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Assessment of the Impact of European Union Free Trade Agreements on Trade Flows

By

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Abstract

It is a general belief that trade agreements between countries and regions are beneficial for development and improving economic wealth through increased trade volumes between nations due to tariff liberalization and regulatory alignment. Nevertheless, there are some risks involved in engaging into such types of agreements, namely the risk of trade diversion which in general leads to a lower global welfare, according to theory. Therefore, the purpose of this thesis is to identify the effects of Free Trade Agreements (FTA) signed between the European Union and its trading partners. Furthermore, it is of our interest to identify which part exactly of trade liberalization embedded into FTAs is more influential on trade flows, tariff elimination or non tariff barriers.

To answer these questions, we begin with an overview of the FTA agreements in order to indentify the tariff elimination phasing out period. The overall conclusion is that in general, tariff line for industrial exports to the EU from the partner countries are eliminated either since entry in force of the agreement or within a shorter period of time. On the other hand, European exports of industrial products are subject to a relatively longer phasing out period. Furthermore, it is important to mention, that as agricultural and food products are considered rather sensitive for the EU, custom duties elimination on these products is rather stiff. As far as NTBs is concerned, our research shows that throughout the years some NTB measures are emerging as more important and their implementation rate is higher compared to other, for instance technical measures which in 2004 accounted for 59 % of NTB measures' distribution.

The first part of the research question is answered after running the gravity model including a FTA dummy in the equation in order to quantify the impact of trade agreements on trade flows. The results of the regression analysis show that EU trade agreements have a significant impact on bilateral trade flows for partners, more precisely it leads to 0.44% more bilateral trade compared to countries with which the EU has not signed an FTA. The rest of the variables demonstrated the predicted effect from previous research carrier on the topic.

The second part of the research was aimed at identifying what trade costs included in EU FTAs (tariff or non tariff barriers) have more influence on trade flows levels. In order to be able to answer the question, the FTA dummy included in the first gravity regression was substituted by two independent variables, weighted average MFN tariff rates and NTBs. In general, according to recent literature, tariff rates are diminishing progressively in the last couple of decades and the importance of non tariff measures as trade policy tools is rising. The results of the regression analysis, however, show that if MFN tariff rates increase by 1%, bilateral trade will go down by 1.07%. NTMs measure, on the other hand, had a coefficient of 0.0094, meaning that trade flows decrease by almost 0.01% if NTMs between trading partners increase by 1%. There are several explanations for these results. First, EU FTAs signed in the period chosen were not focusing on regulatory integration as much as on tariff elimination. Next, regulatory integration is a slow process, thus the benefits from NTM reductions are taking time to realize.

Table of content

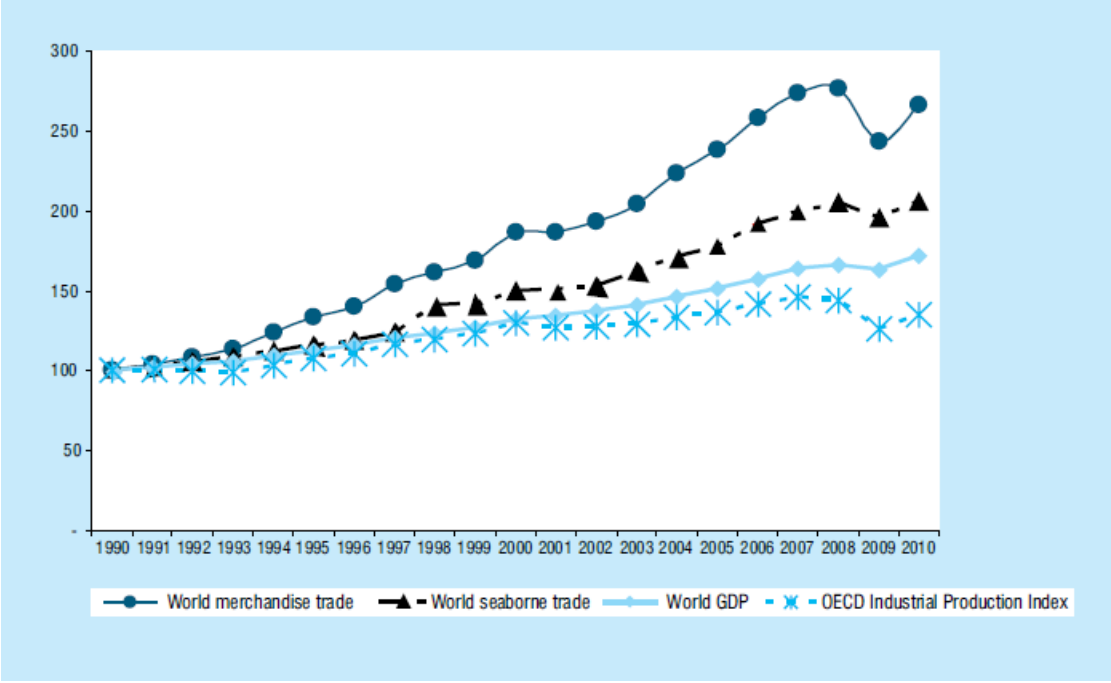
Figures:

Tables:

Chapter 1 General Introduction

Nowadays, the global economy is quickly becoming more integrated thanks to market openness, increase in trade volumes and continuous technological development in the information and communication area, thus generating the prospect for further economic growth. World trade has been growing continuously in the last couple of decades (before the global economic crisis slump in 2009) due to four factors (Feenstra, 1998) including trade liberalization, lower transportation costs, economies converging in economic size and outsourcing. As international economics theory tells us trade between nations leads to higher welfare for trading partners. As a result in the last couple of decades we have witnessed an impressive rise in the number of Regional Trade Agreements (RTAs) signed. Today, almost all member states of the World Trade Organization (WTO) are members of at least one such agreement. The major goal of signing such an agreement for policy makers is to promote economic growth and development and higher trade volumes through the elimination or reduction of trade barriers.

Figure 3.1 GDP, world merchandise trade, world seaborne trade and OECD industrial production index



Source: UNCTAD, 2010

Even though there is a significant number of trade agreements signed internationally, trade barriers still exist and they are surprisingly rather high. Trade costs represent (as tax equivalent) around 170% (Anderson and Wincoop, 2004), from which 21% accounts for transportations costs, 44% is incurred due to border related trade barriers

and the rest (55%) is due to retail and wholesale distribution. In Figure 2 can see how are these costs are further broken down. Obviously, there is ground for further reduction in trade barrier which will allow for trade to approach the levels predicted by economic theory.

Generally, trade agreements are believed to have a positive impact on trade activity, trade creation and as a consequence on consumer surplus (through lower prices) and welfare. Nevertheless, an FTA involves some risks as it might result in discrimination of other trading countries (not taking part of the FTA), exclude the weakest economies (Least Developed Countries) or simply make trade more difficult (European Commission, 2006).

The European Union has actively taking part in numerous and various trade agreements. So far, since 1997, the EU has successfully finalized around 18 FTAs. In 2006, the European Commission set new competitive strategy with the aim of improving the European trade competitive position by eliminating tariff and non-tariff barriers and through the adoption of a new generation of FTAs that prepare the ground for "*the next level of multilateral liberalization*" (European Commission, 2006). Some of the rising developing economies, such as China, India, Russia and Brazil, are regarded as a priority to achieve trade liberalization.

1.1. Objective of Thesis

In view of the great amount of trade agreements the European Union is taking part in, it was interesting for the author to gain thorough insight in the final results of signing a trade agreement in terms of whether initial goals, set by the EU and its partner countries, were achieved. Moreover the greater the number of trade agreements, one the less powerful one would expect the preferential effect to be. The core objective of this research is to identify the level of trade cost reduction for countries taking part in a trade agreement with the European Union. In order to be able to reach this goal, first a clear definition of the trade costs has to be developed, through the identification of trade cost components. Moreover a quantitative analysis is going to be used to identify which components significantly explain trade costs for specific regions. As a result the main research question to be answered in this paper is:

What effects have EU trade agreements had on trade flow levels for trading partner countries and what types of trade costs have been most influential in this?

The following sub-questions have to be answered at the end of this research:

- How to define trade costs? What are the components of trade costs?
- What is the best methodology to be used in order to best grasp the effect of trade agreements on trade flows?
- How can we measure the impact of specific types of trade costs?

- What do EU trade agreements set as a goal for trade cost reduction?

1.2. Structure of the thesis

The paper is organized as follows:

Chapter 2 – Literature review will present an overview of previous research done on measuring trade costs, including identification of the important components that constitute trade barriers. In addition, an overview of EU trade agreements is going to be provided describing the aims of individual FTA as far as trade costs are concerned. Information related to the tariff phasing out schemes for each individual FTA will be summarized. This will help the author to choose the trade agreements and the participating countries to be further investigated in order to answer the research question.

Chapter 3 – Methodology and Data – In order to answer the research question, the gravity model is going to be used. For the first part of the question, the traditional gravity model generally used in the literature to explain trade flows is employed, including GDP levels, distances and dummy for presence of an FTA, in order to determine the impact of EU FTAs on trade flows. For the second part of the question, again the gravity model is used. In this case, however, the dummy for trade agreement is going to be substituted with tariff lines and non-tariff barrier measures. The data for the quantitative analysis is obtained from the International Monetary Fund, the World Bank and World Integrated Trade Solution provided jointly by UNCTAD and the World Bank.

Chapter 4 – Result and Analysis – In this part of the thesis results from the regression analysis are going to be presents and the research question is going to be answered in two parts. First, we are looking at the impact of signing a FTA with the EU on trade flows of EU trade partners. The next part is dedicated to finding, which part of FTA agreements, tariff elimination or NTBs, is has more significant influence on trade liberalization and trade volumes.

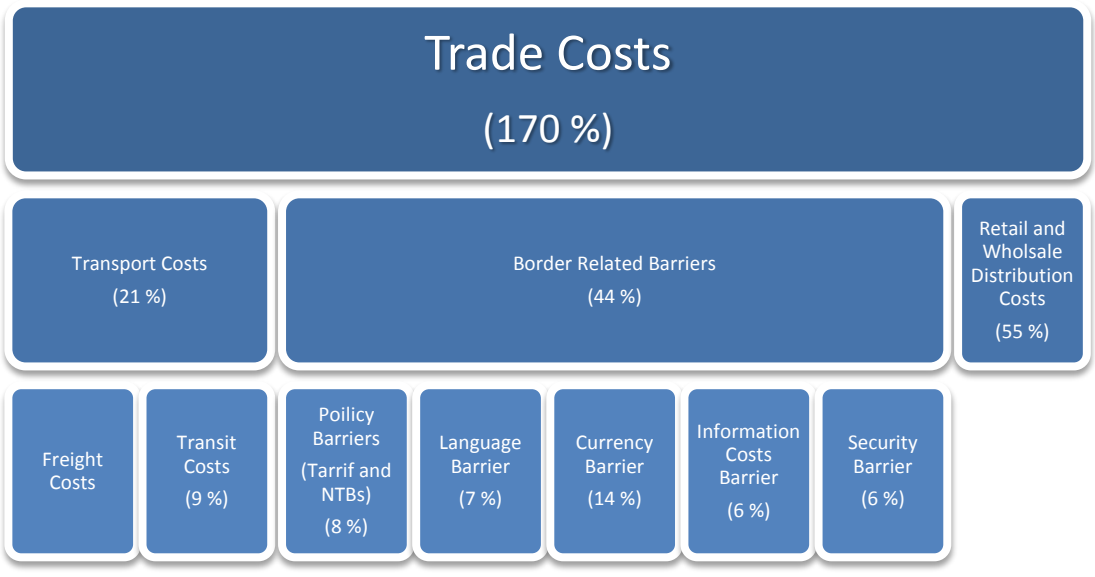
Chapter 5 – Conclusions – This section of the paper presents the conclusions of the research and present recommendations for future studies.

Chapter 2 Literature Review

2.1. Literature Review on trade cost components

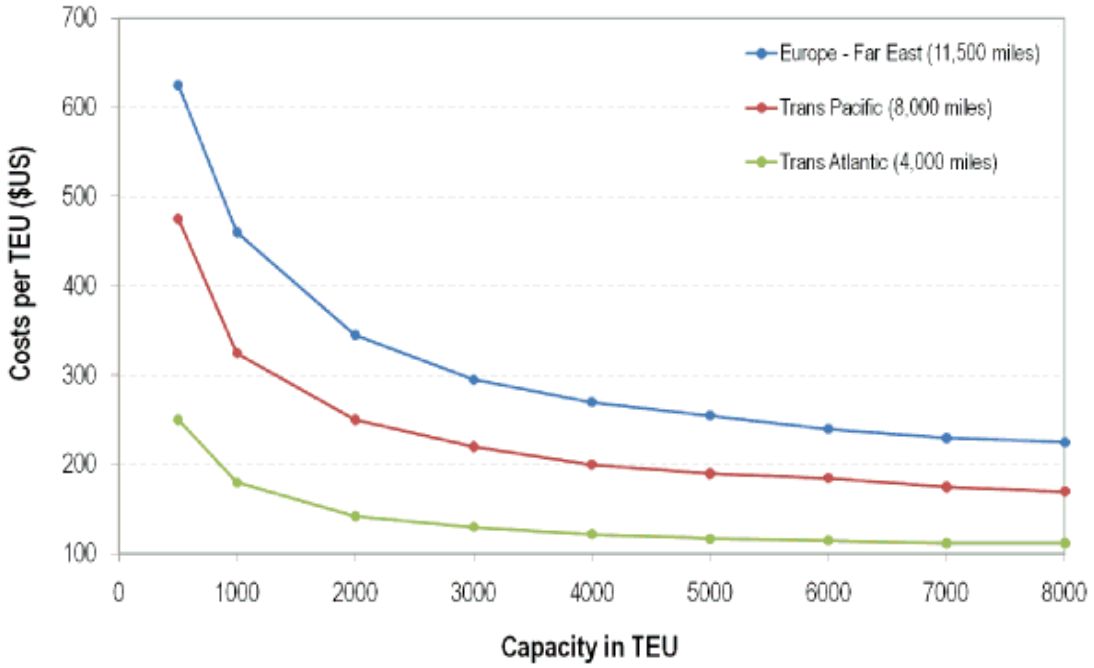
Anderson and Wincoop (2004), who have investigated trade costs thoroughly, inferred them from the gravity model by linking trade flows and observable and unobservable trade costs. Overall their analysis concludes that trade costs are rather substantial, namely representing a 170% (an ad valorem tax equivalent) total trade barrier. The authors define in general trade costs as all types of costs incurred during the process of moving the goods from the producer to the final consumers. The economic policy of a country is an important factor influencing the trade costs for traders. On the one hand, there are direct policy measures such as tariffs and NTBs, which are not of such a big importance. On the other hand, decisions related to investments in transport infrastructure, administrative efficiency of law enforcement and property rights institutions as well as regulatory and information institutions are considered to be of great importance in order to achieve lower trade costs and thus promote higher levels of trade. Trade costs consist of three main components, which can be further broken down into other elements, figure 2.1 . In their research they have estimated that border barriers constitute 44% of the final trade costs. Border barriers include policy barriers (tariffs and non tariff barriers (NTBs)), language barriers, currency barriers, information differences as well as security barriers. In addition, transportation costs, account for 21% of trade costs. When considering transportation costs, the authors include freight rates and the time cost of transporting the good. Last but not least, retail and wholesale distribution costs constitute the largest part of trade costs, around 55%.

