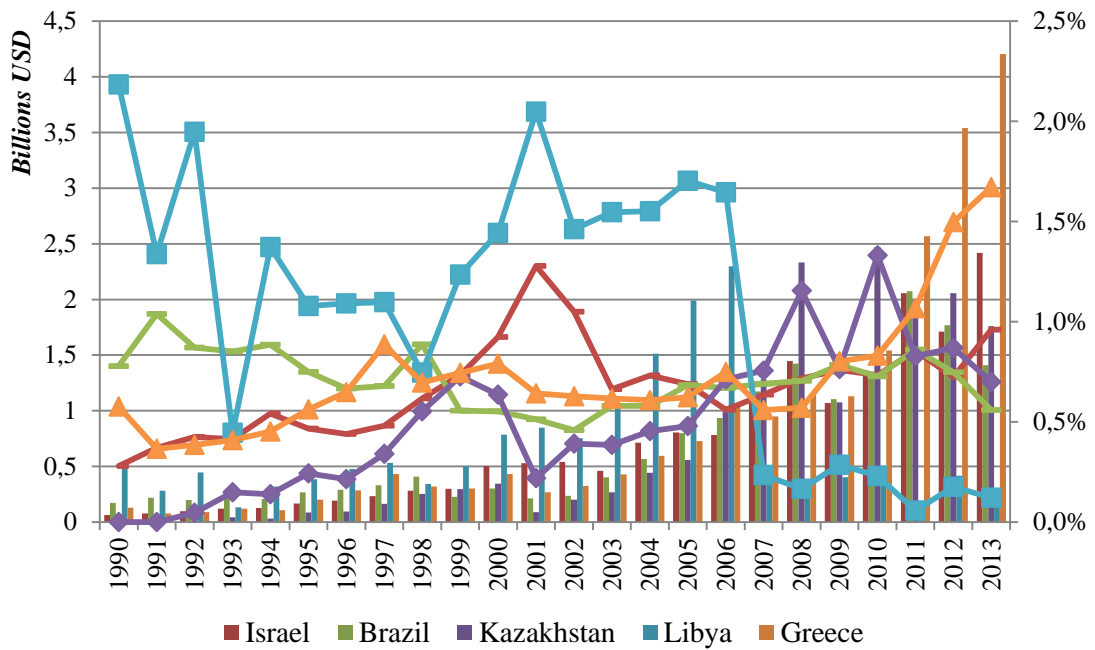


Figure 10.g. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

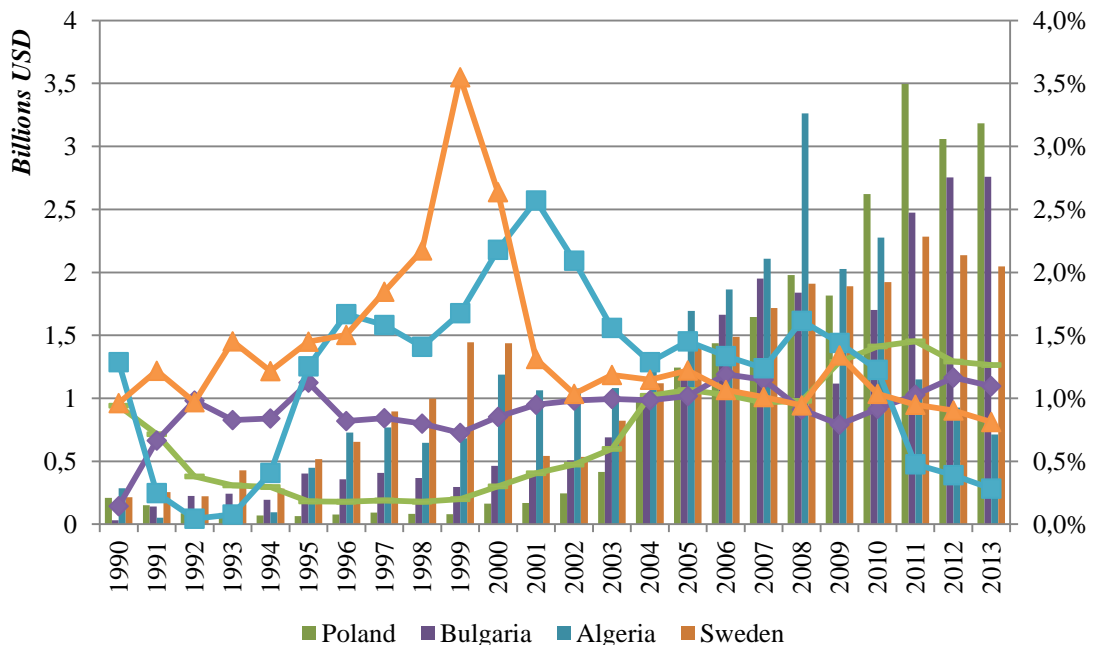


Figure 10.h. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

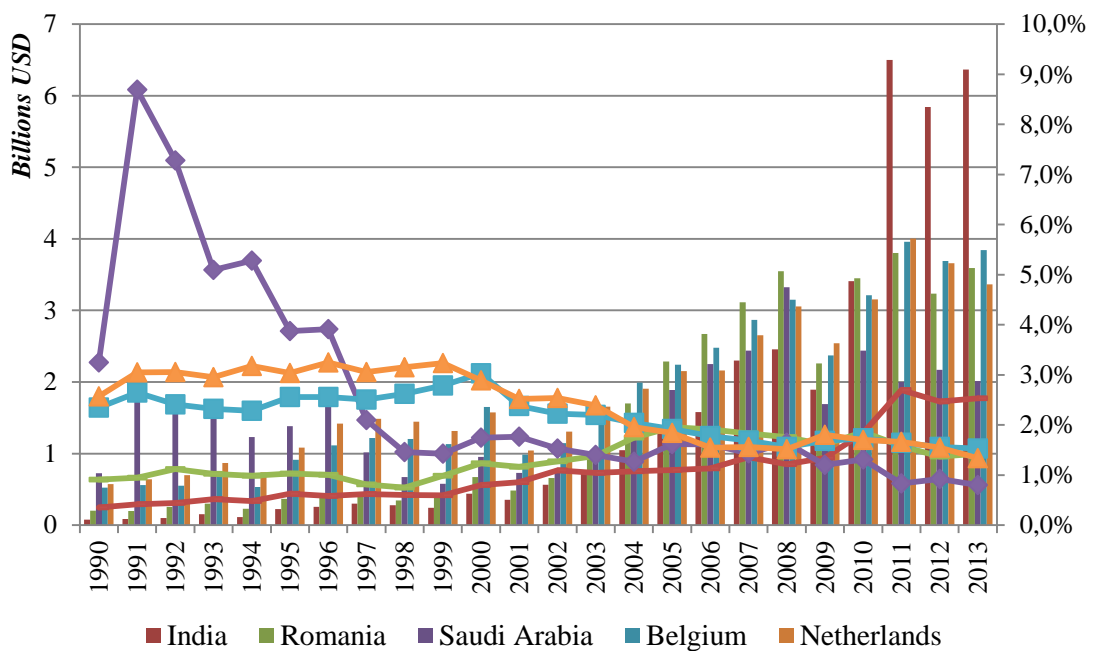


Figure 10.i. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

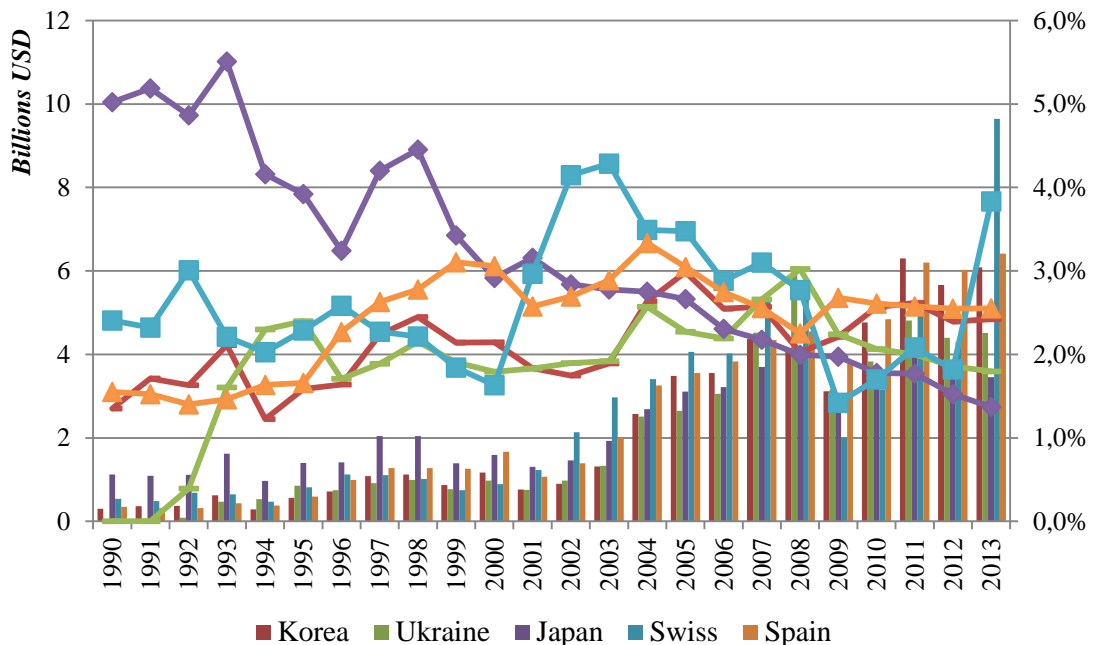


Figure 10.j. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

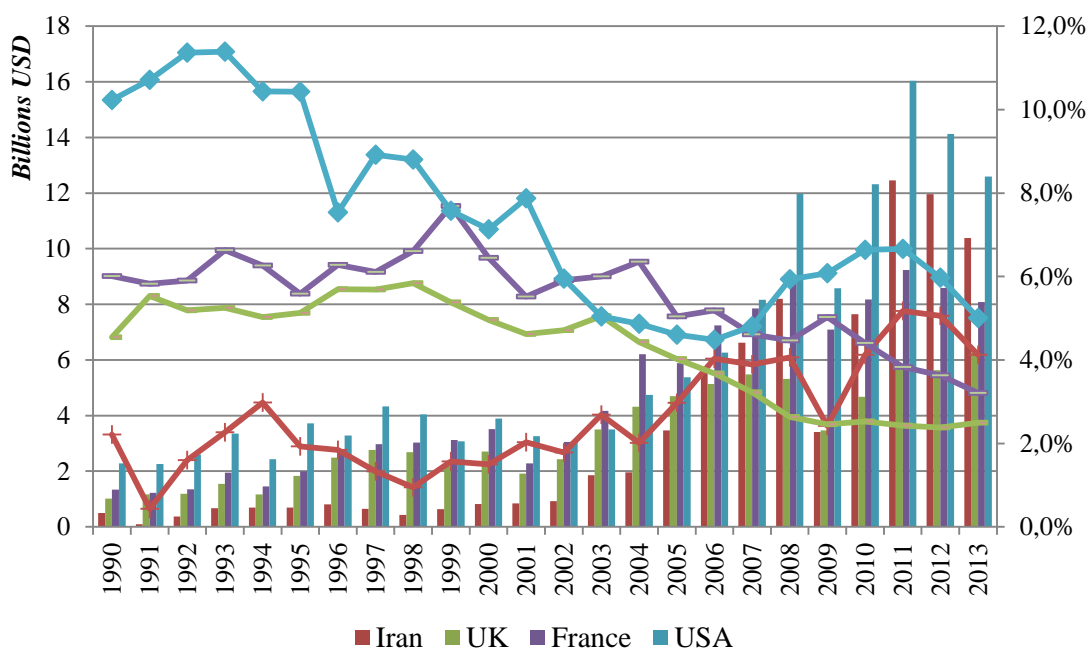


Figure 10.k. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

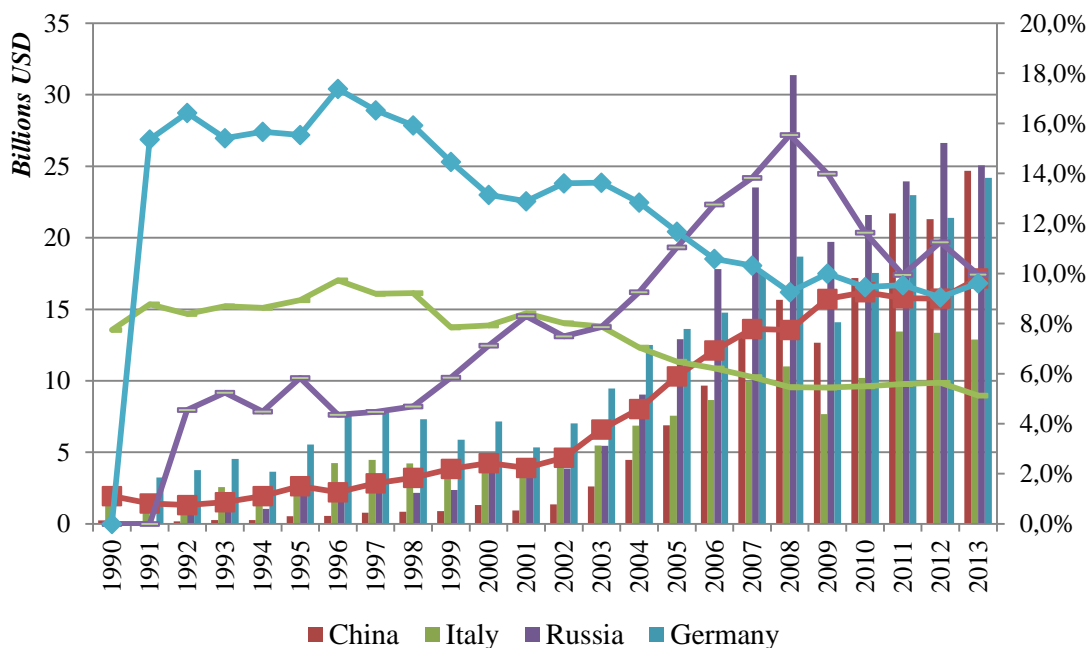


Figure 10.l. Import Dynamics of Turkey by Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axes shows the import of Turkey from given country (charts), right axis refers to share of given country from total import of Turkey (lines).