Figure 2.1 Trade cost components



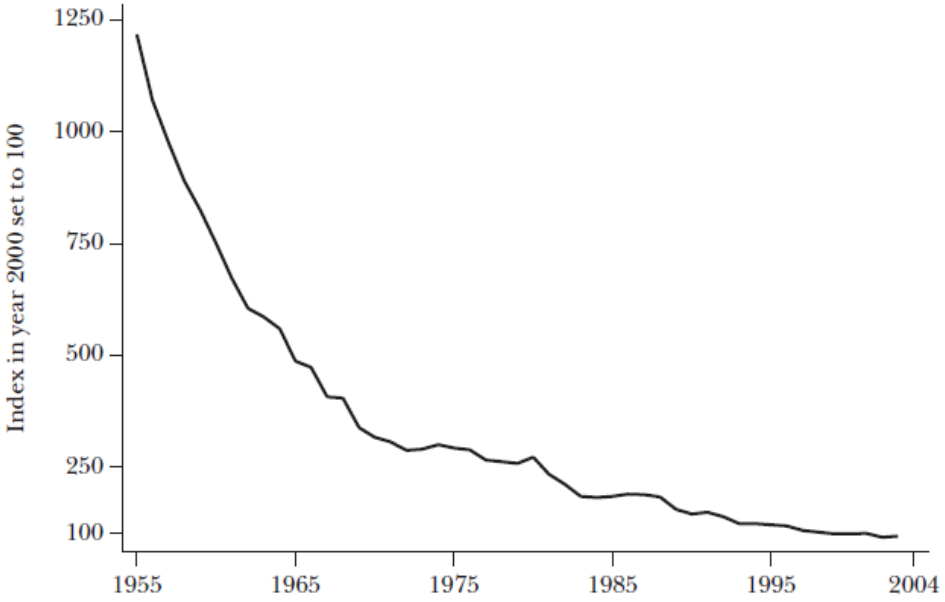
Source: Created by the author from Anderson and Wincoop (2004)

Figure 2.2 Decreasing cost per TEU



Source: Cullinane, K. and M. Khanna (2000).

Figure 2.3 Worldwide Air Revenue per Ton-Kilometer



Source: Hummels (2007), International Air Transportation Association

Transportation costs represent a considerable burden for trade in goods that are produced in multiple stages across different countries. According to a study of the World Bank in 2001, US trading partners face a higher transport cost incidence than tariff cost incidence. Glaeser and Kohlhase (2003) study land transportation costs in the United States and conclude that for the period 1947-1999 land transportation costs have declined for all modes. As far as ocean transportation, lower shipping costs are the result of technological development and institutional adjustments, namely the introduction of flags of conveniences which allow of shipping companies to lower manning costs and avoid regulatory burdens. However, containerization and economies of scale in large ships have significantly lowered the cost per TEU (Figure 2.2). Lastly, air transportation industry has faced significant decrease in cost per ton since the 1950s (Figure 2.3.).

Policy barriers are another important consideration when discussing trade costs. Tariff barriers have continuously fallen over time, especially since the establishment of the General Agreement of Tariff and Trade (GATT) in 1948 (World Trade Report, 2008). The World Trade Organization (WTO) has estimated that tariffs have declined from 14% in 1952 to 3.9% in 2005. As mentioned, previously both developed and developing countries have profited from lower tariffs. As an example for the developed world, the establishment of the European Union and the North American Free Trade Agreement (NAFTA) are for most part responsible for the decrease in tariff. As far as, Least Developed Countries (LDCs) and developing countries are concerned, these are offered preferential access to developed countries market through different types of preferential trade regulations aimed at encouraging industrialization and development through trade. In 1968 UNCTAD suggested the creation of the GSP to help growth in developing and LDCs countries. Apart from GSP, LDCs benefit from a fully liberalized access to the European Market through the “Everything But Arms” Regulation.

Besides border tariffs, countries make use of other policy measures in order to control and restrict trade of goods, services and factors of production, also referred to as Non Tariff Barriers (NTBs). According to Deardorff and Stern (1998), NTBs can be divided in to five Broad categories. First, there are quantitative restrictions (e.g. import quotas, export limitations and bans, licensing, rules of origin and others) to trade. Next, the second category included fees (other than tariffs) and related procedure that intend to control imports, for instance anti-dumping and countervailing duties enforced on goods, which are exported bellow costs or with the help of subsidies of the exporters domestic government. The third category includes an extensive set of macroeconomic policies, such as direct governmental participation and restrictive practices in trade. The last two categories are concerned with customs procedures, technical barriers to trade and administrative methods. Customs procedures include customs clearance practices, customs valuation methods and classification procedures. The technical barriers to trade take care of quality standards, safety and industrial standards, health, sanitary and environmental regulations as well as packing and labeling regulations (Beghin, 2006).

As tariffs continue to go down with the increasing number of trade agreements, the need for protectionism of domestic industries requires other measures. As a result, the importance of NTBs has grown, except for subsidies and quotas. The European

Commission states that unreasonably trade restrictive regulations and procedures have become the major obstruction to further growing trade volumes. From the tables bellow (Table 4.2), one can see the evolution of NTBs based on the extent of application, as reported by UNCTAD (2005). Throughout the years non-core NTB measures have become relatively more important compared to core measures as an instrument for trade policy, the percentage use of non-core NTBs has grown from 55.3 % in 1994 to 84.8 % in 2004. On the other hand, the opposite trend is recorded for core NTBs measures. The largest share of non-core NTBs is allocated to technical measure, 31.9% distribution in 1994 to a 58.5% distribution in 2004.

Table 2.1 Evolution of NTBs use by broad category

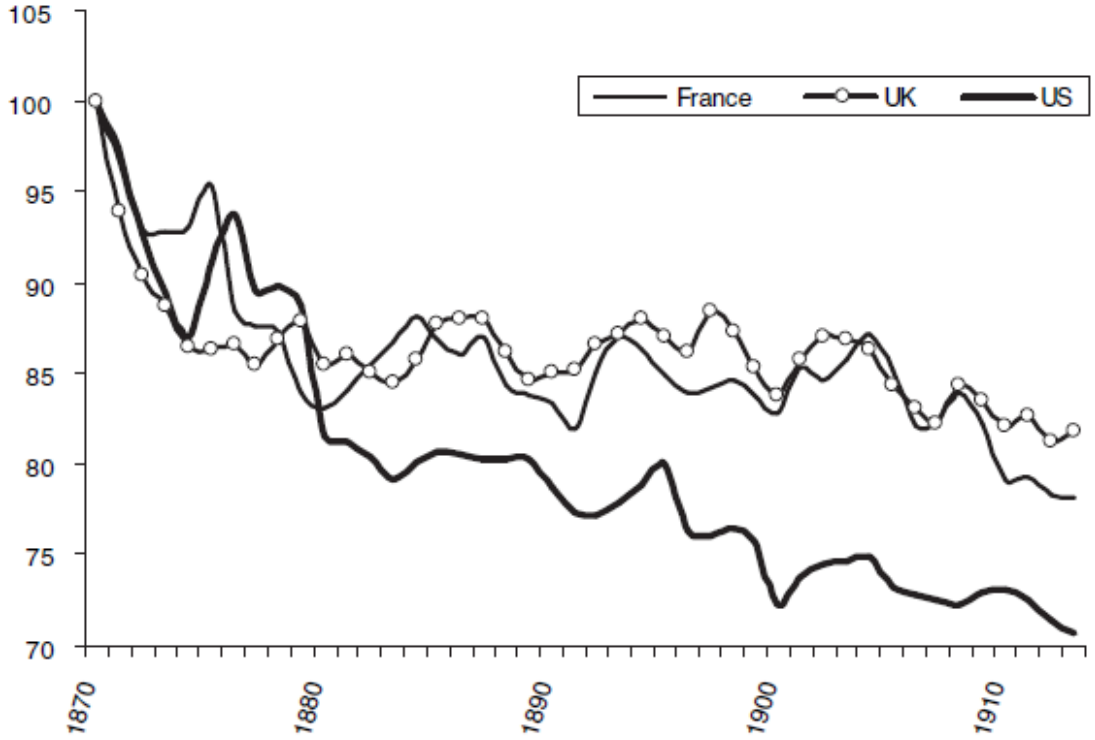
TCM code	TCM description	1994 (distribution %)	2004 (distribution %)
1	Tariff Measures	5.8	**0.3**
3	Price Control Measures	7.1	**1.8**
4	Finance Measures	2.0	**1.5**
417	Refundable deposit for sensitive product categories		**0.6**
5	Automatic Licensing Measures	2.8	**1.7**
6	Quantity Control Measures	49.2	**34.8**
617	Prior authorization for sensitive product categories	18.1	**17.1**
627	Quotas for sensitive product categories	0.2	**0.2**
637	Prohibition for sensitive product categories	2.5	**6.8**
7	Monopolistic Measures	1.3	**1.5**
8	Technical measures	31.9	**58.5**
Non-core measures	6+617+627+637+8	55.3	**84.8**
Core measures	1+3+4+6+7+-(617+627+637)	44.7	**15.2**
Number of countries		52	**97**
Total Observations		**97706**	**545078**

Source: Special tabulation based on UNCTAD Trade Analysis and Information System (TRAINS), 2005

Jacks et al. (2008) investigated what are the responsible factors for the changes in trade levels in the period 1870-2000. As plausible causes for increasing trade the authors suggest the changing nature of global output or costs of trade. A reduction of international trade costs of around 23% in the first wave of globalization (1870-1913) was estimated, which they explain with lower freight rates and lower tariffs and the

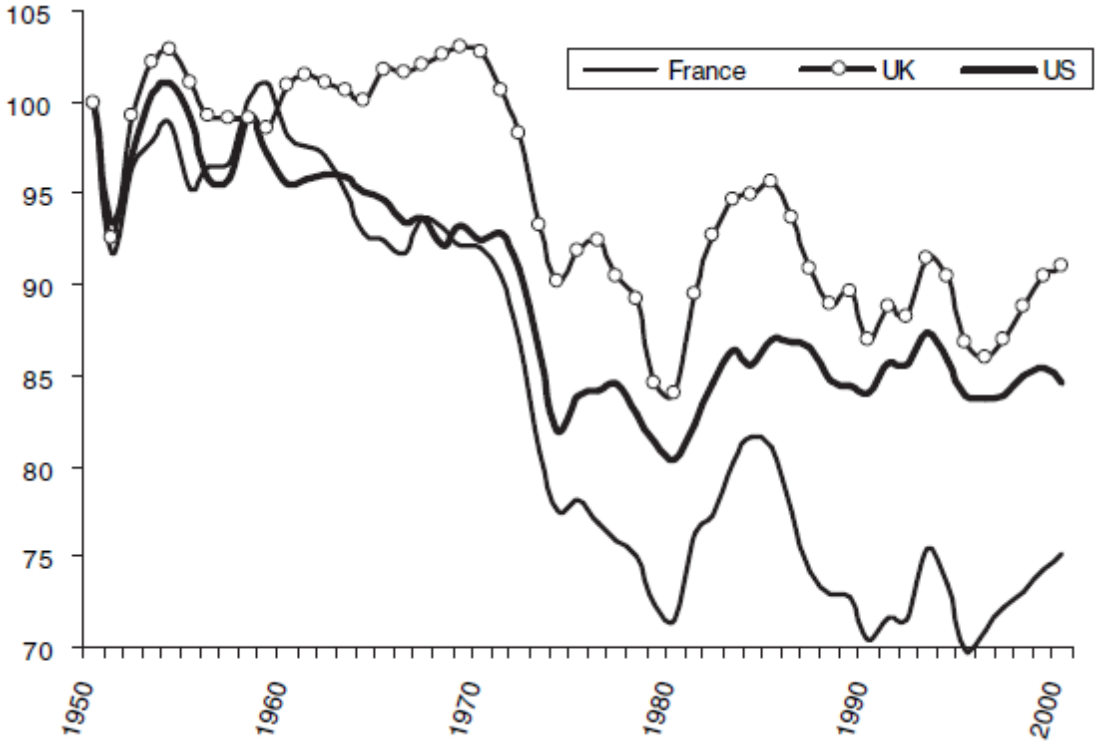
adherence to the gold standard. In the second wave of globalization (1959- 2000) reduction in international trade costs is more moderate (Figure 2.2), namely around 16%. For the period between the two waves of globalization trade costs have not declined substantially due to the fact that these years were marked by wars and the Great Depression. In order to estimate trade costs the authors used the gravity model. As the most important determinants of trade cost, distance, tariffs, exchange rate volatility, fixed exchange rate and colonial background (in this case whether a country belonged to the British Empire) are mentioned. The most significant appear to be distance and tariff barriers, whereas exchange rate volatility and fixed exchange rates affect trade costs only marginally.

Figure 2.4 Trade Cost Indices for Period 1870-1913



Source: Jacks et al. (2008)

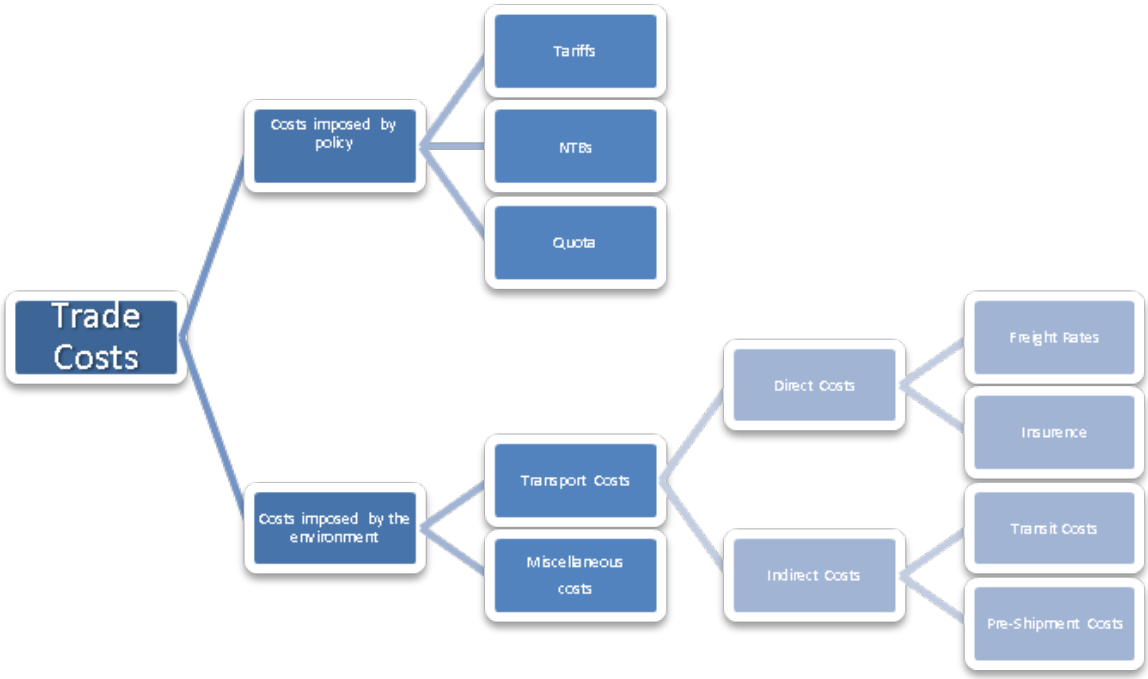
Figure 2.5 Trade Cost Indices for Period 1950 -2000



Source: Jacks et al. (2008)

De (2006) has investigated the importance of trade costs and their impact on trade in the Asian region. The components of trade costs, according to the author, include cost of producing the goods, transport costs (freight rate and time cost), policy barriers, information costs, legal and regulatory costs, currency costs, contact enforcement costs and local distributions. The author makes the distinction between costs that depends on the operational efficiency of the trader and those that depend on the trading environment. Of importance to us is the part of trade costs that depend on the trading environment as it is linked to administrative and regulatory inefficiencies as well as information asymmetry, which might raise significantly the costs of trade. In the figure bellow, trade costs, which depend on the trading environment, are broken down into various components.

Figure 2.6 Trade Costs and its components



Source: De (2006)

2.2. Literature Review on the effect on FTAs

The studies on the effectiveness of FTAs have begun in the 1950s with the study of Viner. The overall conclusion from his research is that there is no clear evidence for the final effect of engaging into a trade agreement. The results of signing such a pact can be either trade creation or trade diversion. Trade creation can be defined as the substitution of high-cost goods produced domestically with lower-cost products imported from the partner country. This would be the beneficial effect that policy makers seek when signing such an agreement. Trade diversion happens when the import levels of lower cost products from a third country that is not a partner in the trade agreement decrease due to higher imports from the partner country, whose products are actually of a higher cost as well. As a result, the following conclusion is made as of the effect of a trade agreement: the impact of a trade agreement on welfare is dependent on the level of trade creation with respect to trade diversion.

In one of their papers, Baier and Bergstrand (2001) use the gravity model in order to estimate what factors affect mean growth of real bilateral trade flows. The factors included in the model tariff reduction (presence of a trade agreement between trading countries) as well as income growth, income convergence and etc. The results of their analysis show that 23-26% of the mean growth in trade is explained by the

presence trade agreements and tariff reductions. As for the rest, GDP growth accounts for 67-69% of trade growth, and only 8-9% is explained by lower transportation costs and none by real GDP convergence. However, as the model they used explains only up to 40% of the deviation in trade growth, there are other factors to be included in order to explain trade flows.

Baier and Bergstrand (2004) developed an econometric model that tries to explain the pure economic determinants that predict the formation and successfulness (in terms of welfare gains) of FTAs. The conclusion of their analysis identifies that *"(i) the closer partner countries are; (ii) the more remote a natural pair is from the Rest of the World (ROW); (iii) the larger and more similar economically (i.e. real GDPs) are two trading partners by exploiting economies of scale in the presence of differentiated products; (iv) the greater the difference in capital-labor endowment ratios between the two countries due to the gains from traditional comparative advantage (i.e. Heckscher – Ohlin trade); and (v) the less is the difference in capital-labor endowment ratios of the member countries relative to that of the ROW due to less inter-industry trade diversion"* the more probably it is that an FTA leads to welfare gains.

Again, Baier and Bergstrand (2007) continued their investigation on to the question of whether FTAs lead to higher levels of trade. The motivation for undertaking further research on this topic is the fact that there are no significant results from previous studies, using the gravity model, that allow for a confident positive answer on the question: "Do trade agreements lead to higher trade levels for partner countries". The conclusion from their research is that an FTA would double the trade between trading countries in 10 years. However, their analysis does not consider the welfare impacts from signing such an agreement (trade diversion and trade creation); neither considers what the implications for non partner countries are. Furthermore, they mention that the final outcome of an FTA might be different based on the terms of the agreement.

In a recent report for the European Commission, Bergstrand et al. (2010) carry out a study on the ex-post effect of EU FTAs on European exports and imports. Six EU trade agreements were chosen for that purpose: South Africa (1999), Mexico (2000), Morocco (2000), Tunisia (1998), Chile (2003) and Jordan (2002). Two methods were used in order to quantify whether these FTAs had a statistically significant impact on trade volumes, the gravity model and the matching approach. Figure … presents an overview of the results as well as commenting on whether the author's prior beliefs were confirmed. The final impact on EU exports and imports is dependent on several factors. First, large part of the six countries is part of the EU's Generalized System of Preference (GPS), thus they already enjoyed rather low tariffs on their exports to the European Union, hence the impact on the partner country's exports will not be significant, if not none at all. Second, each FTA has a diverse tariff reduction profile, some countries are facing a longer phasing out of tariffs compared to others (e.g. Mexico), and hence not a big impact is yet expected on trade flows. All in all, the results go hand with the theory predictions. The EU exports increase significantly in most of the cases, whereas its imports from the six partner countries do not register a major growth as those countries already benefit from lower tariffs already.

Caporale et al (2009) investigate the FTA signed between EU-15 and the Central and Eastern Europe Countries (CEEC-4, i.e. Bulgaria, Hungary, Poland and Romania). The research focuses on whether EU trade agreement lead to higher trade levels for partners and if so what is the level of the increase. The conclusion is that the FTA has a positive significant result as for the trade levels between partners. In order to check the robustness of the FTAs effect on trade the authors have used a control group of countries that have more or less the same political background as the CEEC-4, but which do not have an agreement signed with the EU. As a result of the FTAs, CEEC-4 increased their importance as trading partner of the EU for the period 1990 to 2005 from 34% to 74%.

In summary, the general conclusion from previous research done on the topic identifies that FTAs are beneficial for trading partners. However, it would be interesting to identify which of the trade costs, transportation, tariff elimination, NTBs or service costs, matters the most.

2.3. Review of the EU FTAs

As the largest trading block existing at the moment and as a one of the founders of the contemporary international trade rules (European Commission, 2009), trade is crucial for the wealth of the European Union's member states. Since the 1980s there has been an explosion of trade agreements being signed internationally. In order to maintain its competitiveness on an international level, the EU has made FTAs an inseparable part of their trade policy. According to the European Commission, free trade agreements help to increase investment opportunities, as well as to make trade cheaper and faster through the elimination of customs duties and facilitation of customs transit for goods (European Commission, web page, 2011). So far, the EU has signed 30 RTAs that have already entered in force (WTO webpage, 2011). The countries that have signed a free trade agreement with the European Union are enlisted in Table 1 (Annex)

Only part of the above listed FTA is discussed next for two reasons. First, according to Baier and Bergstrand (2007) it takes 10 to 15years after signing an FTA to pass in order to see the full impact of tariff elimination on trade levels, because of the gradual elimination of tariff and non-tariff barriers in addition to the "*the lagged effects of terms-of-trade changes on trade flows*". Hence, trade agreements signed after 2006 onwards are not considered in the research. In addition, in accordance to the data availability for the bilateral trade flows and GDPs the period 1995 to 2009 was chosen for the research. As a consequence, EU trade agreements signed before 1995 (Oversea Countries and Territories 1971, Switzerland-Liechtenstein and Norway in1973) are also omitted. Lastly, the EU-Palestinian Authority FTA is also omitted due to data unavailability.

Next, each FTA is going to be discussed together with the planned tariff elimination for industrial and agricultural goods.

2.3.1. EU-Chile Free Trade Agreement (2003)

Article 66 and article 65 of the Agreement discuss the phasing out of industrial imports from Chile; depending on the category is either immediately after the entrance in force of the agreement or over three years, meaning that all tariffs are removed on Chilean exports to EU in 2005, as shown in Table 2.2. The products can be found in Annex I, under the category Year 0 and Year 3.

Table 2.2 Percentage of annual tariff reduction for industrial imports originating in Chile

Category	Entry in force (2003)	01.01.2004	01.01.2005	01.01.2006
Year 0	*100%*	-	-	-
Year 3	*25%*	*50%*	*75%*	*100%*

Source: Free Trade Agreement, 2003

The phasing out scheme for the European exports of industrial goods is different. There are three categories, where tariffs are eliminated immediately, over five years and seven years, Table 2.3. The list of products falling in the following three categories can be found in Annex II of the Agreement.

Table 2.3 Percentage of annual tariff reduction for industrial imports originating in EU

Category	Entry in force (2003)	01.01. 2004	01.01. 2005	01.01. 2006	01.01. 2007	01.01. 2008	01.01. 2009	01.01. 2010
Year 0	*100%*	-	-	-	-	-	-	-
Year 5	*16.7%*	*33.3%*	*50%*	*66.7%*	*83.3%*	*100%*		-
Year 7	*12.5%*	*25%*	*37.5%*	*50%*	*62.5%*	*75%*	*87.5%*	*100%*

Source: Free Trade Agreement, 2003

Table 2.4 presents the summary of the reduction scheme of tariffs on Chilean exports to Europe, depending on the category the full elimination end the latest in 2013. Besides, figure 8 gives an overview on the tariff reduction scheme on European agricultural goods. All agricultural products falling into these four categories can be found in Annex I of the Agreement. For the list of products originating from the EU subject to the tariff reductions from Table 2.5 can be found in Annex II of the Agreement.

Table 2.4 Percentage of annual tariff reduction for agricultural and processed agricultural imports originating in Chile

Category	Entry in force (2003)	01.01. 2004	01.01. 2005	01.01. 2006	01.01. 2007	01.01. 2008	01.01. 2009	01.01. 2010	01.01. 2011	01.01. 2012	01.01. 2013
Year 0	*100%*	-	-	-	-	-	-	-	-	-	-
Year 4	*20%*	*40%*	*60%*	*80%*	*100%*	.	-	-	-	-	-

Year 7	*12.5%*	*25%*	*37.5%*	*50%*	*62.5%*	*75%*	*87.5%*	*100%*	-	-	-
Year 10	*9%*	*18%*	*27%*	*36%*	*45%*	*54%*	*63%*	*72%*	*81%*	*90%*	*100%*

Source: Free Trade Agreement, 2003

Table 2.5 Percentage of annual tariff reduction for agricultural and processed agricultural imports originating in the Community

Category	**Entry in force (2003)**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**	**01.01. 2007**	**01.01. 2008**	**01.01. 2009**	**01.01. 2010**	**01.01. 2011**	**01.01. 2012**	**01.01. 2013**
Year 0	*100%*	-	-	-	-	-	-	-	-	-	-
Year 5	*16.7%*	*33.3%*	*50%*	*66.6%*	*83.3%*	*100%*	-	-	-	-	-
Year 10	*9%*	*18%*	*27%*	*36%*	*45%*	*54%*	*63%*	*72%*	*81%*	*90%*	*100%*

Source: Free Trade Agreement, 2003

2.3.2. EU-Croatia Free Trade Agreement (2002)

The trade agreement between Croatia and the EU entered in force in 2002.

According to the agreement, industrial imports to the EU from Croatia are subject to complete elimination of tariffs upon the entry of the document into force. On the other hand, EU industrial exports to Croatia face a gradual phasing out of tariffs. Goods enlisted in Annex I of the Agreement face a two year reduction scheme, Table 2.6.

Table 2.6 Percentage of annual tariff reduction for industrial imports originating in the Community, under Annex I of the Agreement

	Entry in force (2002)	**01.01.2003**	**01.01.2003**
Percentage Reduction	*40%*	*70%*	*100%*

Source: Free Trade Agreement, 2002

For goods that are listed in Annex II of the Agreement, the following reduction scheme applies:

Table 2.7 Percentage of annual tariff reduction for industrial imports originating in the Community, under Annex I of the Agreement

	Entry in force (2002)	01.01.2003	01.01.2004	01.01.2005	01.01.2006	01.01.2007
Percentage Reduction	*30%*	*50%*	*60%*	*70%*	*85%*	*100%*

Source: Free Trade Agreement, 2002

As far as agricultural products are concerned, the parties agree upon eliminating "*all quantitative restrictions and measures having equivalent effect on imports of agricultural*" products (Official Journal of the European Union, 2005). There are a few exceptions for certain categories of agricultural products, where tariffs are meant to be progressively eliminated in several years or reduced to a 50% of MFN duties.

2.3.3. EU-Egypt Free Trade Agreement (2004)

The trade agreement between the European Union and Egypt entered in force in 2004. As from the entrance in force of the agreement, according to Article 8, the EU has to eliminate all tariffs on industrial imports from Egypt. On the other hand, the Community exports of industrial goods to Egypt are subject to gradual reduction of tariffs depending on the category it falls in. The shortest period of phasing out is of three years, meaning that all duties are eliminated in 2007 for all products listed in Annex II. Furthermore, the longest period of tariff reduction is 15 years, for industrial goods listed in Annex V there will be a zero % tariff in 2019. For further information on schemes phasing out refer to Article 9 of the Agreement.

As far as agricultural products are concerned, article 13 of the Agreement states that both parties "shall progressively establish a greater liberalization of their trade in agricultural, fisheries and processed agricultural products in". Protocol 1, 2 and 3 of the Agreement discuss the duty percentage reduction on agricultural products originating in Egypt and the Community respectively as well as on processed agricultural goods. In the fourth year after the introduction of the agreement, the two trading partners meet in order to further discuss the measures to be taken in order to achieve greater liberalization.

2.3.4. EU-Former Yugoslav Republic of Macedonia Free Trade Agreement (2001)

The FTA between EU and Macedonia entered in force in 2001. Article 17 and article 18 deal with tariff reduction of industrial products coming from Macedonia and the Community respectively. It is important to mention that these tariff elimination plans do not hold for textile products and steel products. All EU imports from Macedonia are subject to complete tariff elimination upon adoption of the Agreement. For EU exports of

industrial products to Macedonia tariff elimination is either immediate or progressive depending on the types of goods. For goods listed in Annex I of the Agreement the following reduction plan holds:

Table 2.8 Percentage of annual tariff reduction for industrial imports originating in the Community, under Annex I of the Agreement

	01.01.2002	01.01.2003	01.01.2004	01.01.2005	01.01.2006	01.01.2007	01.01.2008	01.01.2009	01.01.2010	01.01.2011
% Reduction	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*

Source: Free Trade Agreement, 2001

For industrial goods mentioned in Annex II of the Agreement, the phasing out of tariffs is done over seven years starting from 1st of January 2004 by decreasing tariffs by 20% of the basic duty. For further details refer to Annex II.

Agricultural imports are dealt with in Article 27. The Community has to eliminate the customs duties and other charges having a similar effect on Macedonia agricultural imports upon entrance in force of the Agreement except for some products. For products listed in Annex III of the agreement, also called "baby-beef" products, custom duties are fixed at 20% of the ad valorem duty and 20% of the specific duty (Article 23). As far as imports of European agricultural products to Macedonia are concerned, the EU trade partner has to depending on the products duties are either abolished immediately or gradually upon a predetermined time table indicated in the respective Annexes.

2.3.5. EU-Jordan Free Trade Agreement (2002)

The trade agreement between the European Union and Jordan entered in force in 2002. Exports from Jordan to the EU coming from either the agricultural or the industrial sector are facing complete elimination, except for products listed in Annex I and Annex II. For the goods mentioned in Annex I, the EU can retain an agricultural component under the form of a flat amount or an ad valorem duty.

Agriculture good originating in Europe, listed in Annex II, face a tariff that is going to be reduced over a 8 years to no more than 50% of the basic duty (refer to Article 10.2 and article 11.2). In addition, Jordan industrial imports from EU, mentioned in list A of Annex III, are facing a progressively diminishing duty over a period of four years as of the entry in force of the Agreement (refer to Article 11.3). Next, industrial products under list B of the same Annex are facing a tariff elimination time plan of 9 years starting in the fourth year after entering in force of the Agreement. Lastly, industrial goods under Anne IV are subject to further re-examination by the Association Council four years after the Agreement has entered in force. All in all, all products not mentioned in Annex I, II, III and IV originating in Europe are subject to no tariffs as of 2002. In article 13 of the Agreement, it is mentioned that "*exceptional measures of limited duration…may be taken by Jordan in the form of an increase or reintroduction of customs duties*" in order

to protect domestic infant industries, sectors that are being reformed or sectors that are in serious distress.

2.3.6. EU-Lebanon Free Trade Agreement (2002)

The FTA between Lebanon and the European Union was signed in 2002 and entered in force in March 2003. Industrial products originating from Lebanon are facing complete elimination of duties when exporting to the EU, as of the entry in force of the Agreement. European industrial exports to Lebanon on the other hand are facing a gradual phasing out of tariff restrictions. The annual percentage reductions are presented in Table 2.9 (bellow) where each percentage reduction is calculated from the basic duty (Article 5 of the Agreement):

Table 2.9 Percentage of annual tariff reduction for industrial imports originating in the Community

	01.01. 2008	01.01. 2009	01.01. 2010	01.01. 2011	01.01. 2012	01.01. 2013	01.01. 2014	01.01. 2015
% Reduction	*12%*	*34%*	*46%*	*48%*	*60%*	*72%*	*84%*	*100%*

Source: Free Trade Agreement, 2003

As for agricultural products originating in Lebanon that are listed in Protocol 1 of the Agreement are subject to the tariff reduction set out in the Protocol. For goods not mentioned in Protocol 1 are allowed in the Community free of customs duty. For agricultural goods exported to Lebanon from the EU the arrangements set out in Protocol 2 count for goods listed in that Protocol.