Analysis of import relations between Turkey and the Arab countries shows that the main trading partner is Saudi Arabia, while Lebanon has the lowest volume of import during the analysed period. The share of import from Saudi Arabia is on average 1.7 percent, while the share of import from Lebanon 0.1 percent from total import. Total volume of import from Arab countries is an average of 11% for the whole period, while total trade was nine percent. There is positive growing dynamics could be observed in figures, but if we take the weighted average analysis, it shows that there is no growth. Thereby, in 1990 the share of import from Arab countries was 13% and the same 13% in 2013. The most active, but at the same time the most volatile import curve is Qatar, with the average annual growth rate 87.3%. Thus, the Arab countries together are third largest import partner of Turkey and in comparison with 1990, the import from these countries grew by almost 6 times, while compare to total trade and export which has 5 times increase each.

Figure 10.a. illustrates that Turkish import from Kyrgyzstan, Lebanon, Qatar and Jordan has the lowest share, among other reviewing countries, during the analysing period. These countries aggregately account for an average of 0.18 percent share from total Turkish import. As we notices in section above, the structure of import from these countries is relatively the similar to each other. The largest import share belongs to food and beverages, according to BEC classification. Despite high volatility, the import dynamics has positively growing tendency. Figure illustrates almost the same dynamics of curves, except a rapid growth with Qatar in 2009 after WFC. However the dynamics of import with these countries always maintain positively growing. During the whole period average annual growth rate is 30% for Kyrgyzstan, 28% for Lebanon, 87% for Qatar and 18% for Jordan. Thus, Turkish import, in 2013 compared with 1990, increased by 25 times from Kirgizstan; by 2 times from Jordan; by 29 times from Lebanon and by 544 times growth is for Qatar.

According to the analysis of Turkish import from Turkic countries the main import partner is Kazakhstan. The same was identified in total trade and export analysis. Share of import from Kazakhstan is 0.55 percent from total import, while the total import from Turkic countries on average is one percent, during the period under consideration.



Generally, import and overall trade relations with these countries are growing, as compared with 1990, the import from these countries increased by almost 14 times. In 1990, the share of import from Turkic countries was 0.7 percent, and this figure increased to 1.4 percent in 2013. Most active import is from Kyrgyzstan, the average annual growth rate during the period was 30%, at the same time Kyrgyzstan is the last import partner to Turkey. Thus, the Turkic countries are 10<sup>th</sup> import partner of Turkey, but it is primarily related to the fact that the market in these countries is relatively small and they have gained independence relatively recently. Not even economic convergence but also cultural one, especially in last 5 years, this convergence is getting closer and Turkey is playing a central role in closing these relations.

According to the analysis of geographically far countries the main import partner is the USA and the USA is the 5<sup>th</sup> import partner for Turkey. At the same time import from Australia, has the smallest volume during the analysing period. These results are the same result as we noticed in total trade analysis. Moreover, the share of import from USA is 7.4 percent, while from Australia is 0.4 percent. Total volume of import from far distance countries is on average 11% during the analysing period. The trend for each individual country has a growing tendency, but weighted average analysis shows a decrease. The share of import from these countries decreased to nine percent in 2013 from 15% in 1990. Thus, geographically distant countries together are 5<sup>th</sup> largest import partner of Turkey and in comparison with 1990, the import from these countries increased by almost 6 times.

Among geographically close countries or as we called them neighbour countries, main import is coming from Iran, which accounts for an average of 2.6 percent of total import, while Georgia has the smallest import volume, on average 0.19 percent during the period under consideration. Total volume of import from neighbour countries is on average six percent for the whole period under review and compared to 1990, the share of trade increased but negligibly, from 8 percent to 9 percent in 2013.

At last but not least, the analysis of import from OECD countries shows that Turkey has a high volume of import from these countries. Aggregated, these countries import share

to Turkey on average account for 60%. Generally, we can observe increasing trend during the analysing period with the annual average growth rate for 10%. While total share dynamic illustrates decrease, from 72% in 1996 to 49% in 2013. The reason of such decrease could be that WFC is affected mostly to OECD countries and EU countries are continuing to have financial crises.

#### **4. Interrelation between Trade and Conflict**

We made the descriptive analysis of Turkish trade relations, as well as over in detail the export and import activities in the period from 1990 to 2013. Further, in this section we will look at trade relations between Turkey and other countries during different kinds of crises that happened between the two countries. This analysis will allow us to develop hypotheses that will be tested in the statistical part of the study. Also, we will be able to graphically and visually analyse the impact of the conflict on trade. This analysis is a kind of unique, because after conducted literary review, we could not find a specific study, which would cover all the relationships in trade and conflict situations. Most of the research was devoted to the influence of military conflict on trade relations. In this section and in this analysis we have grouped all kinds of crises, but later in the statistical analysis, we consider both the overall impact and each separately.

Before starting analysis of following figure, we would like to make a note, as we are grouping all conflict indicators and issues WFC in 2008-2009 was the reason of global trade decrease. Thus, in descriptive analysis we can't separate decrease or increase in 2009, if it is exist, from other crises. Following statistical analysis in next section will indicate, define and separate each conflict impacts if applicable to these interrelations.

The analysis of the Figure 11.a shows positive dynamics in trade interrelations between Turkey and Arab countries (see Section 1 Chapter II). Despite the conflicts in some countries, mainly related to the "Arab Spring", the positive dynamics and growth trend maintains. This is point to note that after 2001, i.e. after the financial crisis in Turkey this dynamics intensifies. Considering the influence of the "Arab Spring" on trade relations of Turkey with given countries, it could be concludes that impact was minimal, only with Jordan we are observing slight downturn which was seven percent in 2011

compare to 2010, but next year growth of total trade indicated 51% . The post factum impact also in force, such as trade with Tunisia slowed in 2012, which may be caused by the "Arab Spring"; the decline was six percent compare to 2011. Thus, summarizing the analysis for these four states, we are concluding that there was minimal influence of the "Arab Spring" in these countries on trade relations with Turkey.

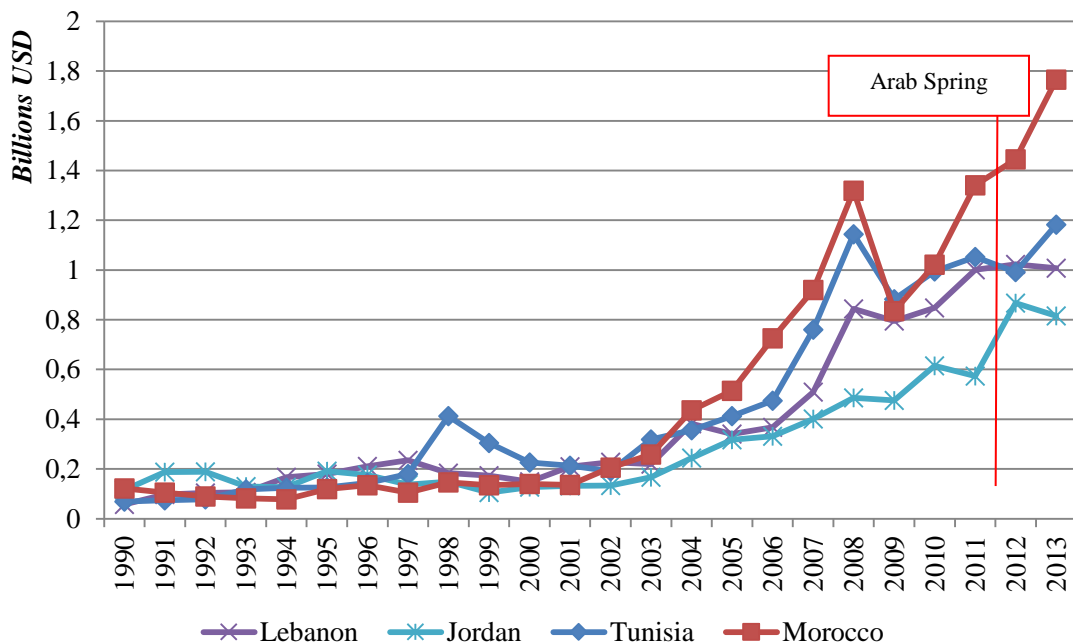


Figure 11.a. Total Trade Dynamics of Turkey in GAFTA Countries Breakdown, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Turning to the following Figure 11.b, on which also presented another four Arab states. In this figure except for the "Arab Spring" conflict, we analyse the impact of the First Gulf War as well-known operations "Desert Storm." Considering the impact of First Gulf War which was negative, in 1991 the decline indicated 89%, but in 1992, trade between Turkey and Kuwait increased by 8 times. Except trade with Algeria influence of the "Arab Spring" for other countries was not negative, paradoxical result is that we observe growth. Growth observed in trade with Saudi Arabia and Egypt. Should also be noted that it is essentially "Arab Spring" in these states did not last long and did not have severe consequences for society, such as in Syria, Libya or Egypt. As it mentioned the decline observed in trade with Algeria, where the decline was 21% in 2011 compared with 2010. This decline was temporary too, as in following year growth was observed.

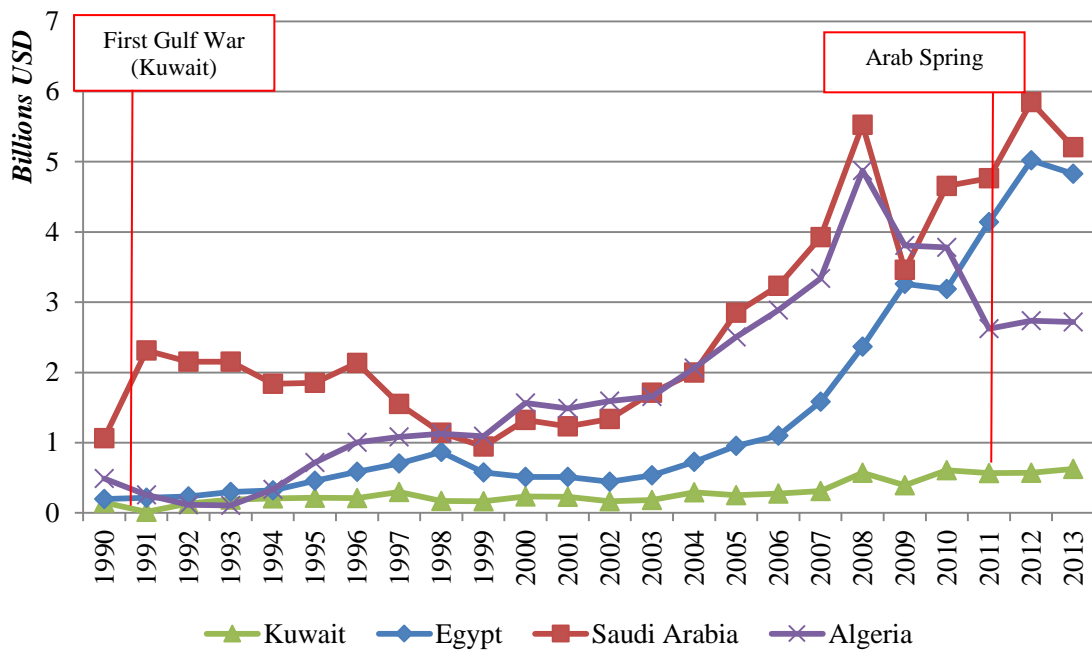


Figure 11.b. Total Trade Dynamics of Turkey in GAFTA Countries Breakdown, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

In Figure 11.c, the impact of the conflict could be observed more rapidly. This figure shows the countries in which the crises lasted longer than others. Trade of Turkey with Iraq decreased sharply in time of First Gulf War. Decrease of trade relations indicated 90% in 1991 compare to 1990. Later in the period from 1991 to 2003, trade has not improved, but rather has a negative trend and dynamics. Between 1998 and 2003, as shown in figure and depending on UNCOMTRADE data trade volume between these two countries was at the zero level. At the beginning of the Iraq War in 2003, trade volume increases and following steadily positive dynamics could be observed, even during the WFC decline is not observed.