2.3.7. EU-Mexico Free Trade Agreement (2000)

According to the Agreement, category “A” industrial goods originating from Mexico, mentioned in Annex I, are going to be subject to no customs duties after the entrance in force of the Agreement. On the other hand products under category “B” are going to face an equal gradual reduction of tariffs over three years from 2000, meaning that in 2003 the tariff is going to be zero %. As far as EU exports of industrial goods are concerned, Article 6 presents the tariff reduction plan. For goods under category “A” in Annex II of the Agreement customs duties are eliminated as of 1st of January 2000. Industrial European exports to Mexico falling in category “B” the tariff elimination plan will take three years of equal percentage reduction of duties every year so that in 2003 those will be equal to zero. Finally, good under category “B+” or “C” will face a five year and seven year elimination plan respectively. For further information on goods listed in the various categories refer to Annex II of the Agreement.

Agriculture goods originating in Mexico are treated in Article 8. Tariff reduction plan for five categories of agricultural and fishery goods are presented in the Table 2.10. For products in category 5 to 7 there are special rules, which investigation goes beyond the purpose of this thesis. For further information refer to Article 8 of the Agreement.

Table 2.10 Percentage of annual tariff reduction for agriculture imports originating in Mexico

	Percentage reduction from basic duty										
Category (Annex II)	**Entry in force 2000**	**01.01.2001**	**01.01.2002**	**01.01.2003**	**01.01.2004**	**01.01.2005**	**01.01.2006**	**01.01.2007**	**01.01.2008**	**01.01.2009**	**01.01.2010**
"1"	*100%*	-	-	-	-	-	-	-	-	-	-
"2"	*25%*	*50%*	*75%*	*100%*	-	-	-	-	-	-	-
"3"	*11%*	*22%*	*33%*	*44%*	*55%*	*66%*	*77%*	*88%*	*100%*	-	-
"4"	*0%*	*0%*	*0%*	*13%*	*25%*	*38%*	*50%*	*63%*	*75%*	*88%*	*100%*
"4a"	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*	-

Source: Free Trade Agreement, 2000

For agricultural and fishery products originating in the Community the following phasing out scheme is applied depending on the various categories, Table 2.11. For the goods under category 5 to 7 refer to Article 9 and Annex II of the Agreement.

Table 2.11 Percentage of annual tariff reduction for agriculture imports originating in the Community

	Percentage reduction from basic duty										
Category (Annex II)	**Entry in force 2000**	**01.01.2001**	**01.01.2002**	**01.01.2003**	**01.01.2004**	**01.01.2005**	**01.01.2006**	**01.01.2007**	**01.01.2008**	**01.01.2009**	**01.01.2010**
"1"	*100%*	-	-	-	-	-	-	-	-	-	-
"2"	*25%*	*50%*	*75%*	*100%*	-	-	-	-	-	-	-
"3"	*11%*	*22%*	*33%*	*44%*	*55%*	*66%*	*77%*	*88%*	*100%*	-	-
"4"				*13%*	*25%*	*38%*	*50%*	*63%*	*75%*	*88%*	*100%*
"4a"	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*	-

Source: Free Trade Agreement, 2000

2.3.8. EU-Morocco Free Trade Agreement (2000)

Industrial goods originating from Morocco are allowed in the EU free of tariffs except for those mentioned in Annex I and II. As far as European exports to Morocco, these products allowed free of customs duties except for products mentioned Annex I, II, III, IV, V and VI. For products in Annex III the phasing out take three years since entrance in force, hence tariffs will be zero % in 2003, same counts for goods in Annex V. Next, for goods in Annex IV the phasing out will take 12 years beginning on the third year of the entry in force of the agreement. Lastly, the provisions for products mentioned in Annex VI are rather unclear.

Article 15 mentions that only products mentioned in Annex II are subject to the provisions of Chapter 2 (Title II) concerning agricultural and fishery goods. According to article 16 of the Agreement both trading partners have to engage into gradual reduction of tariffs on agricultural and fishery products. Protocol 1 and 2 addresses more in depth the benefits for products originating in Morocco. As far as products originating from the Community, Protocol 3 deals with the specific provisions.

2.3.9. EU-South Africa Free Trade Agreement (2000)

Article 11 of the Agreement discusses the reduction tariff plan as for industrial exports from South Africa. As of entry in force if the Agreement all tariffs are eliminated for goods listed in Annex I. For those mentioned in Annex II the following phasing out schedule applies.

Table 2.12 Percentage of annual tariff reduction for industrial imports originating in South Africa

	Percentage reduction from basic duty						
List (Annex II)	**Entry in force 2000**	**01.01. 2001**	**01.01. 2002**	**01.01. 2003**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**
List 1	*25%*	*50%*	*75%*	*100%*	-	-	-
List 2	*14%*	*28%*	*43%*	*57%*	*72%*	*86%*	*100%*
List 3				*25%*	*50%*	*75%*	*100%*

Source: Free Trade Agreement, 2000

As far as for the goods in list 4, the document states that tariffs would be abolished within 10 years and for products in list 5, tariff elimination will be review in five years as of 2000.

Table 2.13 presents an overview of the tariff elimination plan for goods included in Annex III, for the rest (not mentioned there) all tariffs are eliminated as from entry in force of the Agreement.

Table 2.13 Percentage of annual tariff reduction for industrial imports originating in the Community

	Percentage reduction from basic duty												
List (Annex II)	**Entry in force 2000**	**01.01. 2001**	**01.01. 2002**	**01.01. 2003**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**	**01.01. 2007**	**01.01. 2008**	**01.01. 2009**	**01.01. 2010**	**01.01. 2011**	**01.01. 2012**
List 1	*25%*	*50%*	*75%*	*100%*	-	-	-	-	-	-	-	-	-
List 2				*33%*	*67%*	*100%*	-	-	-	-	-	-	-

List 3		*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*
List 4				*12%*	*25%*	*37%*	*50%*	*62%*	*75%*	*87%*	*100%*

Source: Free Trade Agreement, 2000

Tariffs on agricultural products originating in South Africa are in most part phased out in a period of ten years. Only for goods not mentioned in Annex IV are tariffs abolished as from entry in force of the Agreement. The table bellow shows the tariff reduction plan for agriculture exports from Annex IV. Goods mentioned in list 5 and list 6 of Annex IV, tariffs eliminations plans "*are to be applied as from entry into force of this Agreement and in accordance with the conditions mentioned in this Annex*". As for goods in list 7, the custom duties are to be reviewed periodically in line with the agricultural policy developments for both partners.

Table 2.14 Percentage of annual tariff reduction for agriculture imports originating in South Africa

	Percentage reduction from basic duty										
List (Annex II)	**Entry in force 2000**	**01.01. 2001**	**01.01. 2002**	**01.01. 2003**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**	**01.01. 2007**	**01.01. 2008**	**01.01. 2009**	**01.01. 2010**
List 1	*25%*	*50%*	*75%*	*100%*	-	-	-	-	-	-	-
List 2	*9%*	*18%*	*27%*	*36%*	*45%*	*55%*	*64%*	*73%*	*82%*	*91%*	*100%*
List 3				*13%*	*25%*	*38%*	*50%*	*63%*	*74%*	*88%*	*100%*
List 4						*17%*	*33%*	*50%*	*67%*	*83%*	*100%*

Source: Free Trade Agreement, 2000

Last but not least, full elimination of tariffs on European agricultural exports counts only for goods not mentioned in Annex VI. For exports listed in this Annex the following reduction of customs duties is planned.

Table 2.15 Percentage of annual tariff reduction for agriculture imports originating in the Community

	Percentage reduction from basic duty												
List (Annex II)	**Entry in force 2000**	**01.01. 2001**	**01.01. 2002**	**01.01. 2003**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**	**01.01. 2007**	**01.01. 2008**	**01.01. 2009**	**01.01. 2010**	**01.01. 2011**	**01.01. 2012**
List 1	*25%*	*50%*	*75%*	*100%*	-	-	-	-	-	-	-	-	-
List 2				*33%*	*67%*	*100%*	-	-	-	-	-	-	-
List 3						*12%*	*25%*	*37%*	*50%*	*62%*	*75%*	*87%*	*100%*

Source: Free Trade Agreement, 2000

Custom duties for agriculture goods mentioned in list 4 of Annex VI are to be reviewed periodically. Article 17 states there is a possibility for South Africa to demand an accelerated elimination of tariffs on agricultural goods, whose applicability depends on the approval of the request by the Community.

2.3.10. EU-Tunisia Free Trade Agreement (1998)

Overall most of the Tunisian industrial exports to the Community are facing zero tariffs as of entry in force of the Agreement, except for products listed in Annex 1 and Annex 2 of the Agreement. As for European industrial goods, all those not listed in Annex 3 to 6 are allowed customs duty free in Tunisia. For the rest, there is a gradual phasing out plan, Table 2.16.

Table 2.16 Percentage of annual tariff reduction for industrial imports originating in the Community

	Percentage reduction from basic duty												
	Entry in force 1998	**01.01. 1999**	**01.01. 2000**	**01.01. 2001**	**01.01. 2002**	**01.01. 2003**	**01.01. 2004**	**01.01. 2005**	**01.01. 2006**	**01.01. 2007**	**01.01. 2008**	**01.01. 2009**	**01.01. 2010**
Annex 3	*15%*	*30%*	*45%*	*60%*	*75%*	*100%*	-	-	-	-	-	-	-
Annex 4	*8%*	*16%*	*24%*	*32%*	*40%*	*48%*	*56%*	*64%*	*72%*	*80%*	*88%*	*96%*	*100%*
Annex 5					*12%*	*23%*	*34%*	*45%*	*56%*	*63%*	*78%*	*89%*	*100%*

Source: Free Trade Agreement, 1998

As far as agricultural products are concerned, Article 16 states that both parties will engage into gradual reduction of tariff barriers. Protocols 1, 2 and 3 present the provisions for agricultural and fishery exports originating in Tunisia and the EU respectively.

Chapter 3 Methodology and Data

3.1. Methodology

Today, in view of the numerous trade agreements that have been signed and that are being negotiated and proposed, it is of crucial importance for policy makers to conduct a solid impact assessment of the particular FTA in to be able to maximize the positive effects and to be aware of the negative consequences of such an agreement. There are numerous techniques that can be used to assess the impact of a FTA on trade for a particular country. It is important to carry out an ex-ante analysis but also an ex-post evaluation. There are many econometric methods to carry out the analysis of a trade agreement, for instance General Equilibrium Models.

For an ex-post evaluation of a trade agreement, as well as to achieve the goal of this thesis, namely to find what is the impact of signing a trade agreement with the EU on trade flows for trading partners, the gravity model is considered to be the workhorse when studying trade flows. The gravity equation, first used by Jan Tinbergen in 1962, is considered to be one of the most successful empirical tools to predict trade flows as well as to study factors having strong influence on trade levels between nations (Anderson, 1979), due to its high explanatory power, with an R^2 varying between 70% and 95% (Paas, 2000).

The gravity equation is based on Newton's Law of universal gravitation in physics, according to which the trade flow between two nations is positively related to the gross domestic product (GDP) of the two nations and it is negatively influence by the geographical distance. Equation (1) represents the basic form of the gravity model, G is a constant, Y_i and Y_j are the GDP of country *i* and country *j*, and D_{ij} is the distance between countries *i* and *j* (source):

$$(1) \qquad M_{ij} = G\frac{Y_i Y_j}{D_{ij}}$$

To obtain the basic gravity equation used in the academic research, the natural logarithm of equation (1) is taken:

$$(2) \qquad lnM_{ij} = G + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnD_{ij} + u_{ij}$$

The GDPs of the two trading partners are representative of the size of market of the respective country, which according to theory is important for the trade levels between countries. In order to enhance the estimation precision trade flows between seven EU member states, which account for 75% of EU-27 imports and export, are being taken instead overall EU trade flows. Traditionally, distance is included in the equation as a proxy of transportation costs and is expected to have a negative impact on trade volumes, as the bigger the distance between trading partners, the higher are the transportation costs, which as a result hamper trade between nations. In addition to

GDPs and distance, a choice of variables has to be made that represent bilateral trade cost barriers, including natural barriers, cultural barriers as well as policy barriers to trade. For the purpose of this research, as other variables representing trade costs presence of FTA, common language and colonial history are include. These take the form of dummy variables, namely taking the value of one when for example there is an FTA or the two countries share a common language or colonial historical background. In the opposite case the dummy takes the value of zero.

Besides the above mentioned variables, according to Anderson and Wincoop (2003) there might also be other factors that are not evident for the researcher, and which if not taken into account might lead to biased regression results and thus to the wrong conclusions. For this reason, the authors have come up with the "multilateral trade resistance" term in order account for the fact that trade between nations does not only depend on the distance between the trading partners but it is also dependent on the distance of the pair from other countries (Plummer et al, 2010). In other words, if multilateral trade barriers (with the rest of the world) are relatively higher to the bilateral trade barriers between country i and country j, then import and export levels between these two have to increase, and the other way around (Marchetti, 2009). As a result, Multilateral Resistance (MR) terms were calculates for the purpose of this of this research. MR terms are developed for all the dummy variables included in the regression (FTA, colony and common language) as well as distance. For further information on the calculation method concerning the MR terms refer to Baier and Bergstrand's (2008) paper "Bonus vetus: OLS: a simple method for approximating international trade-cost effects using the gravity equation". Another approach is to include country specific fixed effects; a country dummy is included, taking the number of 1 whenever the trade flows include that particular country. The number of dummies is equal to the number country observations in the sample. Marchetti (2009) mentions several research papers (e.g.Feenstra, 2004), which conduct the gravity model analysis including fixed country effects instead of the MT terms used by Anderson and Wincoop (2003) thus leading to very similar results without significant loss of efficiency. In addition, it is suggested in the literature (Baldwin and Taglioni, 2006; Carrere 2006; Marchetti, 2009), to include time (year) dummies. These dummies are included in order to accommodate for variation in inflation (as the trade and GDP values are in nominal terms), but also to take into account other changing factors, such as oil prices, value of the dollar and business cycles. Last but not least, if one fails to include the inclusion of MR terms or country and time fixed effects, he will face the "the gold medal of classic gravity model mistakes", as defined by Baldwin and Taglioni (2006), namely endogeneity problem. Endogeneity, a result of an omitted variable bias, measurement problem or simultaneity, occurs when any of the independent variables are correlated with the error term. However, for the purpose of this research, only MR terms were used to accommodate the fixed effects not captured by the independent variables included in the regression.

In the end the OLS equation representing the gravity equation that is going to be used for this research will look as follows:

$$(3)\quad \ln M_{ij}^{t} = \alpha + \beta_1 lnY_i^t + \beta_2 lnY_j^t + \beta_3 lnDist + \beta_4 D_{FTA} + \beta_5 D_{conlang} + \beta_6 D_{colony} + \beta_7 MR_{comlang} + \beta_8 MR_{lnDist} + \beta_9 MR_{FTA} + \beta_{10} MR_{Colony} + \varepsilon_{ij}^{t}$$

Where:

- M^t_{ij} is the bilateral trade flow from country *i* to country *j* in year *t*.
- α is the intercept
- Y^t_i is the GDP value of country *i* in year *t*
- Y^t_j is the GDP value of country *j* in year *t*
- D_{ij} is the distance between country *i* and *j*
- $dummy_1$FTA is the dummy for the presence of an FTA between country *i* and country *j*
- $dummy_2$comlang is the dummy for common language shared between country *i* and country *j*
- $dummy_3$colony is the dummy to account for a colonial history between country *i* and country *j*
- $MR_{comlang}$, MR_{lnDsit}, MR_{FTA} and MR_{Colony} are the Multilateral Resistance terms calculated for each country pair in year *t*
- ε^t_{ij} is the error term for the specific country pair in year *t*

To answer the second part of the research question, namely which part exactly of the policy trade costs, tariffs or non tariff barriers, help inducing more trade between partner countries in EU FTAs, the gravity model is used again. In this case, however, instead of using a dummy for the presence of a trade agreement between country pairs two other independent variables are included, namely MFN applied tariff rates and non tariff measures (obtained by Ecorys). As a consequence, we hope to get significant results for both indicators and see which one of the two has a bigger influence on trade flows. The gravity equation will look as follows:

$$(4)\quad \ln M_{ij}^{t} = \alpha + \beta_1 lnY_i^t + \beta_2 lnY_j^t + \beta_3 lnDist + \beta_5 D_{conlang} + \beta_6 D_{colony} + \beta_7 MFN\ rates + \beta_8 NTB + \beta_9 MR_{comlang} + \beta_{10} MR_{lnDist} + \beta_{11} MR_{FTA} + \beta_{12} MR_{Colony} + \varepsilon_{ij}^{t}$$

Where:

- MFN rates on imports for each country pair
- Non Tariff Barriers between countries

There are several benefits accounted for in previous literature of using the gravity model to study trade flows. As one of the most widely used methods to explain international trade, the gravity equation has in general very high explanatory power, an R^2 of between 70% and 80%. Furthermore, the model allows to measure the FTA gives the freedom to the researcher to measure the trade effects of signing a trade agreement, which can be used for welfare calculations, as well as to be in charge of other trade related variables. Lastly, the gravity model does not need a large data set in order to show significant results and the data needed is relatively available. On the other hand, one has to be aware that the nature of the data used is crucial for the reliability of the results reported by the model. In addition, depending on the data and variables included in the model, problems such as autocorrelation and heteroskedasticity might result in biased coefficients

3.2. The Data

The data needed to answer the research question included information on the country GDP levels, bilateral trade flow data as well as distances in kilometers. In addition, information on FTAs between countries and common language and colonial history is also necessary. For the second part of the research question, tariff levels on total trade are needed and data on NTBs.

The data on GDP levels is available through the World Bank data base; there information is available on a large range of indicators for majority of the countries in the world since the 60s. The GDP levels used in the gravity equation are measured in nominal terms, in current US dollars. In addition, trade flows data for this research was obtained through the Direction of Trade and Statistics (DOTS) of the International Monetary Fund. Information is relatively available for most of the countries of our interest. Another reliable source for bilateral trade flows is the World Bank and UNCTAD database WITS. Nevertheless, this source only offers data for the past 10 years and not for all countries needed. The countries that data was not available for the period selected, where chosen to be omitted as they are not major trading partners with the EU and in terms of GDP they represent a very small share. Hence, not including these countries will not affect the outcome of the regression analysis. The information on distances, as well as common language and colonial history are offered by Centre D'Etudes Prospectives et d'Information International (CEPII). Data on FTAs is collected by professor Bergstrand. The database created by him can be found on his homepage (www.nd.edu/~jbergstr/), which offers "*an index of the presence or absence of economic integration agreement for every country pair (among 195)*" for all years from 1960 to 2005.

The data set contains bilateral trade flow information between EU countries and trading partners. As mentioned, data was not available for all countries during the period of time chosen; hence those were not included in the set. These were small countries which were not significant partners for the EU so we decided that not including them would not influence the results of the regression analysis. As a consequence, there are

in total 117 countries included, excluding EU countries. As far as EU member states are concerned, in view of the data limitations for that period as well as the limitations of excel, only the member countries accounting for 75% of EU imports and exports were included. The countries are Belgium, Germany, France, Netherlands, Italy, Spain and UK. Furthermore, in this research bilateral trade flows between third countries were not taken into consideration and only imports and exports from and to the EU from other countries were looked at. In this manner, we can quantify the impact of EU trade agreements on EU trade flows only, not looking at the impact they have on trade between other countries not included in the FTA. If the FTAs coefficient in the regression results to be significant, the conclusion would be that signing a trade agreement with the EU improves relatively trade with FTA partners compared to trade with other countries. As mentioned in the literature review, there is significant amount of research that has proven the significance of trade agreements in general in terms of improving trade levels. Because of the limited time this was not done in this research, even though it would have been useful in order to be able to compared results with previous results.

The biggest challenge in terms of data collection turned out to be the MFN tariff rates and NTBs. The data on MFN tariff rates was obtained through WITS. The WITS database offers both a simple and weighted average of MFN tariff rates on total trade for European imports. For this research weighted average MFN rates were employed. Information on weighted average tariffs rates for total trade on EU exports to the 117 countries included in sample for past 15 years were not reported by WITS. Instead, a weighted average of MFN rates on imports for each country was used. Even in this case data was rather limited and there were some countries where data was missing for all the 15 years.

Quantitative data on existing non tariff barriers between countries is not available through the IMF, World Bank or WITS database. For the purpose of our research a data set of non tariff measures (NTMs) collected and calculated by Ecorys for 2008 and 2009 was used. The initial data represented a average of NTMs among certain country pairs for various industries. Among the industries included in the data set were … In order to obtain an overall measure of NTBs for the countries the average for all industries for a particular pair of countries was taken and put in for all years from 1995 to 2009, assuming that throughout these 15 years NTBs were not the primary focus of the EU FTA agreements. Among the industries included in the research carried by Ecorys were aerospace, automotive, biotechnology, electronics, financial services, food and beverages, pharmaceuticals and others.

As previously mentioned, the biggest challenge in this research was the data collection process. In order to have a complete dataset, the sample was limited to seven EU countries and 117 trade partner countries, in this way data on trade flows, GDP levels, distances and the three dummies used was available for all observations. However, this was not the case for the data needed to answer the second part of the research question where information on MFN tariff rates and NTBs was necessary. Missing data is an indispensible problem of every research. There have been several techniques identified to deal with missing data problem. First, whenever there is a missing data point one of the solution is to delete the entire observation, which is the simplest

solution but it bears the risk of reducing the predicting power of the model. Second, the researcher can use imputation techniques, for instance mean substitution, regression estimation and hot-deck imputation. The mean substitution simply uses the mean of all observations. The regression imputation on the other hand is uses linear regression to predict the missing value. Finally, one can use the hot-deck method, which finds a similar observation and appoints its value to the missing data. Roth and Switzer (1999**)** point out that in general all techniques do not provide significantly more accurate results to the missing variables. The authors mention that both deletion techniques and regression imputation "*work fairly well*", but the former one produces less dispersion around true levels. In this research the missing data problem was solved using the simplest solution, namely to delete the entire observation whenever there was a missing data point. To run the gravity model the Eviews statistical software was used. One of the benefits of Eviews is that whenever there is a missing data point it automatically does not take into account the respective observation. As a consequence, in the second gravity equation results, due to the large amount of missing observations for MFN tariffs and NTMs, the data set comprised only a sample of 1667 compared to the 24100 sample of the first regression analysis results. Even though the sample was significantly smaller, the adjusted R^2 was 78% and all the coefficients were statistically significant at a 95% confidence interval.

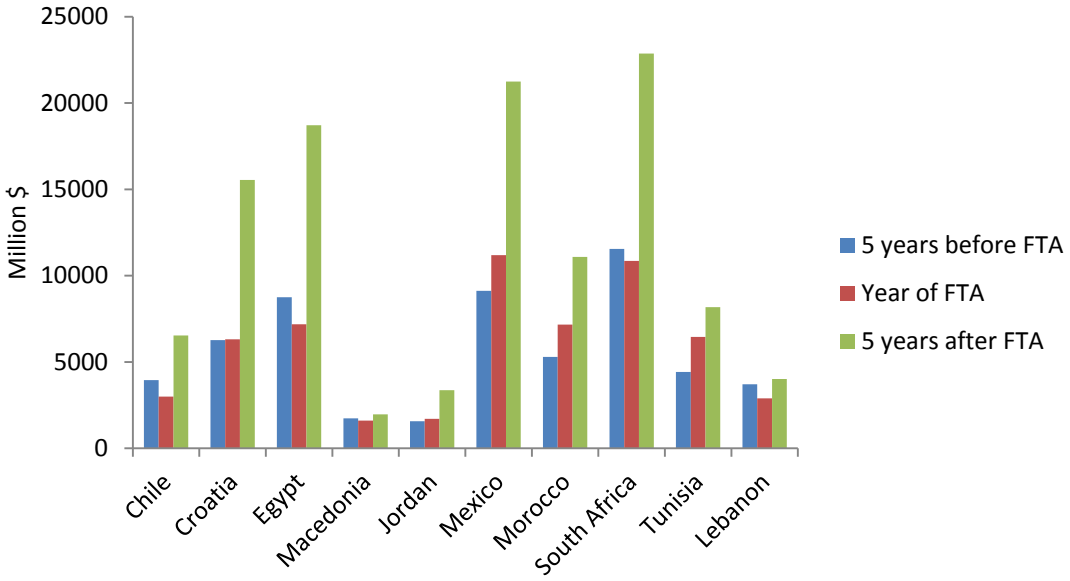
Chapter 4 Results and Analysis

The European Union considered being the largest trading block in the world has made multilateral and regional liberalization and integration its primary goal ever since its foundation. According to the EU, progressive trade opening is *"is an important source of productivity, growth and job creation… an essential factor in reducing poverty and promoting development".*

In figure 4.1 the values of exports from the EU to the FTA partner countries discussed in the literature review section are reported. The values are from 5 years before signing the FTA, in the year of entry in force of the agreement and 5 years after. In figure 4.2 imports from FTA partner countries are presented in the same manner. It can be clearly observed that throughout the years trade flows between FTA partners are increasing. There are many factors that have influence on these trends, among which increase in demand, economic development, political environment as well as market regulation and tariff liberalization. Another interesting observation from figure 4.1 is that for part of the countries the year when the FTA entered in force, the imports from the EU are actually lower compared both to the values five years before and after the FTA, namely Chile, Egypt, Macedonia, South Africa and Lebanon. One explanation could be that exports were hit by the crisis of 2001 (as large part of FTAs was signed between 2000 and 2003). Not the same counts for domestic exports to the EU.

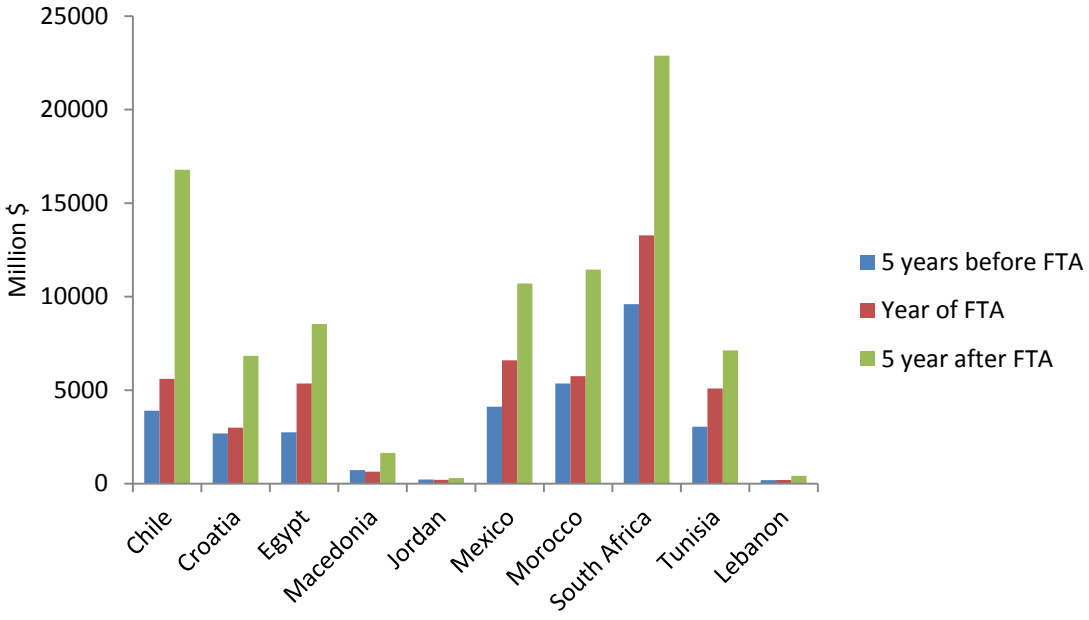
Among the ten FTA partner countries discussed in this research, as it can observed from the figures bellow, South Africa is the largest trading partner for the EU in terms of imports and exports values.

Figure 4.1 EU exports values to FTA partner countries 5 years before FTA, in the year of signing the FTA and 5 years after FTA



Source: created by the author, DOTS by IMF, 2011

Figure 4.2 EU imports values from FTA partner countries 5 years before FTA, in the year of signing the FTA and 5 years after FTA



Source: created by the author, DOTS by IMF; 2011

4.1. The effect of EU FTAs on EU trade flows

To answer the first part of the research question of this thesis, namely what is the impact of EU FTAs on trade flows, we use the gravity model. As independent variables, we have included various factors considered to be explanatory factors that influence international trade, such GDP levels, cultural background, geographic barriers and policy barriers. With the purpose of assess the impact of the FTA, a dummy variable is introduced for country pairs where there is an FTA signed between them. As mentioned before, previous research has identified that FTA agreements in general have significant impact on trade between partners. The next step is to identify, whether signing an FTA for the European Union has a significant impact on EU trade.

With the exception of Macedonia and Croatia, all countries, which have signed an FTA with the EU in the period 1997 to 2004, have enjoyed preferential access to the EU through the Generalized System of Preference (GSP). According to the Common Customs Tariff of the EU, there in total 10, 300 tariffs lines, where 2100 products face a Most Favored Nation (MFN) duty of zero. From the rest 8, 200 products, 7000 fall under the GSP, from which 3,300 are considered non sensitive products and 3,700 are sensitive. The exporters to the EU of non sensitive goods benefit from duty free access. The sensitive products on the other hand face a 3.5% reduction of the ad valorem MFN tariff rates. It is important to mention that agricultural products are considered to be too sensitive in order to be allowed preferential access to the EU market, following the Common Agricultural Policy. As a consequence, due to the already acquired preferential access to EU markets, we expect the FTA agreement to have a statistically significant but yet not major impact on EU trade volumes.

As mentioned in the methodology section of chapter 3, only MR terms were used in the regression so to measure the resistance that trade partners encounter in consequence of their tendency to trade with other countries that are more closely situated or that have a common historical and cultural background, which is represented by each of the dummy variables. The table bellow presents the results of the OLS regression analysis and the gravity model run with robust standard errors. The latter is regression type model that uses HAC standard errors, Newey-West estimator, applied in situations where the assumption homosckedasticity (error terms have the same variance for observations) and no autocorrelation (errors are not correlation with independent variables) do not hold. In this situation, the Newey-West estimator produces standard errors which are robust to heteroskedasticity and autocorrelation (Baum C., 2009). In general, the model shows a rather high explanatory power, an adjusted R^2 of 72%.

The regression analysis results bellow show that market size of countries has a positive influence on trade flows. As the logarithm of dependent variables and the GDP values are taken the coefficient of the GDP for origin and destination countries are interpreted as the elasticity. Namely, a one percent increase in the GDP will lead to a 0.98% increase in trade volumes. The same rationale applies to the second independent variable, the GDP level of the destination country, where a one percent increase in the GDP levels will lead to a 0.9% increase in the trade volumes. As expected and predicted by theory, distance has a negative impact on bilateral trade flows. The

coefficient of the distance can be interpreted as follows, a one percent increase in the distance between the two countries will lead to a -0.49% decrease in trade volumes between trading partners. Next, sharing a common language has a significant positive effect on trade flows. The interpretation of the coefficient of the dummy variable is slightly different compared to the natural logarithm of GDPs and distance coefficient. First, the exponential of the coefficient value is taken and 1 is subtracted from it. Hence, trading partners that share the same language can expect 0.85% higher trade. As far as, colonial history dummy variable, the same procedure is applied, leading to the conclusion that having a common colonial historical background between trading partners lead to 1.1% higher trade volumes. This is not a surprising result as the sample of EU countries included in the data set has a very rich colonial past (e.g. UK, Netherlands, France, and Spain). EU countries still today have managed to maintain very strong trade relations with their past colonial territories, with the majority of which they also share common language. As a consequence, it can be concluded that culture and colonial links represent a rather high barrier to trade, despite the continuously increasing number of FTAs and decreasing policy barriers.