Regarding Libya and Syria, the figure is indicating negative impact of «Arab Spring» to trade relations between Turkey and these countries. Regarding Libya, we are observing temporary reduction of trade volume in 2011, caused by our assumption, the "Arab Spring". Thus, in 2011 the trade volume decline between Turkey and Libya indicated 62% compare to 2010, but in 2012, an increase of nearly 300% compare to 2011. Regarding Syria, long decline could be observed after 2010. The decline also is a result of the "Arab Spring" and the ongoing Civil War. Regarding diplomatic conflict in 1990-

1998 periods, about accommodation of Abdullah Ocalan in Syria, fluctuating positively trended dynamics could be observed in trade between Turkey and Syria, but this dynamic continues until 2006, after which turnover increased sharply and indicated maximum volume in 2010. Further on because of WFC and following security crises included “Arab Spring”, we can observe sharp decline. Decline continued until 2012 and in general indicated 77% compared to 2010. Thus, the analysis of this figure showed us a greater extent about negative impact of security conflict on trade relations, as well as the paradoxical growth of trade with Iraq.

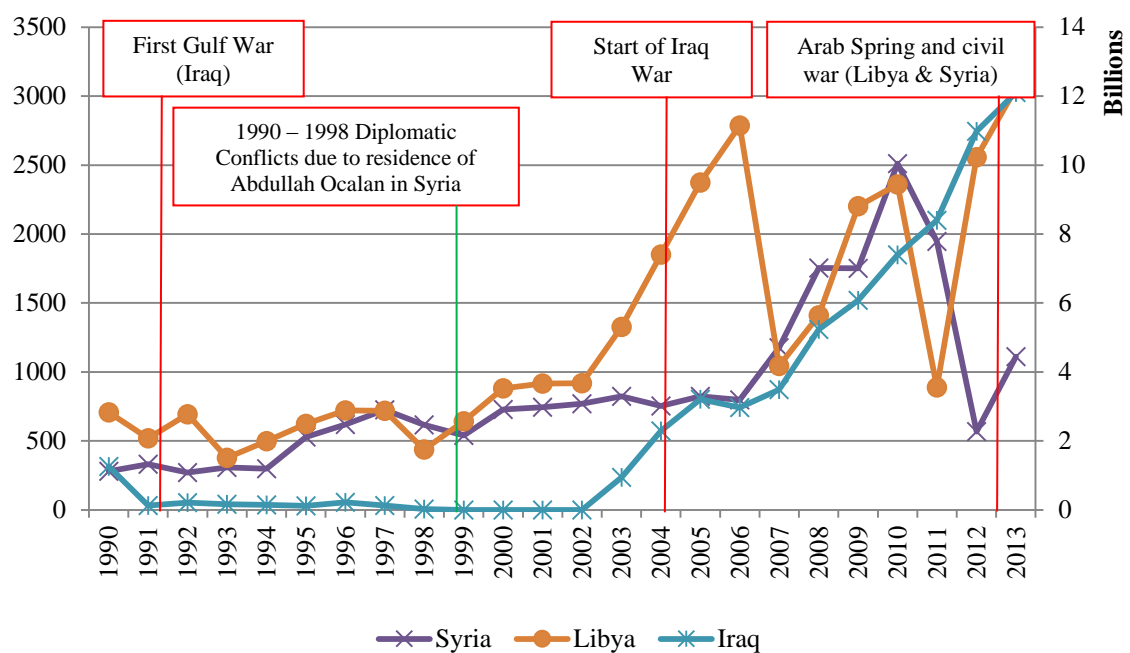


Figure 11.c. Total Trade Dynamics of Turkey in GAFTA Countries Breakdown, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis show figures for line Syria and Libya, left axis indicates figures for Iraq

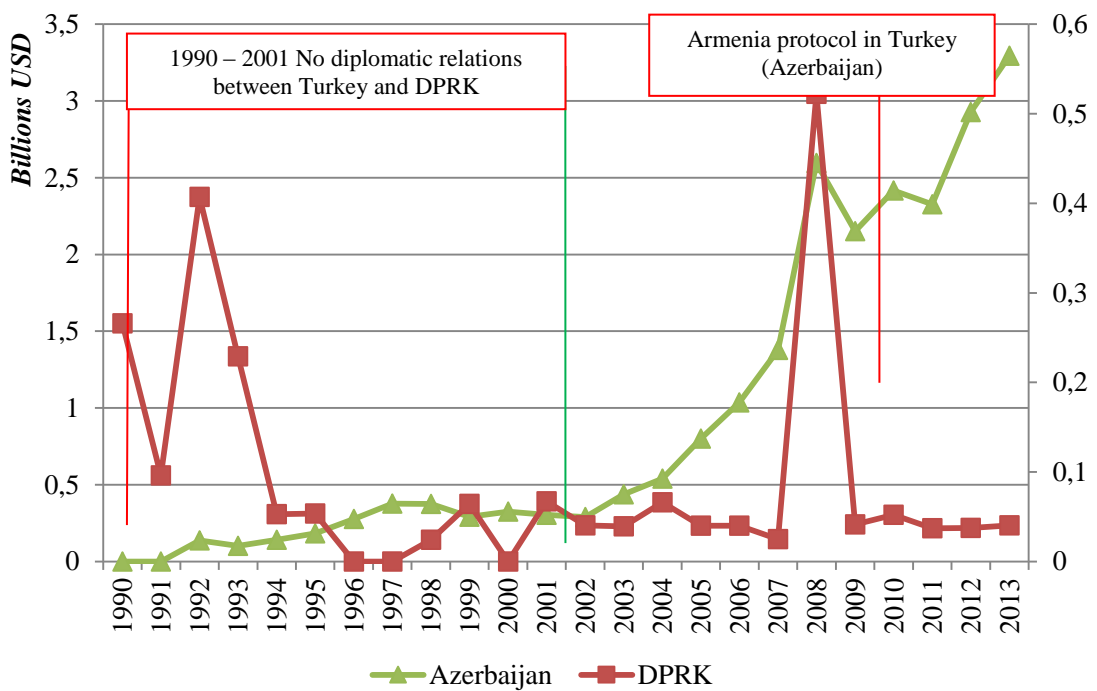


Figure 12.a. Total Trade Dynamics of Turkey by Conflicting Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Note: Left axis show figures for line Azerbaijan, left axis indicates figures for DPRK

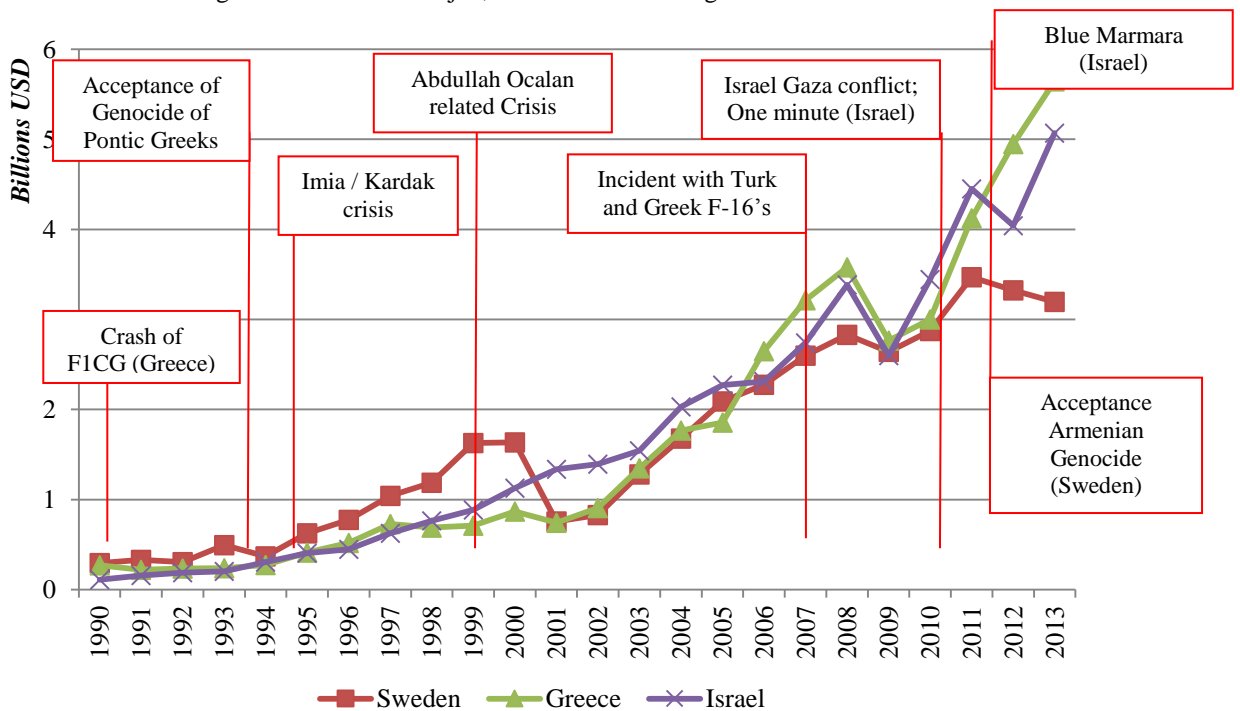


Figure 12.b. Total Trade Dynamics of Turkey by Conflicting Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Analysing the total trade of Democratic People Republic of Korea and Azerbaijan shown in Figure12.a we are seeing some kind of trade and politics paradoxes, it is mainly concerned with the DPRK. In the period from1990 to2001between Turkey and North Korea were no diplomatic relation either, but trade development didn't stop. There were trade relations and very volatile trade dynamics. Another interesting point is that despite of the WFC, when most of the developed and developing countries, faced reduction on trade, trade between Turkey and Korea rose sharply and reached a maximum level for the whole analysing period. But after 2008 so, the same way we have seen a sharp decline and after a relatively smooth dynamics. During the period from 2009 to 2013 the average growth rate of total trade between Turkey and North Korea indicated 0.5 percent yearly. Of course, North Korea the last in the list of trade partners with Turkey among the analysed countries and the country is still under U.S. embargo on certain goods. But in itself dynamics in the trade relationship is the subject of our analysis, despite these limitations and the lack of diplomatic relations. On Azerbaijan we observe only one conflict during the analysed period in 2009. The trade line is decreased at the same year, but as previously mentioned, we cannot attribute this conflict to the results of this decline. We tend to assume that the decline is most likely result of WFC.

Another country with which Turkey had also many types of conflict issues is Greece and at the same time one of the leading trade partners among neighbours. The Figure16.b shows us a dynamics of total trade for Greece, Sweden and Israel. Despite the seemingly complex political relations with Greece, trade relations between Turkey and Greece show a positive and growing trend throughout the period under review. Overall, for the period under review, we observe 5 crises these are covered in the world wide. Considering the rate of turnover, we acknowledge the fact that none of the moments of conflict impacted negatively, but rather from one year to the growing trend.

Regarding the dynamics of trade with Israel, we see two conflict years. In 2009, along with WFC also had an incident between Turkey and Israel, better known as «One minute», this incident certainly be called a conflict, but right after these two countries became alienated from the perspective of politics and diplomacy. But as we can see in the figure from the economic point of view, things are different. Yes, of course, there's a

recession in 2009, but we cannot determine whether this decline is completely the result of «One minute» conflict or WFC, or what proportion of the impact one or another. Sweden for the period under review only one conflict, but he also did not affected either the trend line of total trade.