The focus of these results is the coefficient for EU FTAs. The coefficient for the presence of a trade agreement between a pair of countries is interpreted in the same manner as for common language and colonial history dummies (using the same calculations). The coefficient is statistically significant (p-value=0.000) and has a positive sign, meaning that signing an FTA for the EU has a positive influence on trade flows. Signing a trade agreement with the European Union leads to 0.44% more trade for both partners compare to countries that do not have such an agreement.

Table 4.1 Gravity Model regression result with FTA dummy

Variables	**Gravity (OLS)**	**Gravity (Robust Standard Errors - Newey-West)**
	EU FTAs Only	EU FTAs Only
Intercept	-25.84976 (0.000)	-25.84976 (0.000)
GDP origin	0.989096 (0.000)	0.989096 (0.000)
GDP destination	0.905965 (0.000)	0.905965 (0.000)
Distance	-0.495333 (0.000)	-0.495333 (0.000)
Common Language Dummy	0.616891 (0.000)	0.616891 (0.000)
FTA Dummy	0.365652 (0.000)	0.365652 (0.000)

Colonial History Dummy	0.743411 (0.000)	0.743411 (0.000)
MR term for Colony	-1.231424 (0.000)	-1.231424 (0.000)
MR term for FTA	-1.133975 (0.000)	-1.133975 (0.000)
MR term for Language	0.938926 (0.000)	0.938926 (0.000)
MR term for Distance	0.007077 (0.000)	0.007077 (0.000)
R-squared	0.722259	0.722259
Adjusted R-squared	0.722144	0.722144
Durbin-Watson stat	1.939651	1.939651

Note: Values in brackets are the p-value of the specific coefficient. *Source:* created by the author

4.2. The effect of different types of trade costs inside EU FTAs on trade flows

The second part of the research questions tries to investigate what part trade costs embedded in an EU FTA actually has more influence on trade flows. To answer the question we use again the gravity model with the same dependent and independent variables used as proxies to trade costs, namely GDP levels, distance, common language and colonial links. In this case, however, instead of using a dummy for the presence of a trade agreement between the EU and its trading partners, actual MFN rates and non tariff barriers are used. Lastly, MR terms are included in order to account for country specific effects not capture by the explanatory variables included in the regression.

The core trade policy instruments for the European Union have not changed considerably in last decade, namely tariff rates and non tariff barriers. The literature review has shown that tariff rates have been decreasing continuously due to the large wave of trade agreements. On the other hand, technical measures, for example, have increased the % usage among non tariff measure for the last ten years. The applied MFN tariff rates on agricultural products being exported to the EU has gone down to 15.2% from their levels in 2008, 17.9%. In addition, the applied MFN tariff rates on other products (excluding agricultural) has not changed substantial remaining at the levels of 4.1% (Secretariat of European Commission, 2011). As far as NTBs, the EU has reduced the number of antidumping measures, which in 2011 were 125. In addition, EU has been introducing various customs procedures to improve security but also reduce transaction costs, thus promoting trade facilitation, such as advanced cargo information

requirements and single window services. In chapter 2, we presented the projected reduction of tariff and non tariff barriers of the EU FTAs. The research has proved that in general the EU agrees on cooperation in order to reduced non tariff obstacles to trade, but in fact not establishing any concrete legal obligations aimed at reaching regulatory convergence.

As discussed in the data section of chapter 3, actual quantitative measures of non tariff barriers between countries is not available. The data used for this analysis was obtained by Ecorys in their NTBs research in 2008, where average non tariff measures were collected for various industries. To obtain a NTM for country pairs, the average for all industries was calculated and put for the countries where available. However, still a large amount of data was not available. In addition, MFN tariff rates were used, where large part of the data was accessible through WITS.

In table 4.2 the results from the regression analysis are presented. As in the previous section, the gravity model was once run with OLS and with a regression with robust standard errors using Newey-West estimator, used to correct for heteroskedasticity and autocorrelation (Baum C., 2009). A caution needs to make in terms of the size of the sample used. As previously explained due to data unavailability, a large share of the observations had to be eliminated (automatically done by Eviews) thus resulting in only 1667 observations in the sample. However, the model still has high explanatory power with an adjusted R^2 of 78%.

As with the first regression results, the market size of economies has a positive influence on trade flows. GDP coefficients are interpreted as the elasticity, that is, a one percent increase in the GDP of the country origin will lead to a 0.62% increase in trade volumes and a one percent increase in the GDP levels of the destination country will lead to a 0.66% increase in the trade volumes. Distance has a negative impact on trade, as expected. The coefficient of the distance variable is close to the one in the first regression results, namely -0.40% decrease in trade volumes between trading partners due to an increase of 1% in distance. In addition, according to the results, when trading partners share a common language, exports increase by 1.25%. A surprising result is the coefficient for colonial history, which according to the regression output has a negative impact on trade flows. A coefficient of -0.27 means that if a country pair shares has a colonial history background trade reduces by 0.24%, which goes against all prediction and expectations by the theory.

The purpose of running the gravity model without FTA dummies and MFN rates and NTBs instead was to indentify which one has most influential impact on trade flows. To begin with the MFN tariff rates, the sign of the coefficient is negative, which makes intuitive sense as if tariff rates are higher there is less trade and the opposite the lower the tariff barriers the more countries trade among each other. If MFN tariff rate increases by 1%, trade flows will decrease 1.07%. The coefficient value is highly significant as p-value=0.000. As far as NTM barriers, the coefficient is negative as well, meaning that when a country increases non tariff measures on imports, countries trade less. The coefficient for NTMs is -0.0094 with a p-value of 0.000. Consequently, if the NTMs decrease by 1%, trade levels are going to increase by 0.09%.

As the literature review showed, tariff rates have been decreasing throughout the past decades as a result of the effort put into liberalizing trade and integrating markets. NTMs, however, have increased their importance, in comparison to tariff measures, as a policy measure aimed at protecting domestic markets from foreign competition. Consequently, one would expect the coefficient of NTBs to be having a larger impact on trade flows, compared to tariffs. Nevertheless, this is not the case with the results of our regression analysis. It is important to point out that what our analysis does is to analyze the de facto impact of EU FTAs over the past years. Hence, there are several explanations for the lower NTB coefficient, showing that the EU FTAs have not yet captured the possible impact of NTBs. To begin with, the FTA agreements discussed in this paper have primarily focused on tariff elimination rather than on deeper integration. As mentioned, the FTAs consider collaboration to achieve NTB integration that would help lower trade costs, but there are no legal provisions obliging parents to engage into further regulatory convergence. Furthermore, such regulatory harmonization is a relatively more time consuming process in comparison to tariff elimination. Lastly, the NTM index used in the regression uses EU-level of integration as the benchmark, not full incorporation.

The results from the second regression analysis show that tariff barriers actually are significantly more influential in comparison to non tariff measures. However, when we run the model with robust standard errors in order to have errors which are strongly reliable in the presence of heteroskedasticity and autocorrelation, the p-value for the coefficient of tariff barriers increases substantially as well as the standard errors. As a result the MFN coefficient is not statistically significant. A reason for that might be the small sample (1667 observations) actually used for this regression and the fact the large amount of the data observations were missing.

Table 4.2 Gravity Model regression result with MFN rates and NTBs

Variables	Gravity (OLS)	Gravity (Robust Standard Errors - Newey-West)
	EU FTAs Only	EU FTAs Only
Intercept	-9.682941 (0.000)	-9.682941 (0.0049)
GDP origin	0.618749 (0.000)	0.618749 (0.000)
GDP destination	0.662481 (0.000)	0.662481 (0.000)
Distance	-0.400857 (0.000)	-0.400857 (0.000)
Common Laguage Dummy	0.817854 (0.000)	0.817854

		(0.000)
Colonial History Dummy	-0.270023 (0.000)	-0.270023 (0.000)
MFN_RATES	-1.072142 (0.000)	-1.072142 (0.1915)
NTM	-0.009431 (0.0000)	-0.009431 (0.000)
MR term for Colony	0.93143 (0.000)	0.93143 (0.0036)
MR term for Language	-1.278775 (0.000)	-1.278775 (0.000)
MR term for Distance	0.004473 (0.000)	0.004473 (0.0375)
R-squared	0.786241	0.786241
Adjusted R-squared	0.784951	0.784951
Durbin-Watson stat	2.457055	2.457055

Note: Values in brackets are the p-value of the specific coefficient. *Source:* created by the author.

Chapter 5 Conclusions

Market opening, trade liberalization and technological development have enabled an impressive expansion in trade volumes and economic growth. As a result the number of regional trade agreements has risen significantly in the last couple of decades. Today, all member countries in the WTO are participating in at least one trade agreement. The European Union, which is the largest trading block in the world, has always had on its economic agenda trade openness and further integration of markets, as this created opportunities for economic development. According to the European Commission an FTA is not a zero sum game as there are benefits to be exploited for both trade partners.

The aim of this thesis is to identify the effect of EU FTAs on trade flows for the EU and their partners. Furthermore, we want to identify which part of the trade agreement liberalization actually influences the trade volumes most; i.e. whether tariff rates or non tariff barriers are most important in practice, since even though tariffs nowadays are rather low trade volumes are not at the optimal level predicted by the theory.

Assessment of Impact of signing an FTA with the EU on Trade Flows

The first part of the analysis aimed at identifying whether EU trade agreements have a significant impact on bilateral EU trade and trade of the signing partners. As proved by previous literature findings, in general FTA agreements have a positive and significant impact on bilateral trade flow. In this section, we have focused on EU bilateral trade flows with other countries. The results are in line with theoretical predictions. GDP levels have a positive influence on trade, namely leading on average to 1% more trade. Larger distance, on the other hand, between trading partners leads to 0.5% lower trade volumes. Sharing a common language or colonial links with trading partner positively influences trade, leading to 1% more trade. The coefficient for EU FTAs was significant showing that signing an FTA with the EU that would lead to a 1% more open trade environment, would lead to 0.44% more trade among the FTA partners than among non-FTA partners. So in general we can firmly conclude that signing EU FTAs leads to significantly more trade among the signatory trading partners.

Estimating which part of trade costs included in EU FTAs has most influence on trade flows

The results of the second regression analysis were less intuitive, but can be explained adequately. As a representative of tariff measures we used the weighted average MFN tariff rates, which have a significant impact on trade flows, namely a 1% increase in MFN tariff rates leads to 1.1% decrease in trade flows. On the other hand, NTBs have a statistically significant coefficient but a much more modest effect; i.e. a decrease in non tariff measures by 1% leads to a 0.01% increase in trade flows.

So how can this be explained? The literature review showed that tariff rates have been going down continuously over the past 50 years due trade liberalization and integration policies. The EU has carried a very active trade policy of promoting trade facilitation by offering preferential access to developing and least developed countries as well as signing a considerable number of FTAs in the past decades. On the other hand, NTBs (or NTMs) have increased in importance relative to tariff barriers as the main de facto impediments to trade. NTBs have also been utilized at some occasions as measures to protect domestic markets. This is why we could expect NTMs to have significant impacts on trade flows – also in comparison to tariff rates.

However, this is too simple and not exactly what our analysis looks at: what our regression analysis does is analyze the *de facto* effect of signing EU trade agreements over the *past* years. So how could this explain a lower coefficient for NTMs? First, these FTA agreements have originally focused much more on tariffs than on deep integration (e.g. EU- Chile FTA, EU-Mexico FTA) and only more recently looked at regulatory harmonization. Second, regulatory harmonization is a cumbersome and slow process – especially in comparison to tariff reductions – the latter also being much more visible. This is why FTAs signed within the last 10 years may have front-loaded the tariff benefits and only slowly starts to factor in the benefits from NTM reduction. Third, the NTM index used uses the EU-level of integration as the benchmark, not full integration. Insofar the EU is not an integrated market; this reduces the potential effect of non-tariff barrier removal and NTM alignment. It is these three factors that explain why the literature may still be right in naming NTBs as relatively the main trade impediments of today, while our analysis is right in showing that these potential effects have not (yet) been fully captured in EU-partner country FTAs.

Recommendations for further research

The research was carried on a limited amount of country pairs due to data unavailability on all country specific figures. As far as EU countries only the top countries accounting for 75% of imports and exports were chosen. As a result, in the future, creating a larger data set in terms of time and countries will be beneficial to increase the accuracy of regression results.

Furthermore, as mentioned several times, due to the limited amount of data, particularly on NTMs, a very small data set was used for the second part of the research. Thus more research can be dedicated to collecting and quantifying data for non tariff measures, this way a better idea can be created on how liberalized actually trade is.

ANNEX I

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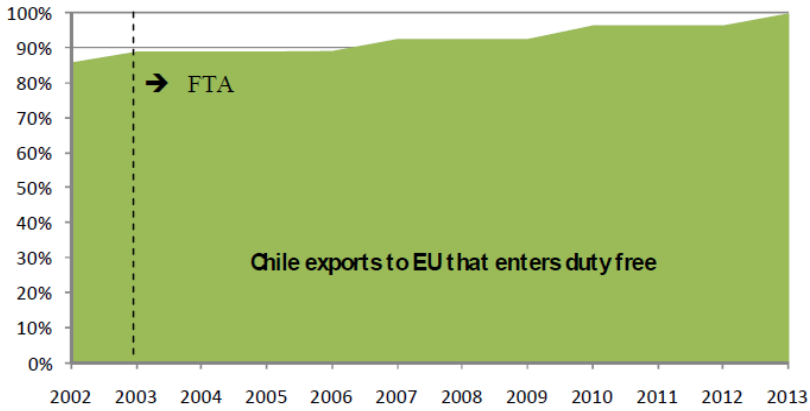
Annex II Additional information of FTA partners presented in the Literature Review

Chile

Chile's GDP has been growing steadily in the last decade, with the exception of 2009 dip, which is explained by the global economic recession (Figure4.3. In 2009, the service sector represented 54.6% of domestic GDP, the industrial sector accounted for 42.1% of GDP and the agriculture 3.3%. Chile is ranked as 32nd largest exporter of European products and 39th largest importer in the EU. The European Union, on the other hand, is considered to be the second largest import and export market for Chile, after the United States. The main Chilean exports to the EU market include mining products, fish and other non food goods. Main import products from the EU for Chile are machinery and electric (equipment), transport equipment and chemical products (European Commission, 2011).

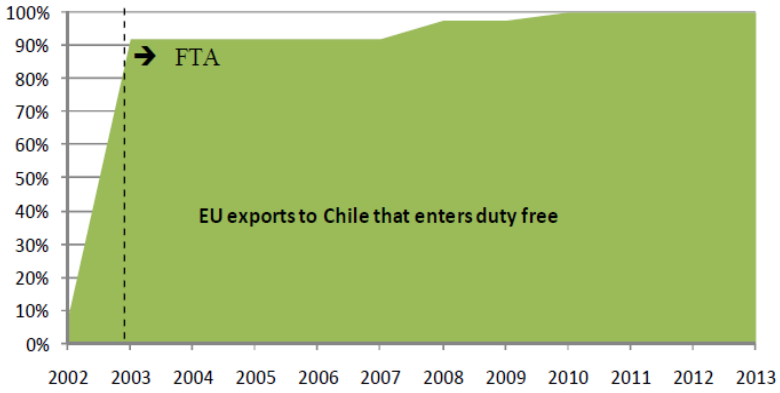
GDP % growth Chile. *Source:* prepared by the author, World Bank 2011

As already mentioned in the Chapter 2, the EU-Chile FTA agreement planned for a quick phasing out of tariffs for Chile's industrial products. In addition, before the entrance in force of the agreement, Chile was already benefiting from a preferential access to the EU market; hence the percentage of goods that are duty free did not increase substantially after the FTA, figure 4.4. Before the agreement, 86 % of Chile's exports were duty free and in 2003 right after the enforcement of the FTA this percentage increased to almost 90% (Copenhagen Economics, 2011).