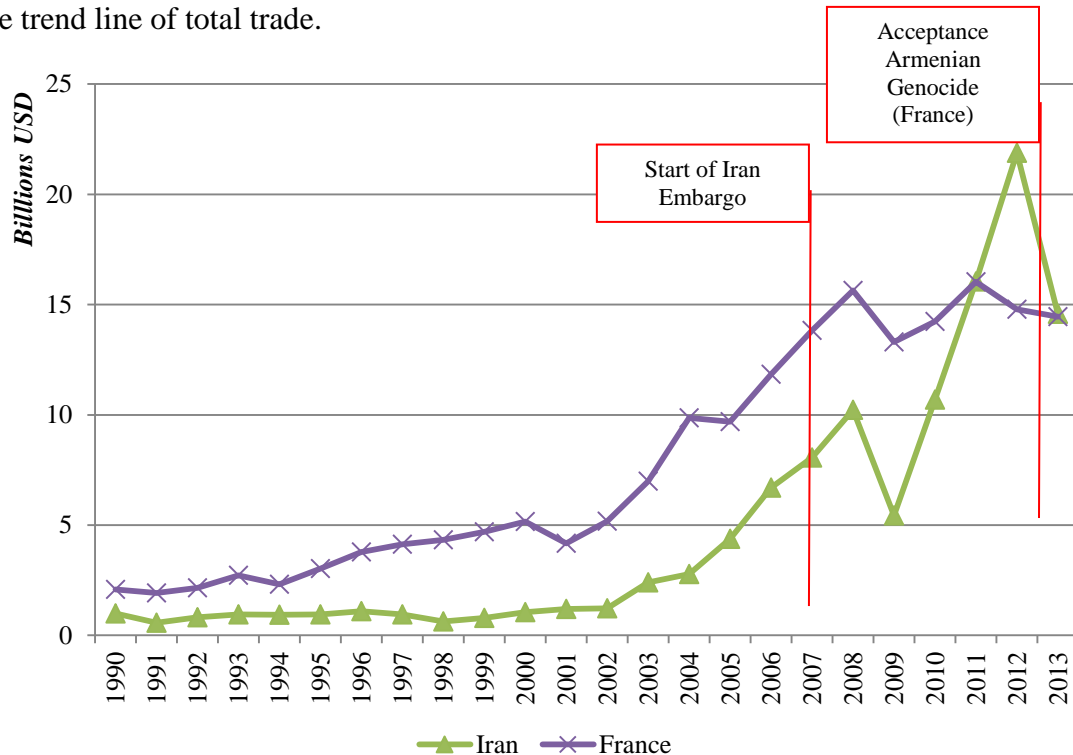


Figure 12.c. Total Trade Dynamics of Turkey by Conflicting Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Iran for Turkey is one of the most important trading partners and in addition these two countries have many common interests in the Middle East region. In 2006, when the UN Security Council put an embargo on Iran, Turkish trade relations with Iran have not deteriorated, but vice-versa only increased. During the period from 2006 to 2013 the average annual increase in total trade of Turkey with Iran has reached 25%, compared with 1990 to 2005 the average annual increase was 15%. Paradoxically the fact that during the conflict, even not a directly interrelated conflict, trade between the two countries only improved. Regarding trade relations with France we do not observe significant effects of the conflict on trade in 2011. On this year as indicated in figure acceptance of Armenia Genocide from French Parliament, but after diplomatic notes from Turkey Parliament cancelled the decision. On 2011 the total trade between these two countries reached its maximum level but after the slight decline could be observed



and most probably the result of this reduction is the financial crisis in Europe, which is still ongoing.

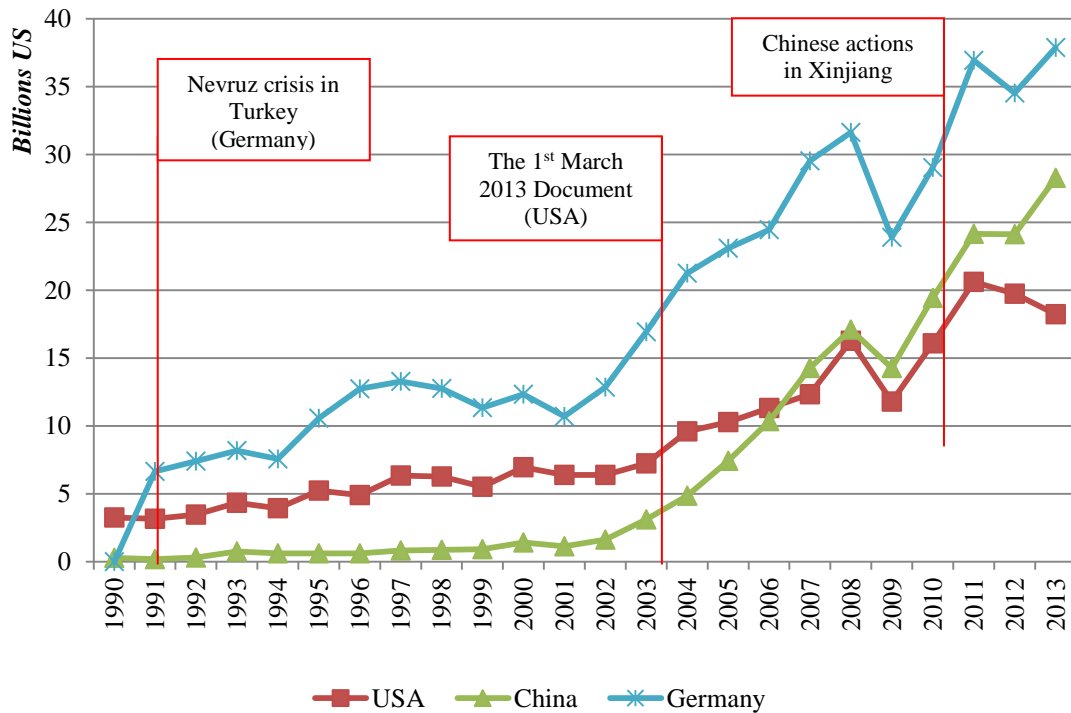


Figure 12.d. Total Trade Dynamics of Turkey by Conflicting Countries, 1990 – 2013

Source: UN COMTRADE Statistical database, 2013, [www.comtrade.un.org/db/](http://www.comtrade.un.org/db/) (Access Date: 25.07.2014)

Turkish trade relationship with China, USA and Germany were originally good and had a high rate of growth. The Figure 12.d shows the evolution of trade with these countries. As expected, no significant changes have occurred even during crises. The other important factor is that these crises are indirectly related to Turkey and they have occurred in the short period of time and basically the impact on the annual dynamics itself is minimal.

## 5. Summary

As an overview of descriptive statistics made above we note some important points as summary:

First, Turkish economy is showing stable and steady growth during all analysing period. Compare to trade indicators this growth does not look as significant as it is. GDP grew by 3 times compared with the total trade volume, which grew by an average of 10 times;

mainly economic growth accelerated in the post-crisis<sup>83</sup> period; Trade balance maintains negative rate during overall analysing period which is increasing and has strong influence on GDP; relatively positive point of analysis is slowdown negative trade balance after the crisis; short conclusion from above mentioned analysis: Turkish economy is very sensitive to the external market.

Second, foreign policy of Turkey passed from re-interpretation of the stable or structural variables policy formation. According to this perspective, Turkey's value in the World politics is predicated on its geo-strategic location and its historical assets. Turkey's potentialities could be transformed into productive policy instruments as long as they are re-evaluated in harmony with the internal and international changes throughout strategic principles and planning, instead of static perspectives and status quo motives which preclude Turkey's fully employment of its power parameters. There are series of foreign policy principles introduces through a new policy orientation. There are three methodological foreign policy principles: vision-based strategy or a visionary approach; consistent and systematic framework; utilization of "soft power".

Third, trade indicators had high growth rate especially after crisis of 2001. Import is growing higher than export. Structural analysis of total trade indicates that growth rate of mining and manufacturing industries increase much more higher than other industries and total trade of capital goods growth rate twice times higher than other products groups. There was a test of similarity in culture and religious values impact on trade relations. The test indicated that religious similarity has positive impact on trade relations at least in case of Turkey; cultural similarity test does not have significant result because of several reasons, countries involved and the trade volume too low. Arab countries are as indicator of religious impact on trade and Turkic Countries as similarity in culture. Relations between Turkey and Arab countries grew by almost 8 times and the Arab countries together are six largest trade partners of Turkey. Turkic Countries in aggregate are insignificant trading partner of Turkey, but it related to the small markets in these countries.

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<sup>83</sup> Period after Financial Crisis of 2001 in Turkey

Forth, there was simplest test of gravity model how distance affects trade. We tested how intensive trade is when partner country geographically close or vice versa. The test indicated that descriptively gravity approach to explain intensity of trade with far or close countries does not fits to modern trade relations of Turkey, but the hypothesis will be tested further with econometric testing methodologies. With the abstraction from other changes and taking into account selected countries geographically distant countries together are 5<sup>th</sup> largest trade partner of Turkey and in comparison with 1990, the total trade between these countries increased by almost 6 times, when total trade volume with neighbour countries is on average six percent for the whole period from the total trade and the values in on 7<sup>th</sup> rank. Need to note that in last decade three neighbour countries had politically unstable conditions and even were under international embargoes and despite this trade maintain positive dynamics and even show growth for the end of the period. It is point to note that given the current state of globalization there is no big difference between distant and close countries.

Fives, there are some features have been identified for export and import that have occurred over the period:

- Among the main ISIS industries the most export making and at the same time most importing industry is manufacturing;
- Among the BEC products classification most exporting product group is consumption goods while most importing is intermediate goods, but in export intermediate goods has slight difference from consumption goods;
- High rate of intermediate goods imports and high rate of manufacturing export characterizes Turkish economy and value adding and re-exporting economy and consumptions goods export could confirm this hypothesis;
- Geographically top 20 countries in export and import does not have significant difference, almost the same countries in both lists with difference in ranks, for example Germany has 1<sup>st</sup> rank in top 20 exporting countries while in top 20 importing it has 3<sup>rd</sup> rank;
- Top 20 exporting countries have 68% share from total and 73% share for top 20 importing countries;

- One of the most advantage of Turkish trade is export of finished goods which does not make foreign trade high dependable from market fluctuations;

Six, we analysed the interrelation between crisis and trade by using Turkish trade data for 1990-2013 and defined several results:

- Diplomatic conflicts have neither negative nor positive impact. These types of crises mostly in political level and business relations do not affected much besides unique issues. But even though political conflicts are short time and impact also could be reviewed in short time based.
- The impact of security conflicts on trade have not been defined clearly. Following logical conclusion the impact should be negative but in some cases we defined positive and moreover rapidly growing trade during the conflict. Turkey and Iraq trade could be an example case.
- Arab Spring conflict impact on trade is negative. This result can be easily seen in volatile dynamics on graphs. Exact in conflict period trade dynamics decreased in mostly countries and moreover continuously decreasing between Turkey and Syria for example.

These assumptions would be used as expectation in statistical analysis but does not have final meaning and answer to the main question of the research. This is to show whether conflicts between two country and trade interrelated or not. Once more need to note these assumptions made under graphical analysis with several abstracts and should be tested in terms of statistical significance, which we going to make in next chapter.

## Chapter III

### Determinants of International Trade: Does Conflict Affect Trade?

#### 1. Definition of Conflict and Conflict Index

Modern international society is impossible to afford without confrontation of positions and views specific to certain subjects. Events of the last decades have shown that treats to the concept "conflict" and its various phrases, especially to such as "international military conflict" in contemporary international relations and international law falls more often than one would like. Reports of the Secretary-General of the United Nations in recent years do not contain chapters on the peaceful settlement of international disputes, but more devoted to actual issues of current international relations: conflict prevention, peacekeeping and post-conflict peace building<sup>84</sup>. Some of the resolutions of Security Council of the United Nations instead of "amicable settlement of disputes" refer to "the peaceful settlement of the conflict"<sup>85</sup>. More frequent use of such words and phrases as "conflict", "resolution (resolving) conflict" is not accidental. Good intentions of States to settle conflicts in the stage of the dispute faced with the mismatch with the realities of international life. The desire of some politicians to change "conflict" with dispute or similarly the absence of this term in the UN Charter has led to confusion in the use of the terms "conflict" and "dispute".

The term "conflict" is used in a variety of senses: as a synonym for international dispute, international military problems or refer to all situations<sup>86</sup>, the background of which is contradiction in the relations. "Problem of having to distinguish between these terms rose in the literature:<sup>87</sup> but was not solved. The word "conflict" comes from «conflictus» (lat. - «Collision") and stands for clash between the parties. In theory highlighted 12 areas of scientific knowledge studying conflicts: psychology, sociology,

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<sup>84</sup> See: yearly report of Secretary General of United Nations. Official web-site in Russian: <http://www.un.org/russian/basic/sg/reports.htm> (Access Date: 02.06.2014)

<sup>85</sup> See: S/RES/1528 (2004), S/RES/1554 (2004), S/RES/733 (1992)

<sup>86</sup> T. V. Khudoykina (1998). Peaceful settlement of disputes. *Moscow Journal of International Law*, 3, 52-60

<sup>87</sup> S. A. Yegorov, (2003). Military conflicts and international law. *MFA Russia publications* 2 (3), p 38

political science, history, philosophy, art history, education, law, physical and mathematical sciences, military science, medical science and economics. In each of these areas, the meaning of "conflict" is well-defined and differentiated. Common to all these definitions is the understanding of the conflict as issue with the additional feature of escalation and the presence of claim on the one hand and rejected by the other<sup>88</sup>.

**The relationship of the term "conflict" with other related concepts such as crisis and war.** The terms "crisis" and "war" are the main cognate with "conflict" terms. They used relatively freely in the literature and their meaning is used in legal documents, usually based on their conventional sense, taking into account specific features of international law.

The concept of "crisis" was using since ancient time and mean rotation, when the question was life or death, victory and defeat and so on. In the XVII–XVIII centuries, the term "crisis" has spread to other areas and meaning changes to more specific "troubled times" and "speeds up the process". Then the term entered into the economy with the meaning "the unique and dramatic catastrophic events". During all this transformations the main meaning of the crisis as fracture coup or transition condition preserved.

The war also does not have a universally accepted definition. According to the author of the Practical Dictionary humanitarian law Françoise Bouchet-Saulnier, the word "war" is no longer used in modern international law, it is replaced by the term "military conflict"<sup>89</sup>. Researchers of military conflicts use the term to describe the degree of intensity. The researchers Heidelberg Institute for International conflict Studies define war as the highest level intensity form to resolve the conflict. Researchers at the University of Uppsala include military conflict in the category of "war" if the victims are at least 1,000 people per year.