Share of Chile's exports to the EU with zero tariffs. *Source:* Copenhagen Economics, 2010

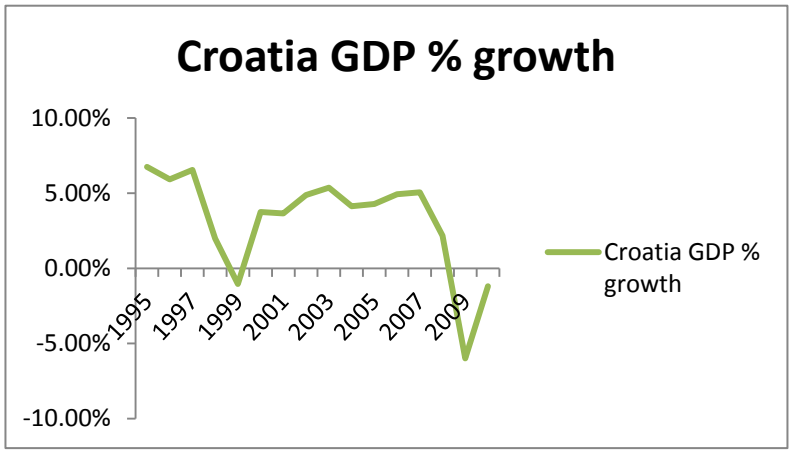
As far as European exports to the Chile are concerned, the increase in percentage of duty free products was substantial after the enforcement of the agreement, namely in 2002 around 8% of the European products would enter the country free of duty and in 2003 this number grew up to 92 %. As it can be observed from figure 4.4 this percentage kept on growing throughout the years and in 2011 it reaches 100% as planned by the agreement (refer to table 2.3 and 2.5 in Chapter 2).



Share of EU's exports to Chile with zero tariffs. *Source:* Copenhagen Economics, 2010

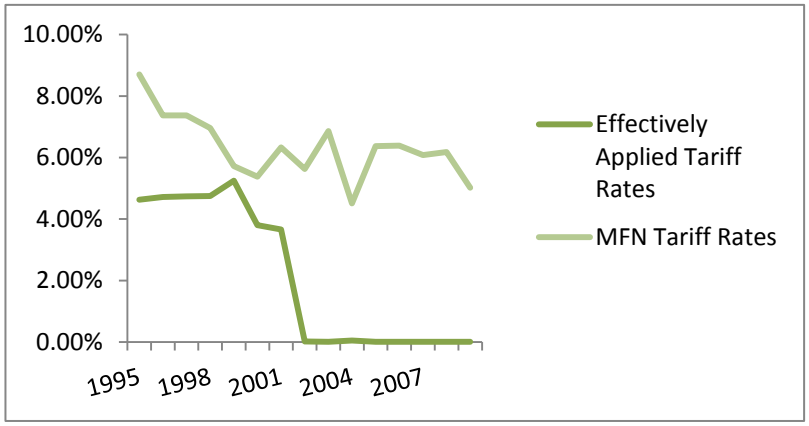
Croatia

Considered as an emerging and developing economy from the IMF, Croatia's GDP has been growing since the year 2000 and as most countries has taken a hit from the economic crisis in 2008 and has shown slow recovery signs (figure 4.6).. Croatia is ranked as 44th EU partner in terms of imports and 31st in terms of exports to Croatia. The main industries include chemicals and plastics, machine tools and fabricated metal, electronics, textiles, food and beverages and tourism (economy watch web page, 2011).



Croatia GDP % growth. *Source* :created by the author, World Bank 2011

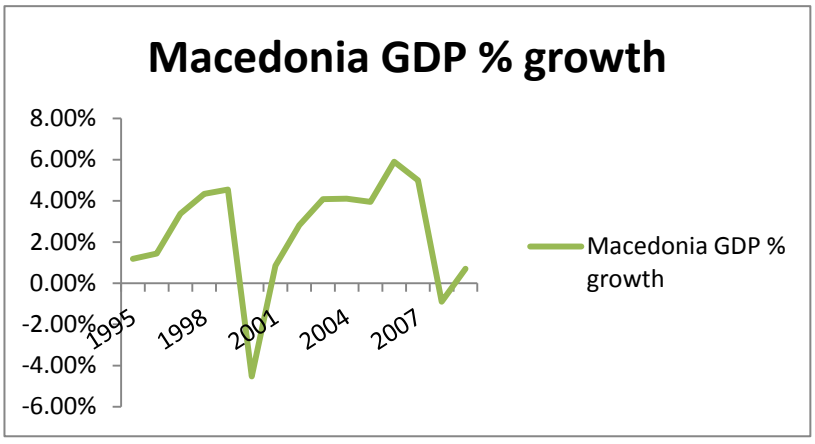
The trade agreement signed in 2002 planned for fats elimination of tariffs on industrial goods exported to the EU and slower phasing out of tariffs on imports originating in the community. Croatia, together with Macedonia, was not included in the GSP system before the entrance in force of the agreement. In figure (4.7), the weighted average of effectively applied rates and the weighted average of MFN tariffs on EU imports from Croatia are presented. The effectively applied rates go down to 0.1% after the entry in force of the trade agreement.



Weighted average of MFN and effectively applied tariffs on EU imports originating in Croatia. *Source:* Created by the author, WITS, 2011

Macedonia

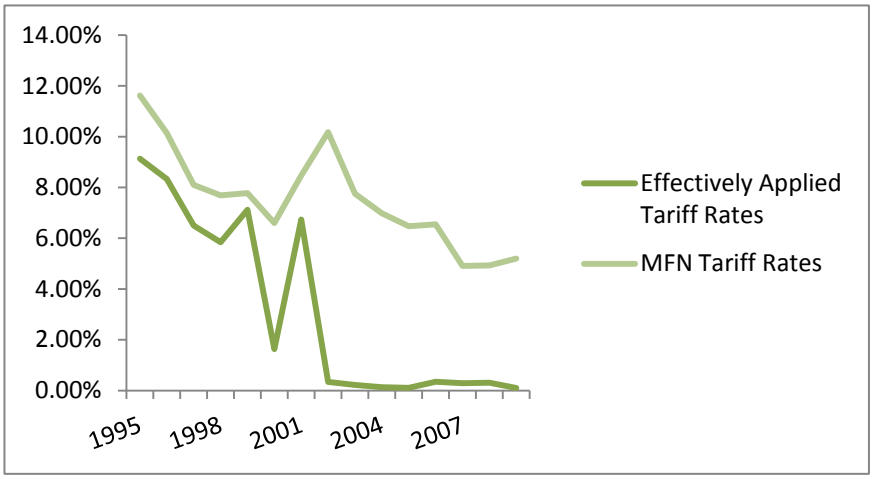
After obtaining its independence in September 1991, Macedonia was considered the least developed of all Yugoslavian Republics. There have been many political and economic factors (such as economic embargos, UN sanctions as well as lacking infrastructure) slowing down its progress until 2003, when the country started showing signs of growth (Figure 4.8). The manufacturing and agriculture industries are crucial contributors to the country's GDP. Among the primary products being exported from the country are wine, food items, textiles, tobacco, and iron and steel are prominent. As far as imports, the main trading partners are Balkan countries, and imports include automobiles, machineries and equipments, food products, fuels, and chemicals (economy watch, 2011).



Macedonia GDP% growth. *Source:* created by the author, World Bank 2011

The EU-Macedonia trade agreement was signed in 2001. Upon the entry of the agreement all tariffs on industrial products originating from Macedonia are eliminated

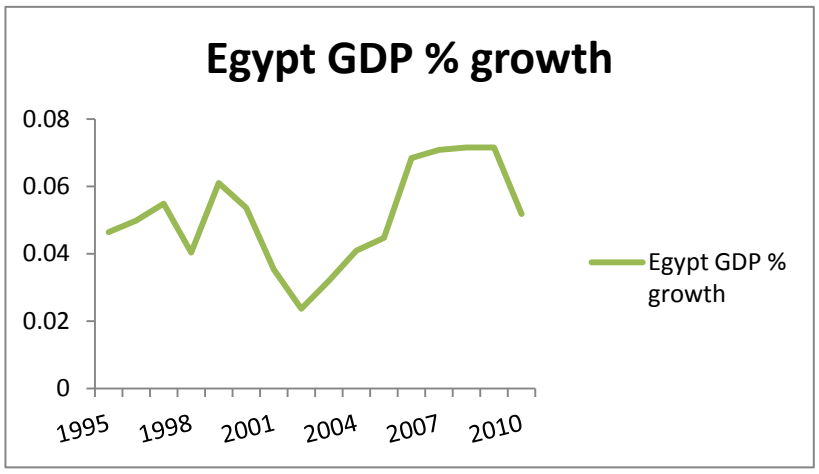
according to the agreement with the exception of textile and steel products. In figure 4.9 the weighted average of effectively applied and MFN tariff rates are presented. It is important to mention that together with Croatia, Macedonia was not benefiting from preferential access to the EU market under the GSP system.



Weighted average of MFN and effectively applied tariffs on EU imports originating in Macedonia. *Source:* Created by the author, WITS, 2011

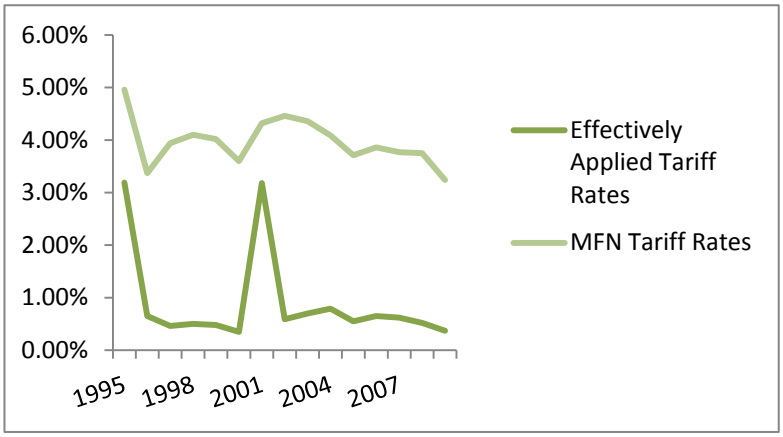
Egypt

Egypt's GDP has show a constant growth in the past decade showing no significant consequences of the global crisis of 2008. The Egyptian economy is highly dependent on its exports to European countries (economy watch, 2011), with main exports in energy, chemicals as well as textiles and clothes. The EU, on the other hand exports primarily machinery and chemicals. The country takes the 37st rank in terms of EU importing partners and the 21st when it comes to EU exports. For Egypt the European Union is the primary trade partner with 33.1% share of Egypt's trade volume (European Commission, 2011).



Egypt GDP% growth. *Source:* created by the author, World Bank 2011

The trade agreement between the EU and Egypt was signed in 2004. As previously mentioned, the agreement plans complete elimination of tariffs on industrial exports to the EU originating from Egypt. As far as EU exports of industrial products, the phasing out of the tariffs lines is covers a more extensive period of time. In figure 4.9 the weighted average of MFN tariffs and effectively applied tariffs on EU imports from Egypt are presented.

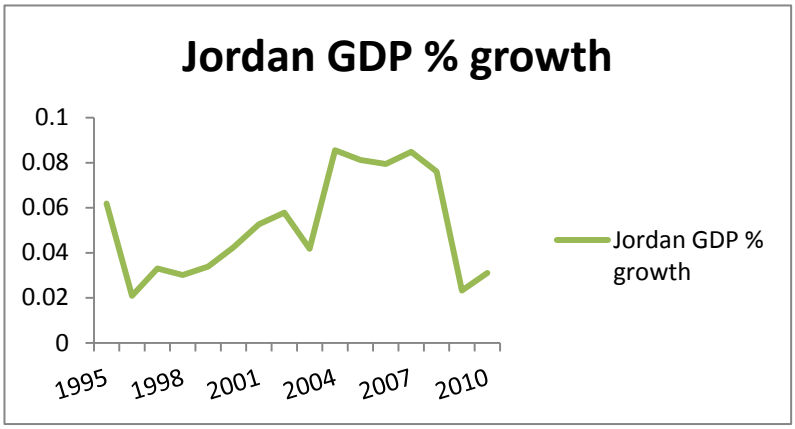


Weighted average of MFN and effectively applied tariffs on EU imports originating from Egypt. *Source:* Created by the author, WITS, 2011

Jordan

In the last decade Jordan economy has show steady growth, with a dip in 2009 due to the economic downturn, where trade flows to the EU contracted by 15%. The country economy is heavily dependent on services, whose share is around 65% of GDP. Next is

industrial sector with 31 % share of GSP and lastly with only 3% share is agriculture. The main exports to the EU market include machinery and transport equipment, chemical and mining products. As far as EU exports to Jordan, chemicals, machinery and transport equipment constitute the largest share of all exports.



Jordan GDP % growth. *Source:* created by the author, World Bank, 2011

The FTA between EU and Jordan was signed in 2002. The country already was benefiting from preferential access to the European market under the GSP thus having large part of its products entering the EU duty free. In figure 4.13 the weighted average of MFN and effectively applied tariff rates are calculated for total trade for products exported to the EU for the years 1995 to 2010. According to the agreement, in 2014 around 100% of EU exports of industrial products to Jordan are going to be free of duty. On the other hand, exports to the EU from Jordan are facing full elimination of tariff barrier, except for good listed in Annex I and II, which include agricultural products.

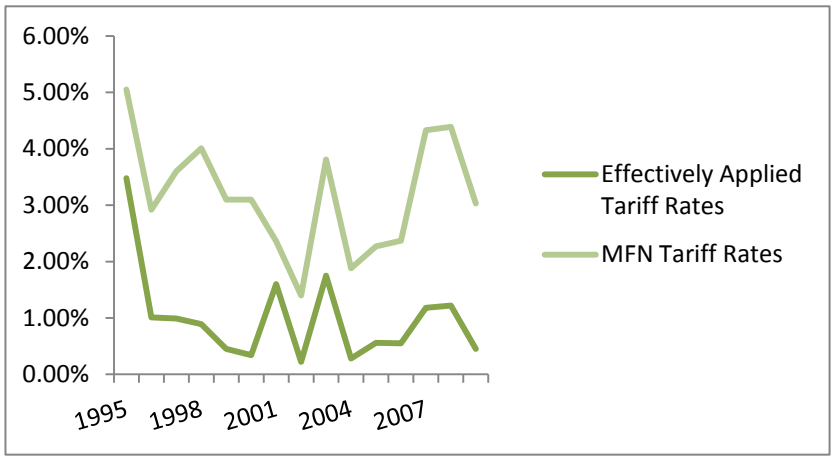
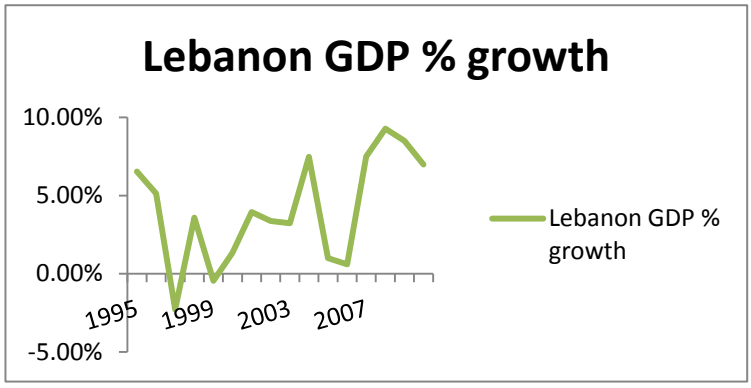


Figure 4.13 Weighted average of MFN and effectively applied tariffs on EU imports originating from Jordan. *Source:* Created by the author, WITS, 2011

Lebanon

Lebanon's GDP has been growing continuously not showing considerable impacts of the economic downturn. Services represent a significant share in terms of GDP, around 78% and the rest is distributed between industrial and agriculture sectors. Economy is characterized high import levels. The EU is the largest importing country, constituting around 35% of total import volumes. Major imports from the EU include machinery and transport equipment, energy products, agricultural products and chemicals. As far as exports, EU ranks 3rd as trading partner, after Syria and United Arab Emirates. The primary goods exported to the EU market consist of semi manufactured foods, agricultural products, fuel and mining products, machinery and transport equipment and chemicals.