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<sup>88</sup> See different definitions of these terms in official web-site of Uppsala University. Uppsala Conflict Date Program [http://www.pcr.uu.se/research/UCDP/UCDP\\_toplevel.htm](http://www.pcr.uu.se/research/UCDP/UCDP_toplevel.htm), web-site of Heidelberg University of International Research of Conflicts [http://www.hiik.de/de/index\\_d.htm](http://www.hiik.de/de/index_d.htm) (Definitionen bis 2002 und ab 2003) (Access Date: 04.06.2014)

<sup>89</sup> F. Bouchet-Saulnier (2004). Practical Dictionary of humanitarian Law. (Trans. E. Kirpichnikov), *MIK*, p. 81.

Despite the differences in the definition of the "conflict" term with the respect to the currents international law and economics interpretations there several type of classification and one of them given below as we interested mainly in international conflicts.

International conflicts:

- diplomatic disputes;
- territorial claims;
- economic contradictions;
- military conflicts (include war)

State Governments are the main party in the international conflicts and based on it separates:

- interstate conflicts(both opposing sides presented by states and their coalitions);
- national liberty wars (one of the parties is represented by the state include civil war);
- internationalized internal conflicts (the state acts as assistant to one of the sides in the internal conflict in the territory of another state);

It is points to note the functional impacts of conflict on global scale and in particular to the neighbour countries and regions, from the point of view of international law. There are two types of impact of conflict on the international "arena":

Positive:

- relaxation of tensions between the conflicting parties;
- acquisition of new information about his opponent;
- consolidation of the people in the conflict with an external "enemy";
- promotion of change and development;

Negative:

- more emotional, material costs involved in the conflict;
- deterioration of the socio-economic climate in the country and region;
- after the conflict - reducing the level of cooperation between groups of peoples;
- difficult recovery business relationship ("plume" of conflict);

To determine the interrelationship between conflict and trade and to test its econometrical consistence and significance, we have defined conflict index. Conflict indexes created using data given in free encyclopaedia ([www.wikipedia.org](http://www.wikipedia.org)) and book by Haydar Çakmak and all related to the analysing period. We have defined three types of conflict indexes, two of them directly related to Turkish foreign relation both politically and economically and the third is world conflict index which indicates conflicts ongoing in the global “arena” during the analysing period. While defining the conflict index and selecting its type there several assumptions have been applied:

- \* Political disputes considered as Diplomatic Conflict;
- \* If there is conflict with the military involved on it that is accepted as Security Conflict;
- \* Diplomatic Conflicts accepted as short term and Security Conflicts accepted as long terms and have postponed impact;
- \* Iran Embargo by UN Security Council accepted as both as Security Conflict and Diplomatic Conflict. The conflict is Diplomatic indeed but the military trainings of all participants made serious security problems in Persian Gulf;
- \* Arab Spring both included in Security Conflict index and separated as individual index in order to determine its impact on trade.

*Table 2. Diplomatic Conflicts Events for Turkey, 1990 – 2013*

<b>№</b>	<b>Country</b>	<b>Years</b>	<b>Definition of conflict</b>
1	France	2011	Year when France Government officially recognized Armenia Genocide by Ottoman Empire
2	Sweden	2010 – 2012	Years when Swedish Government officially recognized Armenia Genocide by Ottoman Empire
3	Greece	1994	Greek Government declares May 19 as a day of remembrance of the (1914–1923) Genocide of Pontic Greeks <sup>90</sup> by Ottoman Empire.

**Source:** Free encyclopaedia [www.wikipedia.org](http://www.wikipedia.org) (Access Date: 21.02.2014)

<sup>90</sup> [http://en.wikipedia.org/wiki/Greek-Turkish\\_relations#cite\\_note-B.C3.B61.C3.BCkbası\\_62-32](http://en.wikipedia.org/wiki/Greek-Turkish_relations#cite_note-B.C3.B61.C3.BCkbası_62-32) (Access Date: 21.02.2014)



Table 2 (Cont.). Diplomatic Conflicts Events for Turkey, 1990 – 2013

<b>№</b>	<b>Country</b>	<b>Years</b>	<b>Definition of conflict</b>
4	Greece	1999	Relations between Greek officials and Abdullah Ocalan (Kurdish rebel leader) and the role of Greek Embassy in Nairobi International Airport Kenya when he captured in an operation by NIO (National Intelligence Organization) caused crisis in relations between two countries for a period of time <sup>91</sup> .
5	Iran	2006 – 2013	UN Security Council Resolutions and International Sanctions against Iran
6	Israel	2009 – 2012	Israel Gaza conflict, position of Turkey Government related to State Palestine; “One minute” conflict in Davos forum 2009 and cooling relationships following after
7	Germany	1992	Nevruz crisis in Turkey and position of German’s Government
8	USA	2003	The 1 <sup>st</sup> March 2013 Document <sup>92</sup>
		2010	Diplomatic issues raised because of Wiki leaks publications
9	China	2009	Positions of Turkish Government against Chinese actions in Xinjiang

Source: Free encyclopaedia [www.wikipedia.org](http://www.wikipedia.org) (Access Date: 21.02.2014)

Table 3. World Security Conflicts Events, 1990 – 2013

<b>№</b>	<b>Country</b>	<b>Years</b>	<b>Definition of conflict</b>
1	Algeria	2011, 2012	Arab Spring and spill overs with minor and major protests in other countries
2	Libya	2011	
3	Jordan	2011, 2012	
4	Morocco	2011, 2012	
5	Egypt	2011, 2012	

Source: Free encyclopaedia [www.wikipedia.org](http://www.wikipedia.org) (Access Date: 21.02.2014)

<sup>91</sup> [http://en.wikipedia.org/wiki/Greek-Turkish\\_relations#cite\\_note-B.C3.B61.C3.BCkbası\\_62-32](http://en.wikipedia.org/wiki/Greek-Turkish_relations#cite_note-B.C3.B61.C3.BCkbası_62-32) (Access Date: 21.02.2014)

<sup>92</sup> Refusal of the GNAT (Grand National Assembly of Turkey) to provide the Turkish bases for the transfer of NATO forces to start operations in Iraq

Table 3 (Cont.). World Security Conflicts Events, 1990 – 2013

No	Country	Years	Definition of conflict
6	Lebanon	2011, 2012	Arab Spring and spill overs with minor and major protests in other countries
7	Tunisia	2011	
8	Saudi Arabia	2011	
9	Kuwait	2011	
10	Syria	2011 - 2013	
11	Iraq	1990, 1991	First Gulf War
		2003 – 2011	Iraq War
12	Kuwait	1990, 1991	First Gulf War
13	Georgia	1990 – 1995	Georgia Internal War
14	Iran	2006 – 2013	UN Security Council Resolutions and International Sanctions against Iran
15	Slovenia	1990 – 1994	Slovenia Internal War
16	Azerbaijan	1992 – 1994	Nagorno – Karabakh conflict

Source: Free encyclopaedia [www.wikipedia.org](http://www.wikipedia.org) (Access Date: 21.02.2014)

Thus, there were three type of conflict dummies defined above: Diplomatic Conflict; Security Conflict and Arab Spring. Diplomatic Conflict is directly related to Turkey, Security Conflict index is to determine the global conflict impact on trade. Below are given the lists of year when conflict occurred and the reason of such conflict.

## 2. Data and Estimated Models

The empirical analysis is based on UNCOMTRADE data, Turkish Statistical Institute and World Bank statistical database for Turkey for the period 1990 to 2013. All variables are in real indicators and reflected in US Dollars. Data set is given as import and export of Turkey to partner country. In order to prevent statistical uncertainties the collected data have been grouped, counties with missing variables dropped. Thus, panel data analysis includes 23 year time period and 60 countries. The model estimated on standard dynamic log linear equation model augmented to account first the impact of distance on trade relations, second impact of conflict control dummies, the third control of slope changes in conflict matters and the last control of other variables impact. Thus

the first model is the model of gravity equation which is accepted and presented by Tinbergen in 1962:

$$LNT_{i,t} = \beta_0 + \beta_1 LNDIST_{i,t} + \beta_2 LNGDP_{i,t} + \beta_3 LNGDPTR_t + \beta_4 LNPOP_{i,t} + \beta_5 LNPOPTR_t + \mu_t + \varepsilon_{i,t} \quad (5)$$

Second model is for controlling conflict impact and other controlling variables. Model becomes dynamic; lag dependent variable included:

$$LNT_{i,t} = \beta_0 + \beta_1 LNT_{i,t-1} + \beta_2 LNDIST_{i,t} + \beta_3 LNGDP_{i,t} + \beta_4 LNGDPTR_t + \beta_5 LNSIM_{i,t} + \beta_6 LNRER_{i,t} + \beta_7 RLFAC_{i,t} + \beta_8 WFC + \beta_9 C + \mu_t + \varepsilon_{i,t} \quad (6)$$

Third, dynamic model with interaction between distance and conflict dummies to control for the changes of distance slope, i.e. does conflict decrease/increases gravity effect on trade:

$$LNT_{i,t} = \beta_0 + \beta_1 LNT_{i,t-1} + \beta_2 LNDIST_{i,t} + \beta_3 LNGDP_{i,t} + \beta_4 LNGDPTR_t + \beta_5 LNSIM_{i,t} + \beta_6 LNRER_{i,t} + \beta_7 RLFAC_{i,t} + \beta_8 WFC + \beta_9 C + \beta_{10} GC + \mu_t + \varepsilon_{i,t} \quad (7)$$

Where LNT, LNDIST, LNGDP, LNGDPTR, LNSIM, LNRER, RLFAC, C, GC and WFC, are relatively total trade, distance, GDP of partner country, GDP of Turkey, countries similarity index, bilateral exchange rate, relative factor endowment, World Financial Crisis<sup>93</sup> dummy, group of conflict variables, interaction of distance and conflict;  $i$  and  $t$  denote country and time period  $\mu_t$  control for time  $\varepsilon_{i,t}$  is the usual error term. All variables except calculated indexes are given in logarithmic values.

The definition and measurement of the variables used in the estimations are as follows: Total trade (LNT) is measure as sum of export and import for Turkey to partner country for given year of. The first lag of LNT in the equation above measures the speed of

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<sup>93</sup> Financial Crisis of 2008-2009, dummy is used for the year 2009 as post crisis effect

adjustment, or the so-called “catch-up”<sup>94</sup> factor. The coefficient of the lag of trade is expected to be positive and less than one.

Distance (LNDIST) is the logarithm of distance between capital cities of Turkey and partner country<sup>95</sup>. The coefficient of distance is expected to be negative as according to gravity model hypothesis.

GDP and GDPTR is the partner Country’s and Turkey’s GDP respectively. The coefficients expected to be positive.

Countries similarity (LNSIM) captures the relative size of two countries in terms of GDP. The larger this measure and, thus, the more similar two countries in term of GDP, the higher the share of intra-industry, i.e. overall trade. It is also clear that the total volume of trade should be higher, the larger the overall economic space. Calculated as follow:

$$SIM = [1 - \frac{GDP_{i,t}}{(GDP_{i,t} + GDPTR_t)^2} - \frac{GDPTR_t}{(GDP_{i,t} - GDPTR_t)^2}]^2 \quad (8)$$

Bilateral exchange rate (LNRER) is value of exchange rate index between trading countries. Lane and Burke (2001) find that exchange rate volatility is negatively associated with the level of international reserves in a large cross-section of countries and the period 1981–1995. Abrams (1980) identifies a negative impact of exchange rate uncertainty on bilateral trade. The higher the real exchange rate index (LNRER) the cheaper are products from country *i* for consumers in country *j* and, therefore, we expect a positive sign of LNRER. As strong are currencies between two countries as much money flow and easy trade flow. LNRER calculated as follows:

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<sup>94</sup> The decision to include a lagged dependent variable is really a theoretical question. It makes sense to include a lagged DV if you expect that the current level of the DV is heavily determined by its past level. In that case, not including the lagged DV will lead to omitted variable bias and your results might be unreliable. As we use dynamic model and trade relations are heavily determinate with previous relations we are testing “catch-up” and define how strong current year trade depend on previous.

<sup>95</sup> This information got by using [www.mapcrow.info](http://www.mapcrow.info) (Access Date: 15.01.2014)

$$RER = \frac{Deflat_{i,t}}{DeflatTR_t} * \frac{Ex\_rate_{i,t}}{Ex\_rateTR_t} \quad (9)$$

Relative factor endowment (RLFAC) is factor endowment ratio in terms of capital which is measures the distance between the two countries in terms of relative factor endowment. According to theory, the larger this difference, the higher is the volume of trade, and the lower the share of intra-industry trade. This variable expected to be negative, as big as factor difference between countries exchange of goods of slow and less trade relations. Calculated as follow:

$$RLFAC = |\ln \frac{K_{i,t}}{L_{i,t}} - \ln \frac{KTR_t}{LTR_t}| \quad (10)$$

We have determined two types of Conflict dummies they are: Diplomatic Conflicts (see Table 2); and Security Conflicts and Arab Spring (see Table 3). The dummy variables defined as 1 in the year of conflicts occurs and null otherwise. There is no exact expectation about Diplomatic Conflict variable, as descriptive statistics shown in previous section, there is no significant relationship between trade and diplomatic conflicts in case of Turkey. Security Conflict and Arab Spring dummied expected to have negative sign. However, expectation on these variables based on descriptive statistics results and could be different in econometrical estimations. The reason of negative sign expectation that the conflict is build additional barriers to business and make cooperation more difficult. These difficulties from the perspective of gravity type of models make trade even more difficult. Thus there is necessity to control the interaction between conflict and distance effect and impact on trade. We define these variables as slope control. Slope of distance accepted as geographical proximity calculated as multiplication of specific conflict dummy to distance variable. This variable used to control whether impact of conflict enhances or disappears distance effect on trade. The positive sign of variables will show the decrease of distance impact and the negative reverse.

### **3. Estimation Methodology**

We use different econometric methodologies in the estimations of the gravity model, since the nature of the gravity approach in the beginning is static, while in our examples we use dynamic nature model. Thus, while using fixed-effects model in estimations lead to consistent estimators of the coefficients of the interest, the same estimation methodology may not give consistent estimators for the dynamic model. Estimation of the dynamic productivity equation, thereby, may require other estimation techniques which lead to more consistent estimators. Further we would shortly review the appropriate estimation methodologies used while estimating Gravity Model.

Gravity type models were very popular in analysing economic phenomena related international trade in last decade of XX century. These types of models were frequently used for policy analysis, especially to investigate the effect of trading blocks, for example, it is quite important to get the econometrics correctly and avoid unnecessary mistakes in the modelling process. Previously these models were only applied to either cross-section data, or to single country time-series data, which imposed severe explicit (or implicit) restrictions on the specification of the model. The purpose of this part of the research is to review alternative specifications of the gravity models from the perspective of estimation methodology and select and explain appropriate estimation method the given analysis in research.

Gravity model have been criticized for the lack of theoretical background, empirically they seem to perform particularly well, and are therefore well suited for policy analysis. A major drawback of all studies lies in the nature of the data used, and the explicit (or implicit) model restrictions implied by it. Invariably, inference was drawn either upon a cross-section of country data in one time period, or upon single time-series of data in a country by country approach. However, heterogeneity across countries in trade flows is extremely likely, and should therefore be accounted for in the model. Moreover, the business cycle will also undoubtedly affect bilateral trade flows. Erroneously ignoring

either of these effects will lead to seriously miss-specified econometric models and biased and miss-interpreted parameter estimates<sup>96</sup>.

**The fixed effect model:** The fully unrestricted static basic Gravity model involves augmenting by three sets of dummy variables: exporting country dummies, time dummies and importing country dummies. Set of dummy variables chosen as a basic dummy specification for related dummy  $d = 1$  and 0 otherwise. Once all these dummies have been specified, due to the obvious perfect co linearity between all three sets of dummies and the constant term, one can estimate directly by OLS. A point not often addressed in the literature, is the extent to which the explanatory variables can be considered strictly exogenous. For example, via national accounting identities, GDP and exports are intrinsically linked. Indeed, of the explanatory variables, only population appears to be strictly exogenous. Ignoring this endogeneity, will result in the well know simultaneous bias of the parameter estimates? An obvious way to circumvent this problem is to use instrumental variables for the likely endogenous explanatory variables. Here we use lags of the endogenous variables as their instruments<sup>97</sup>.

**The dynamic Model:** Using instrumental variables like lag dependent variable changes the model from static to dynamic. In the simple dynamic panel data setting augmented by a lagged dependent variable, one has three standard options of obtaining consistent parameter estimates. One can estimate the model in levels, i.e. using past values of the strictly exogenous values as instruments for the lagged dependent variable and use OLS. Secondly, one can transform the model into first differences, and again use instrumental variables. Finally, one can generalize the method to Generalized Method of Moments (GMM) estimation, where in addition to the implicit assumption that the instruments and the disturbance term are asymptotically uncorrected, further such conditions are exploited.

Irrespective of any simultaneity bias, gravity model augmented by lag dependent variables cannot be consistently estimated by OLS or simply pooled regression type, as

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<sup>96</sup> M. N. Harris and L. Matyas (1998). The econometrics of Gravity Model. *Melbourne Institute Working Paper № 5(98)*, p.4

<sup>97</sup> M.N. Harris and L. Matyas (1998). op. cit., p.4

the lagged dependent variable will be highly correlated with the composite disturbance terms due to the presence time invariant specifications. According to the Matyas the most appropriate estimation methodology is GMM and the reason is the existence of lagged variable and simultaneity bias. Additional advantage of is that the GMM estimation involves explicit exploitation of theoretical moment conditions. These conditions, which are expressed in terms of data and parameters, are estimated by their sample counterparts. The other reason of GMM estimator selection is that GMM takes into account econometrical problems such as endogeneity and autocorrelation and gives more appropriate results.

As discussed above, for the reason dynamic type of model and, OLS may not lead to consistent estimators in models with lag dependent variables. In order to remove the possible inconsistencies, we use one-step GMM estimation method proposed by Arellano and Bond (1991) (Table 7–10).

#### **4. The Summary Statistics of the Variables**

The summary statistics of the variables used in the estimations and their correlations are reported in Tables 4 and 5. The statistics shows that total trade (LNT) and partners countries GDP, have almost identical Standard Deviation among all variables used (see Table 5).

Among the indicators of the model estimated, we found standard deviation of relative exchange rate LNRER and countries similarity index, LNSIM, to be higher among all other variables (see Table 4). The correlation between trade and partner countries and Turkey's GDP found to be positive, quite high and statistically significant. Correlation analysis once more gives evidence on positive relationship between trade and GDP and negative relationship between distance and trade, which is fundamental assumption of Gravity Model. The regression also shows negative and significant relation between trade and relative exchange rare (LNRER) which noted in model estimation and specification section. Table 5 also implies positive and significant impact of relative factor endowment (RLFAC) and country similarity index (LNSIM).



Concerning relationship between conflict dummies and trade we can observe a little surprising picture which gives positive sign of correlation. All conflict dummies are showing positive regression and even World Financial Crisis (WFC) dummy. Moreover, WFC and DC are showing statistically significant results. However, there is no strong correlation among these variables.

*Table 4. Summary Statistics of the Variables, 1990-2013*

<b>Variable</b>	<b>Number of Observations</b>	<b>Mean</b>	<b>Std. Dev.</b>
LNT	1294	20.35382	1.782507
LAGLNT	1234	20.30192	1.758891
LNGDP	1205	25.59697	1.79244
LNGDPTR	1303	26.71248	.2550533
LNDIST	1303	7.798001	.7164205
RLFAC	1060	-.0812703	1.68296
LNSIM	1205	-1.036078	4.218227
LNRER	1099	1.619157	3.794936
WFC	1303	.0445127	.2063103
DC	1303	.0145817	.1199172
AS	1303	.0122794	.1101721
SC	1303	.0376055	.1903133

**Source:** Author's calculations based on UNCOMTRADE (2013), Turkish Statistical Institute (2014), WDI (2013), and WB (2013) databases.

Table 5. Pairwise Correlations, 1990 – 2013

Variables	LNT	LAGLNT	LNGDP	LNGDPTR	LNDIST	RLFAC	LNSIM	LNRER	WFC	AS	ASD	DC	DCD	SC	SCD	
<b>LNT</b>	1.000															
<b>LAGLNT</b>	0.977*	1.000														
<b>LNGDP</b>	0.627*	0.633*	1.000													
<b>LNGDPTR</b>	0.498*	0.485*	0.156*	1.000												
<b>LNDIST</b>	-0.122*	-0.115*	0.404*	0.005	1.000											
<b>RLFAC</b>	0.330*	0.341*	0.592*	0.006	0.094*	1.000										
<b>LNSIM</b>	0.228*	0.240*	0.440*	-0.007	0.033	0.466*	1.000									
<b>LNRER</b>	-0.255*	-0.235*	-0.236*	-0.362*	-0.070*	-0.440*	-0.109*	1.000								
<b>WFC</b>	0.115*	0.163*	0.026	0.226*	-0.001	0.021	-0.013	-0.034	1.000							
<b>AS</b>	0.047	0.052	-0.038	0.193*	-0.079*	-0.040	-0.029	-0.012	-0.024	1.000						
<b>ASD</b>	0.048	0.053	-0.035	0.192*	-0.072*	-0.040	-0.027	-0.015	-0.024	0.997*	1.000					
<b>DC</b>	0.132*	0.134*	0.057*	0.127*	-0.050	0.040	0.045	0.035	0.098*	-0.016	-0.014	1.000				
<b>DCD</b>	0.135*	0.138*	0.061*	0.129*	-0.043	0.038	0.044	0.036	0.101*	-0.015	-0.014	0.997*	1.000			
<b>SC</b>	0.014	0.032	-0.139*	0.080*	-0.137*	-0.072*	-0.097*	0.094*	-0.004	0.564*	0.562*	0.178*	0.186*	1.000		
<b>SCD</b>	0.017	0.035	-0.135*	0.082*	-0.131*	-0.072*	-0.093*	0.094*	-0.003	0.562*	0.564*	0.192*	0.201*	0.998*	1.000	

Source: Author's calculations based on UNCOMTRADE (2013), Turkish Statistical Institute (2014), WDI (2013), and WB (2013) databases.

Note: \* significant at 5%.

Analysis shows negative correlation between all type of conflict dummies and distance variables; moreover the calculated interaction variables (ASD, DCD, and SCD) also have negative correlation with distance variable (LNDIST). Negative sign of this variables explain increase of distance impact on trade, i.e. in conflict exist and country *i* trading less with distance country *j*, than these distance increases more. Point to note that distance variable (LNDIST) has negative and significant correlation with trade variable (LNT). Table 5 indicates that is any type of conflict exit, there is possibility to arising another and this concluded according to positive sign on correlation among all conflict dummies with each other.

*Table 6. Partial Correlations, 1990 – 2013*

Variable	Partial Corr.	Semi partial Corr.	Partial Corr.^2	Semi partial Corr.^2	Significance Value
<b>LNGDP</b>	0.7897	0.6075	0.6237	0.3691	0.0000
<b>LNGDPTR</b>	0.5888	0.3438	0.3467	0.1182	0.0000
<b>LNDIST</b>	-0.6522	-0.4060	0.4254	0.1649	0.0000
<b>RLFAC</b>	-0.1409	-0.0672	0.0199	0.0045	0.0000
<b>LNSIM</b>	-0.1328	-0.0632	0.0176	0.0040	0.0001
<b>LNRER</b>	0.0832	0.0394	0.0069	0.0016	0.0117
<b>WC</b>	-0.0132	-0.0062	0.0002	0.0000	0.6900
<b>AS</b>	-0.0077	-0.0036	0.0001	0.0000	0.8152
<b>ASD</b>	0.0076	0.0036	0.0001	0.0000	0.8176
<b>DC</b>	-0.0656	-0.0310	0.0043	0.0010	0.0472
<b>DCD</b>	0.0637	0.0301	0.0041	0.0009	0.0540
<b>SC</b>	-0.0080	-0.0038	0.0001	0.0000	0.8098
<b>SCD</b>	0.0072	0.0034	0.0001	0.0000	0.8265

**Source:** Author's calculations based on UNCOMTRADE (2013), Turkish Statistical Institute (2014), WDI (2013), and WB (2013) databases

Partial correlation<sup>98</sup> analysis given in the table 6 has following results. The correlation between trade and partner countries GDP and trade with Turkey's GDP found to be positive and statistically significant. Correlation analysis confirms the result given in

<sup>98</sup> Partial correlation displays the partial correlation coefficients of dependent variable with each other independent variables after removing the effects of all other variables.

Table 5. The regression also shows negative and significant relation between trade and distance variable. The relative factor endowment (RLFAC) variable finds to be negative while it was positive in pairwise correlation. Table 6 also implies positive partial correlation between trade and relative exchange rate (LNRER) while it was negative in pairwise correlation.

Concerning relationship between conflict index and trade we can observe a little different picture than pairwise correlation. All conflict indexes are showing negative regression. Moreover, the interaction terms between conflict and distance has positive sign which refer to decreasing distance effect on trade.

The partial correlation results more appropriate and closer to our expectations. These partial correlation coefficients are different, in general, than regular or pairwise correlations. Partial correlation gives the individual and separate correlation result of any dependent variable with each other independent variables taking under control third or in other words after removing the effects of all other variables. This additional regression suggested that the expectations based on simple regression could be affected by other factors and the results could be different. Thus our initial expectations are confirmed by partial correlations. Although, the results for pairwise correlations are different the final regression would show the initial relationship among variables.

## **5. Estimation results**

The estimation results are reported in Tables 7-10. We do also report the results of the estimated models with interaction terms, interactions of conflict dummy variables with the indicator of distance, since we found significant impact for interaction variables. In spite of the applied assumptions and other facts, the estimation results are, to some extent, sensitive to the econometric methodology utilized, the results are plausible and robust.

The findings may be summarized as follows: First, GDP of partner country, LNGDP has always been one of the ingredients of gravity type of trade estimation from 1990 to

2013. It turned out to be significant and positively related with trade whatever the econometric mythology is used (see Table 7 to 9). Moreover, estimated long-run elasticity of GDP is consistent with gravity hypothesis (about 1.4 percent).

We also found that GDP of exporting country (in our case GDP of Turkey), LNGDPTR, is also part of the trade estimation and turned to be positive and statistically significant but with respective low long-run elasticity, about 0.9 percent, (see Table 7 to 9).

There is a strong, statistically significant, and negative relationship between trade and distance, LNDIST (see Table 7 to 9). This implies consistency with gravity theory and indicates that an increase in geographical distance between trading partners is detrimental, i.e. decreases trade growth. Moreover, estimated long-run elasticity of distance variable is relatively high in our case, about 5.5 percent, (see Table 7 to 9).

We found that so-called “catch-up” process is also convenient to trade estimation and trade growth of current year depends on previous year (positive coefficient of the lagged trade), (see Table 7 to 9).

The results show that relative factor endowment, RLFAC, is consistent to theory and the larger this difference, the higher is the volume of trade, i.e. reverse effect. This analysis gives evidence in the test of Helpman and Krugman (1985) endowment test.

Table 7. Determinants of International Trade, Impact of Diplomatic Conflict, 1990-2013. (GMM model, the dependent variable is the log of total trade)

Variables	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
LAGLNT	0.505** [0.076]	0.502** [0.075]	0.505** [0.076]	0.590** [0.094]	0.502** [0.075]	0.590** [0.096]	0.669** [0.059]	0.590** [0.094]	0.668** [0.062]	0.434** [0.069]
LNGDP	1.342** [0.382]	1.338** [0.386]	1.342** [0.382]	1.638** [0.385]	1.338** [0.386]	1.644** [0.392]		1.638** [0.385]		1.508** [0.393]
LNGDPTR	0.715** [0.254]	0.732** [0.254]	0.715** [0.254]		0.732** [0.254]		1.490** [0.226]		1.458** [0.217]	0.725** [0.278]
LNDIST	-5.598** [0.775]	-5.636** [0.773]		-4.346** [1.045]		-4.361** [1.067]	-4.223** [0.623]			-5.999** [0.788]
RLFAC	-0.244** [0.091]	-0.246** [0.091]	-0.244** [0.091]	-0.371** [0.075]	-0.246** [0.091]	-0.381** [0.073]	0.031 [0.075]	-0.371** [0.075]	0.023 [0.071]	-0.326** [0.085]
LNSIM	-0.008 [0.010]		-0.008 [0.010]	-0.014 [0.012]				-0.014 [0.012]	-0.004 [0.011]	-0.005 [0.009]
LNRER	0.013+ [0.008]	0.013+ [0.008]	0.013+ [0.008]	0.006 [0.008]	0.013+ [0.008]	0.006 [0.008]	0.026** [0.008]	0.006 [0.008]	0.022** [0.007]	0.009 [0.008]
WFC	-0.225** [0.054]	-0.223** [0.054]	-0.225** [0.054]	-0.230** [0.060]	-0.223** [0.054]	-0.226** [0.060]	-0.339** [0.050]	-0.230** [0.060]	-0.333** [0.052]	
DC	0.860+ [0.478]	0.838+ [0.474]	0.860+ [0.478]	0.541 [0.489]	0.838+ [0.474]	0.487 [0.487]	1.455* [0.577]	0.541 [0.489]	1.385* [0.552]	
DCD	-0.125+ [0.067]	-0.121+ [0.066]	-0.125+ [0.067]	-0.078 [0.069]	-0.121+ [0.066]	-0.071 [0.069]	-0.208** [0.081]	-0.078 [0.069]	-0.198* [0.077]	
Observations	796	796	796	796	796	796	820	796	796	796
Number of country	50	50	50	50	50	50	51	50	50	50
Wald Chi Squared	7999	7104	3764	8424	3579	7581	6138	2416	2706	5189
Sigma Epsilon sq.	0.0385	0.0384	0.0385	0.0430	0.0384	0.0430	0.0470	0.0430	0.0475	0.0376

Notes: Standard errors in brackets

+significant at 10%; \* significant at 5%; \*\* significant at 1%

Table 8. Determinants of International Trade, Impact of Arab Spring, 1990-2013. (GMM model, the dependent variable is the log of total trade)

Variables	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
LAGLNT	0.505** [0.076]	0.503** [0.076]	0.505** [0.076]	0.591** [0.094]	0.503** [0.076]	0.590** [0.095]	0.670** [0.058]	0.591** [0.094]	0.669** [0.061]	0.434** [0.069]
LNGDP	1.346** [0.383]	1.343** [0.386]	1.346** [0.383]	1.641** [0.386]	1.343** [0.386]	1.646** [0.393]		1.641** [0.386]		1.508** [0.393]
LNGDPTR	0.714** [0.251]	0.729** [0.250]	0.714** [0.251]		0.729** [0.250]		1.486** [0.224]		1.455** [0.214]	0.725** [0.278]
LNDIST	-5.609** [0.777]	-5.644** [0.775]		-4.356** [1.050]		-4.372** [1.070]	-4.212** [0.616]			-5.999** [0.788]
RLFAC	-0.246** [0.091]	-0.248** [0.091]	-0.246** [0.091]	-0.373** [0.075]	-0.248** [0.091]	-0.383** [0.073]	0.030 [0.075]	-0.373** [0.075]	0.022 [0.071]	-0.326** [0.085]
LNSIM	-0.007 [0.010]		-0.007 [0.010]	-0.013 [0.012]				-0.013 [0.012]	-0.004 [0.011]	-0.005 [0.009]
LNRER	0.013+ [0.008]	0.013+ [0.008]	0.013+ [0.008]	0.005 [0.008]	0.013+ [0.008]	0.005 [0.008]	0.025** [0.008]	0.005 [0.008]	0.022** [0.007]	0.009 [0.008]
WFC	-0.225** [0.053]	-0.223** [0.053]	-0.225** [0.053]	-0.231** [0.059]	-0.223** [0.053]	-0.227** [0.059]	-0.339** [0.049]	-0.231** [0.059]	-0.333** [0.052]	
AS	-1.707* [0.790]	-1.719* [0.795]	-1.707* [0.790]	-1.707+ [0.907]	-1.719* [0.795]	-1.730+ [0.921]	-1.902** [0.734]	-1.707+ [0.907]	-1.835* [0.750]	
ASD	0.215* [0.105]	0.216* [0.106]	0.215* [0.105]	0.218+ [0.122]	0.216* [0.106]	0.221+ [0.124]	0.243* [0.097]	0.218+ [0.122]	0.235* [0.100]	
Observations	796	796	796	796	796	796	820	796	796	796
Number of country	50	50	50	50	50	50	51	50	50	50
Wald Chi Squared	7044	6577	3814	7749	3594	7301	5848	2390	2568	5189
Sigma Epsilon sq.	0.0386	0.0385	0.0386	0.0431	0.0385	0.0431	0.0471	0.0430	0.0476	0.0376

Notes: Standard errors in brackets

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Table 9. Determinants of International Trade, Impact of Security Conflict, 1990-2013. (GMM model, the dependent variable is the log of total trade)

Variables	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
LAGLNT	0.499** [0.072]	0.496** [0.071]	0.499** [0.072]	0.584** [0.088]	0.496** [0.071]	0.583** [0.089]	0.669** [0.059]	0.584** [0.088]	0.670** [0.062]	0.434** [0.069]
LNGDP	1.372** [0.360]	1.369** [0.364]	1.372** [0.360]	1.666** [0.362]	1.369** [0.364]	1.671** [0.369]		1.666** [0.362]		1.508** [0.393]
LNGDPTR	0.709** [0.254]	0.724** [0.254]	0.709** [0.254]		0.724** [0.254]		1.481** [0.227]		1.447** [0.217]	0.725** [0.278]
LNDIST	-5.661** [0.738]	-5.696** [0.734]		-4.420** [0.985]		-4.435** [1.006]	-4.192** [0.625]			-5.999** [0.788]
RLFAC	-0.250** [0.088]	-0.252** [0.088]	-0.250** [0.088]	-0.375** [0.071]	-0.252** [0.088]	-0.385** [0.070]	0.031 [0.074]	-0.375** [0.071]	0.023 [0.071]	-0.326** [0.085]
LNSIM	-0.007 [0.010]		-0.007 [0.010]	-0.014 [0.012]				-0.014 [0.012]	-0.004 [0.011]	-0.005 [0.009]
LNRER	0.013+ [0.008]	0.014+ [0.008]	0.013+ [0.008]	0.006 [0.008]	0.014+ [0.008]	0.006 [0.008]	0.025** [0.008]	0.006 [0.008]	0.021** [0.007]	0.009 [0.008]
WFC	-0.222** [0.052]	-0.220** [0.052]	-0.222** [0.052]	-0.228** [0.058]	-0.220** [0.052]	-0.224** [0.058]	-0.337** [0.049]	-0.228** [0.058]	-0.331** [0.052]	
SC	-1.491* [0.753]	-1.516* [0.756]	-1.491* [0.753]	-1.447+ [0.853]	-1.516* [0.756]	-1.492+ [0.865]	-1.416+ [0.724]	-1.447+ [0.853]	-1.448+ [0.770]	
SCD	0.183+ [0.104]	0.186+ [0.105]	0.183+ [0.104]	0.177 [0.119]	0.186+ [0.105]	0.183 [0.120]	0.190+ [0.103]	0.177 [0.119]	0.197+ [0.109]	
Observations	796	796	796	796	796	796	820	796	796	796
Number of country	50	50	50	50	50	50	51	50	50	50
Wald Chi Squared	7642	7196	4325	8261	4102	7716	5987	2522	2608	5189
Sigma Epsilon sq.	0.0385	0.0383	0.0384	0.0429	0.0383	0.0429	0.0471	0.0428	0.0476	0.0376

Notes: Standard errors in brackets

+ significant at 10%; \* significant at 5%; \*\* significant at 1%



Table 10: Determinants of International Trade, Impact of Diplomatic Conflict for Neighbour Countries, 1990-2013. (GMM model, the dependent variable is the log of total trade)

Variables	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
LAGLNT	0.401** [0.134]	0.413** [0.144]	0.401** [0.134]	0.515** [0.144]	0.413** [0.144]	0.799** [0.118]	0.426** [0.158]	0.515** [0.144]	0.423** [0.157]	0.342* [0.142]
LNGDP	0.993** [0.358]	0.433* [0.179]	0.993** [0.358]	1.829** [0.342]	0.433* [0.179]	0.805* [0.388]		1.829** [0.342]		0.488 [0.421]
LNGDPTR	1.420** [0.106]	2.033** [0.281]	1.420** [0.106]		2.033** [0.281]		2.436** [0.324]		2.495** [0.391]	2.232** [0.208]
LNDIST	-7.153** [0.763]	-7.501** [1.074]		-5.097** [0.915]		-2.202+ [1.149]	-7.550** [0.977]			-8.248** [1.022]
RLFAC	0.251** [0.081]	0.224* [0.089]	0.251** [0.081]	0.271** [0.092]	0.224* [0.089]	0.082 [0.151]	0.283** [0.060]	0.271** [0.092]	0.209* [0.086]	0.201+ [0.106]
LNSIM	-0.236* [0.114]		-0.236* [0.114]	-0.560** [0.148]				-0.560** [0.148]	0.140* [0.061]	-0.012 [0.153]
LNRER	0.006 [0.014]	0.013 [0.017]	0.006 [0.014]	0.009 [0.015]	0.013 [0.017]	0.004 [0.010]	0.021 [0.019]	0.009 [0.015]	0.009 [0.016]	0.014 [0.018]
WFC	-0.358** [0.107]	-0.365** [0.111]	-0.358** [0.107]	-0.414** [0.107]	-0.365** [0.111]	-0.500** [0.091]	-0.385** [0.124]	-0.414** [0.107]	-0.366** [0.112]	
DC	-1.782+ [0.913]	-1.996+ [1.128]	-1.782+ [0.913]	-1.927* [0.948]	-1.996+ [1.128]	-1.797 [1.493]	-2.121 [1.436]	-1.927* [0.948]	-1.696 [1.246]	
DCD	0.260+ [0.136]	0.280+ [0.161]	0.260+ [0.136]	0.282* [0.142]	0.280+ [0.161]	0.244 [0.210]	0.298 [0.207]	0.282* [0.142]	0.239 [0.178]	
Observations	83	83	83	83	83	83	83	83	83	83
Number of country	5	5	5	5	5	5	5	5	5	5
Wald Chi Squared	2220	2470	544.0	28929	4890	735.5	820132	80.84	5373	1070
Sigma Epsilon sq.	0.0274	0.0269	0.0270	0.0324	0.0265	0.0463	0.0277	0.0319	0.0266	0.0246

Notes: Standard errors in brackets

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

According to Helpman and Krugman an endowment based 2X2X2 model is chosen, where one of the two goods is differentiated and the other is homogeneous. The two factors of production are the stock of capital and the labour force (proxied by population). In such a framework the total volume of trade of each country could be defined as the sum of inter- and intra-industry trade volumes. And according to theory specified, the larger this difference, the higher is the volume of inter-industry (and overall) trade. Estimated long-run elasticity for factor endowment

The results for the GMM estimation emphasize that relative country size similarity, LNSIM, does not have significant impact on trade whatever econometric estimation used. This term expected to show how relative similarity of countries impact on trade but our analysis shown that country similarity, proxy by relative size of GDP does not have any impact of trade, at last in given analysis of Turkey's trade relations. However, both partner's GDP and exporters GDP have highly significant and positive impact on trade.

Estimations results that bilateral exchange rate, LNRER, between two trading countries has changeable but with significant impact dominance. This variable loses its significance when model does include exporter's GDP and gets significant in reverse models. Moreover, significance level increasing when model excluded partner country's GDP. Estimated long run elasticity of bilateral exchange rate is the same 0.013 percent for the models, where GDPTR used significance at 10% level and 0.025 when excluding GDP with the significance level at five percent (see Table 6 to 9).

Analysis shows that in general conflict has negative impact on trade, especially when considering security type of conflicts. First looking to the impact of World Financial Crisis, WFC, dummy as expected the variable has negative and significant level of impact on trade with the estimated long-run elasticity is about 0.22 percent. This is additional evidence showing how impact of WFC harmfully affected world economy. Regarding researching conflict variables impacts, it defined that considering Turkish trade relations Diplomatic Conflict has a positive impact on trade (see Table 7). This

may come across as a surprising result; taking into account deduction normally the relationship of any type of conflict with trade is negative.

In order to avoid multi co linearity we made additional tests for DC with specific country groups which are neighbour countries, Turkic countries and European Customs Union countries. Additional specific analysis shown that Diplomatic Conflict, DC, has negative and significant impact on trade of Turkey with neighbour countries (see Table 10).

Concerning analysis of general security type of conflict's impact on trade, the relationships find to be negative and statistically significant whatever econometric estimation used. Estimated long-run elasticity for both Arab Spring (AS) and Security Conflict (SC) is above 1 which states high rate of impact. The long-run elasticity coefficient for AS estimated about -1.70 percent and for SC is about -1.50 percent. This also defines that impact of AS conflict higher than world security conflicts. Our estimates suggest that a one percent increase in the number of security conflicts is associated with a decrease in bilateral trade by about 1.5 for percent.

The interaction term, Distance X Conflict, suggests that the Conflict have an impact of the effect of distance and this impact is negative, i.e. conflict reduces the gravity effect on trade. Distance normally has a negative sign and conflict has also a negative sign. But the interaction terms Distance X Conflict have a positive sign, which is the case means decrease the impact of distance. However, this relationship does not always fit our analysis. This hypothesis is true when we have both negative sign of Distance and Conflict variables. In the Table 7, where Diplomatic Conflict (DC) results are given this impact is turned to have negative sign which states increase the impact of distance. In case of interaction of distance with security conflicts the impact found to be positive and statistically significant. So, no matter this index is a poor indicator and the value of long-run elasticity coefficient is low, it has impact on performance of gravity model and on interrelation of trade and distance.

We also estimated the original gravity model with the given data in order to define whether it fits our case or not. The findings are as follows: all variables included in gravity model fit our case and distance has negative impact on trade. Concerning variables LNSIM, LNRER and RLFAC these variables do not have statistically significance and the reason could be not originally involved in gravity model (see model J, in each Table6 to 9).

## **6. Summary**

This chapter has analysed the impact of the conflicts and trade performance in case of Turkey. In order to do so, we first developed a new conflict index based on newspapers, publications, journals books and data on free encyclopaedia ([www.wikipedia.org](http://www.wikipedia.org)). We have defined some assumptions which involved in selection of conflict index and we argued that this new index reflects the degree of conflict relations among Turkey and other countries and world security conflict as well. We also measured countries similarity index in terms of GDP, bilateral exchange rate in terms of deflators and relative factor endowment between countries.

We found a negative relationship between conflict and trade. In other words, if there is conflict issue between trading partner counties there is a decrease on trade relations between them. The estimation results also showed that interaction term between conflict and distance has negative impact on distance and reduces its impact on trade. But this result is acquired when we have both negative impact of distance and conflict on trade.

This chapter has also showed the significance of Relative factor endowment and bilateral exchange rate on trade performance and once more gives evidence on negative impact of World Financial Crisis on trade.

## Chapter IV

### Conclusion and Policy Implications

This thesis provides evidence on the inter-relations between conflict, geographical distance and trade for about 60 countries with different characteristics from 1990 to 2013. The findings of this study especially undercurrent crisis and conflict periods may be summarized as follows:

- Gravity model fits for the case of Turkish trade implying distance matters for international trade.
- Our findings show that while diplomatic conflicts among countries do not have strong significant impact on trade, both security conflicts and Arab Spring affected Turkish trade negatively.
- We found in this study that the interaction between conflict and distance is important. In other words, conflicts affect the impact of distance on trade significantly.

#### 1. Main Findings

Gravity model was firstly introduced by Tinbergen in 1962, as a purely empirical proposition to explain bilateral trade flows. This model became an important tool to analyse current trade flows without little or no theoretical underpinnings. In some cases, this model has been used to predict trade potential and flow between countries.

The gravity equation is an empirical model for analysing bilateral trade flows based on geographical characteristics. The model is analogous to the Newtonian physics function and describes the “force of gravity” in economics. The model explains the flow of trade between a pair of countries as being proportional to their economic “mass” represented by GDP and inversely proportional to the distance between them.

In today’s World, politics and international relations among countries play very important roles in formations and development of international trade. Therefore, in this study, we modify the gravity model of international trade by integrating conflict into the

model. In order to do so, we defined and measured two types of conflicts: diplomatic and security. We then included into the model to explore their impacts on trade.

The descriptive findings indicate that there is a positive relation between religion similarity and trade relations at least in case of Turkey. There is, however, no significant relation between cultural similarity and trade. Finally, we descriptively proved the negative relation between distance and trade.

Econometric estimation in chapter 3 gives us evidence on importance of gravity model in current trade relations. We found that distance has negative impact on trade and conclude that as long as distance between trading partners, trade decreasing. We also found a negative relationship between security conflict and trade. The estimation results also showed that interaction between conflict and distance is also significant. Conflict increases the impact of distance on trade. However, the results for Diplomatic Conflict are ambiguous considering these two variables we can state that specific conflicts have highly impact on trade rather than the general ones. Finally, Arab Spring as a specific form of conflict had a very significant negative impact on Turkish trade.

Previous chapter's findings suggest that enhancing trade performance not only depends on avoiding conflicts, but also decreasing Relative Factor Endowment and enhancing Bilateral Exchange Rate between trading partners are playing important role too.

## **2. Policy Implications**

The results obtained in this study allow us to argue that global trade relations highly related to politics. Conflict among trading partners induces risks and raise the transactions costs and thereby lower the volume of international trade. The findings in this study imply that countries should have well developed political and economic strategies for sustainable trade relations. The main aim of them should be the reduction of conflict and enhancing cooperation through trade and multi-dimensional politics. One way preventing the emergence of conflicts among parties would be creating political or economic cooperation and unions.

To conclude, the main policy derived from this study for any economy would be “Don’t fight” and “Don’t let the others fight” simply because reducing conflicts increases trade which enhances growth and welfare of all parties.

## Appendix A: Countries in the Sample

Code	Country Name	Trade Union
12	Algeria	GAFTA
31	Azerbaijan	NBR
36	Australia	N/A
40	Austria	ECU
56	Belgium	ECU
76	Brazil	N/A
100	Bulgaria	ECU/NBR
124	Canada	N/A
156	China	N/A
192	Cuba	N/A
203	Czech Republic	ECU
208	Denmark	ECU
246	Finland	ECU
251	France	ECU
268	Georgia	NBR
276	Germany	ECU
300	Greece	ECU/NBR
348	Hungary	ECU
364	Iran	NBR
368	Iraq	NBR/GAFTA
372	Ireland	ECU
376	Israel	N/A
381	Italy	ECU
392	Japan	N/A
398	Kazakhstan	TRK
400	Jordan	GAFTA
408	Dem. People's Rep. of Korea	N/A

Legend: GAFTA (Great Arab Free Trade Area); NBR (Neighbour Country); ECU (European Customs Union Country); TRK (Turkic Country Member); N/A (Not Applicable).



### Appendix A (Cont.): Countries in the Sample

Code	Country Name	Trade Union
410	Rep. of Korea	N/A
414	Kuwait	GAFTA
417	Kyrgyzstan	TRK
422	Lebanon	GAFTA
434	Libya	GAFTA
504	Morocco	GAFTA
528	Netherlands	ECU
579	Norway	ECU
586	Pakistan	N/A
616	Poland	ECU
620	Portugal	ECU
634	Qatar	GAFTA
642	Romania	ECU
643	Russian Federation	N/A
682	Saudi Arabia	GAFTA
699	India	N/A
703	Slovakia	ECU
705	Slovenia	ECU
724	Spain	ECU
752	Sweden	ECU
757	Switzerland	N/A
760	Syria	NBR
762	Tajikistan	N/A
784	United Arab Emirates	GAFTA
788	Tunisia	GAFTA
792	Turkey*	

Legend: GAFTA (Great Arab Free Trade Area); NBR (Neighbour Country); ECU (European Customs Union Country); TRK (Turkic Country Member); N/A (Not Applicable).

Note: \* Turkey N/A because of all analysis based on this country's trade data.

### Appendix A (Cont.): Countries in the Sample

<b>Code</b>	<b>Country Name</b>	<b>Trade Union</b>
795	Turkmenistan	
804	Ukraine	N/A
818	Egypt	GAFTA
826	United Kingdom	ECU
842	USA	N/A
860	Uzbekistan	TRK

Legend: GAFTA (Great Arab Free Trade Area); NBR (Neighbour Country); ECU (European Customs Union Country); TRK (Turkic Country Member); N/A (Not Applicable).

**Appendix B: Classification by Broad Economic Categories (BEC)**

<b>Code</b>	<b>Product Group Name</b>
1	Food and beverages
11	Primary
12	Processed
2	Industrial supplies not elsewhere specified
21	Primary
22	Processed
3	Fuels and lubricants
31	Primary
32	Processed
4	Capital goods (except transport equipment), and parts and accessories thereof
41	Capital goods (except transport equipment)
42	Parts and accessories
5	Transport equipment and parts and accessories thereof
51	Passenger motor cars
52	Other
53	Parts and accessories
6	Consumer goods not elsewhere specified
61	Durable
62	Semi-durable
63	Non-durable
7	Goods not elsewhere specified

**Appendix C: Classification by International Standard Industrial Classification of  
All Economic Activities, Rev.3**

<b>Code</b>	<b>Product Group Name</b>
A	Agriculture, hunting and forestry
01	Agriculture, hunting and related service activities
02	Forestry, logging and related service activities
B	Fishing
05	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
C	Mining and quarrying
10	Mining of coal and lignite; extraction of peat
11	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
12	Mining of uranium and thorium ores
13	Mining of metal ores
14	Other mining and quarrying
C	Mining and quarrying
D	Manufacturing
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddler, harness and footwear
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	Manufacture of paper and paper products
22	Publishing, printing and reproduction of recorded media
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	Manufacture of chemicals and chemical products

**Appendix C (Cont.): Classification by International Standard Industrial  
Classification of All Economic Activities, Rev.3**

<b>Code</b>	<b>Product Group Name</b>
25	Manufacture of rubber and plastics products
26	Manufacture of other non
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery and equipment
29	Manufacture of machinery and equipment n.e.c.
30	Manufacture of office, accounting and computing machinery
31	Manufacture of electrical machinery and apparatus n.e.c.
32	Manufacture of radio, television and communication equipment and apparatus
33	Manufacture of medical, precision and optical instruments, watches and clocks
34	Manufacture of motor vehicles, trailers and semi
35	Manufacture of other transport equipment
36	Manufacture of furniture; manufacturing n.e.c.
37	Recycling
E	Electricity, gas and water supply
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
F	Construction
45	Construction
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles

**Appendix C (Cont.): Classification by International Standard Industrial  
Classification of All Economic Activities, Rev.3**

<b>Code</b>	<b>Product Group Name</b>
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods
H	Hotels and restaurants
55	Hotels and restaurants
I	Transport, storage and communications
60	Land transport; transport via pipelines
61	Water transport
62	Air transport
63	Supporting and auxiliary transport activities; activities of travel agencies
64	Post and telecommunications
J	Financial intermediation
65	Financial intermediation, except insurance and pension funding
66	Insurance and pension funding, except compulsory social security
67	Activities auxiliary to financial intermediation
K	Real estate, renting and business activities
70	Real estate activities
71	Renting of machinery and equipment without operator and of personal and household goods
72	Computer and related activities
73	Research and development
74	Other business activities
L	Public administration and defence; compulsory social security
75	Public administration and defence; compulsory social security
M	Education
80	Education
N	Health and social work
85	Health and social work

**Appendix C (Cont.): Classification by International Standard Industrial  
Classification of All Economic Activities, Rev.3**

<b>Code</b>	<b>Product Group Name</b>
O	Other community, social and personal service activities
90	Sewage and refuse disposal, sanitation and similar activities
91	Activities of membership organizations n.e.c.
92	Recreational, cultural and sporting activities
93	Other service activities
P	Private households with employed persons
95	Private households with employed persons
Q	Extra
99	Extra

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