Lebanon GDP % growth. *Source:* created by the author, World Bank, 2011

EU and Lebanon signed an FTA agreement in 2002. As a consequence, industrial products originating from Lebanon as well as share of agriculture goods are give free access to the EU market. On the other hand, the tariff phasing out scheme for EU industrial goods exported to Lebanon will finish in 2014. In the figure 4.15 the weighted average of MFN and effectively applied tariffs on Lebanon's exports to the EU are presented.

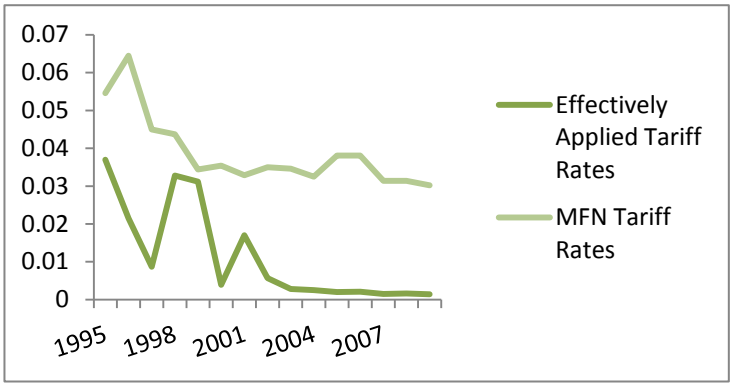
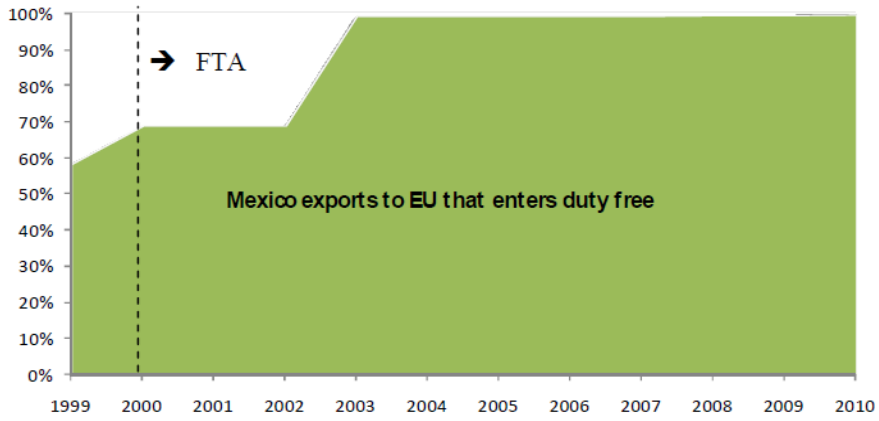


Figure 4.15 Weighted average of MFN and effectively applied tariffs on EU imports originating from Lebanon. *Source:* Created by the author, WITS, 2011

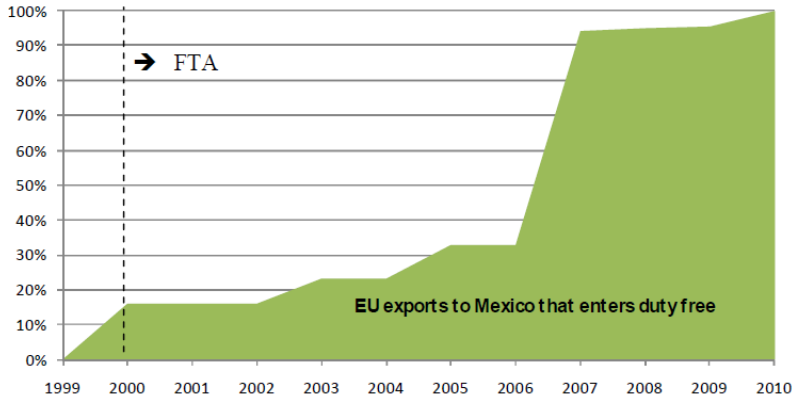
Mexico

The EU is the second largest export market for Mexican products, after the United States, and is the third largest importing trading partner after the United States and China. Significant part of Mexican trade is covered by 12 trade agreements with 40 countries around the world. Among the main exported products to the EU are mineral products, machinery and electric equipment, transport equipment and optic precision instruments. Among the most important imports from the European market are machinery and electric equipment, transport equipment, chemicals and mineral products.

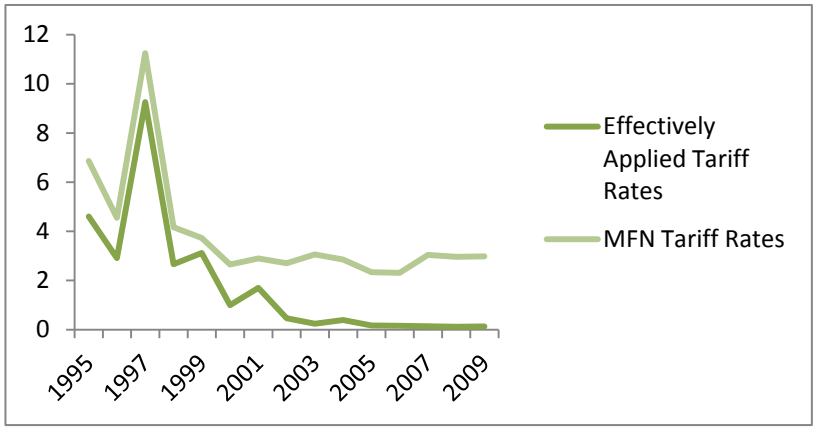
The FTA between the EU and Mexico was signed in 2000. Before the entry in force of the agreement, Mexico was benefiting of preferential EU market access under the GSP, when around 56% of goods entered free of duty. After the enforcement, as it can be observed from figure 4.16, in 2004 around 100% of products were granted free access. On the other hand, products originating in the EU did not have duty free entrance to Mexico. After the enforcement of the agreement, around 16% of EU products were entering duty free, until 2009 when the tariff elimination plan was completed and 100% of EU products we facing no duty charges, figure 4.17 (Copenhagen Economics, 2010). These figures account only industrial products. As mentioned in Chapter 2, the phasing out of tariffs for agricultural products takes longer time for both countries. Figure 4.18 presents the weighted average of MFN and effectively applied tariffs on total trade for Mexican exports to the EU.



Percentage of Mexican exports entering the EU free of duty. *Source:* Copenhagen Economics, 2010



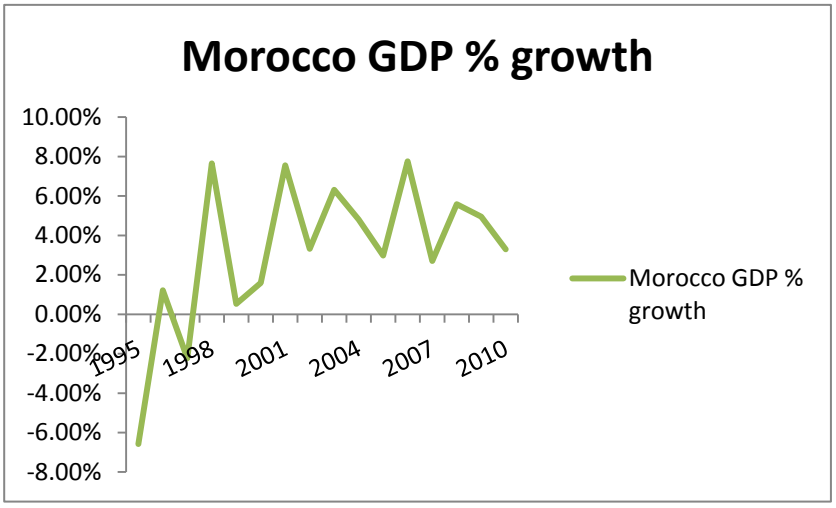
Percentage of European exports entering Mexico duty free. *Source:* Copenhagen Economics, 2010



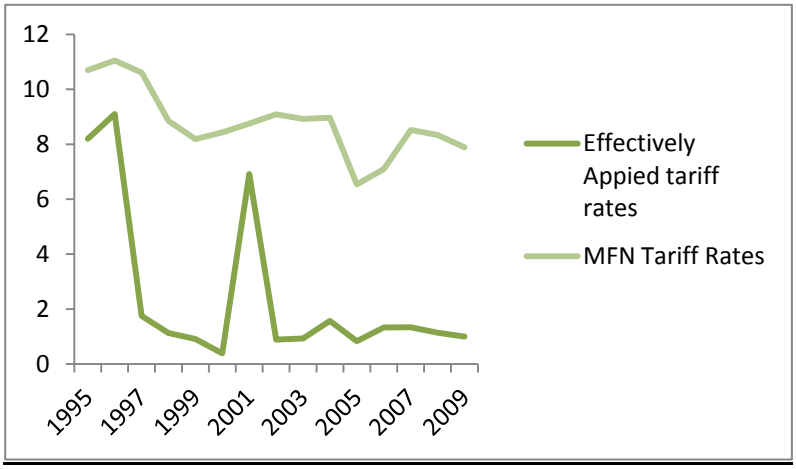
Weighted average of MFN and effectively applied tariffs on EU imports originating from Mexico, created by the author *Source:* WITS, 2011

Morocco

The EU is Morocco largest trading partner accounting for around 58 percent of import and export volumes. The Morocco primary exports textile articles and agricultural products. On the other hand the EU mainly exports machinery and transport equipment, chemical sand fuels. The FTA agreement between the EU and Morocco plans progressive eliminations of tariff barriers of industrial products with some exceptions. As far as agricultural and food products are concerned, these do not face tariff elimination as of entrance of in force of the agreement, but are rather subject to negotiations. In the next figure, MFN and effectively applied tariff rates for Marocco's exports to the EU are presented.



GDP % growth Morocco, created by the author *Source*: World Bank, 2011



Weighted average of MFN and effectively applied tariffs on EU imports originating from Morocco, created by the author *Source:* WITS, 2011

South Africa

The European Union is the largest trading partner for the South Africa, accounting for around 33% of the imports and 30% of the exports. The main South African exports to the EU are coal, diamonds and mechanical machinery. As far as EU exports to the African country, the main products include mechanical machinery, vehicles and electrical machinery.

The EU – South Africa FTA plans for a complete elimination of tariffs for industrial products originating in the EU, except for those mentioned in Annex III. Tariff lines for South African industrial exports are also subject to full tariff elimination except for products mentioned in Annex II. The graph bellow present the weighted average of

MFN tariff rates and effectively applied tariff rates for total trade for South African products exported to the EU.

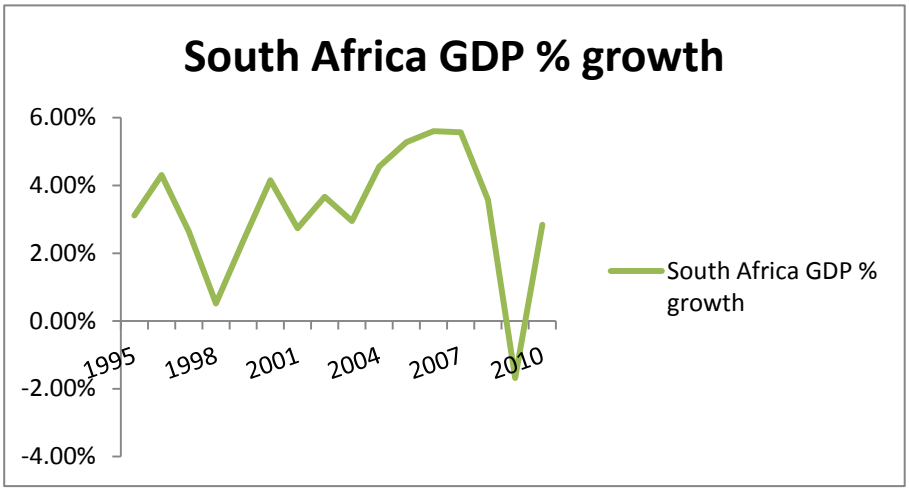
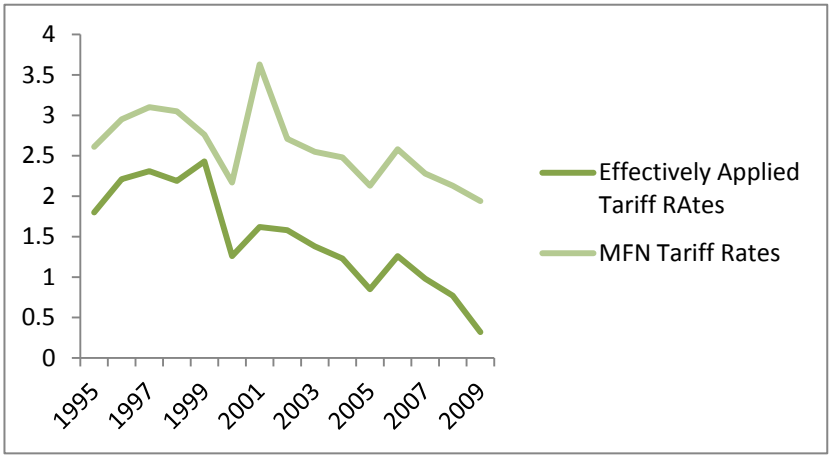


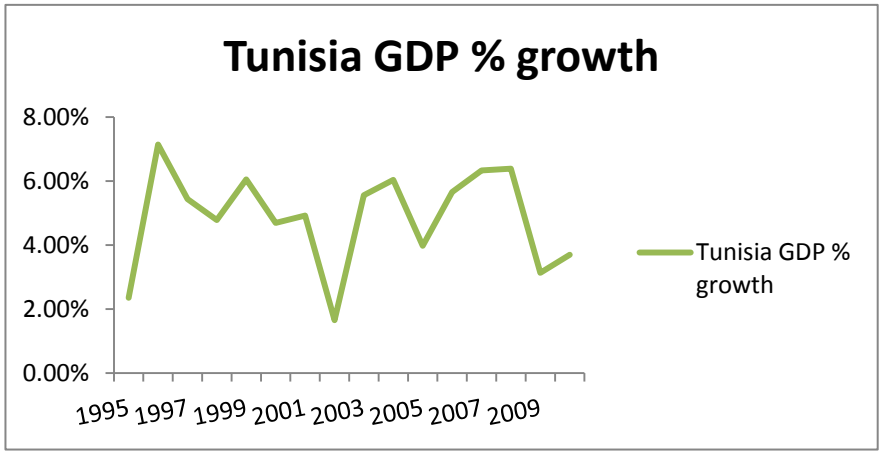
Figure 4.21 South Africa GD % growth, created by the author. *Source:* World Bank, 2011



Weighted average of MFN and effectively applied tariffs on EU imports originating from South Africa, created by the author *Source:* WITS, 2011

Tunisia

As in for the previous trading partners mentioned, the EU is the largest trading partner. The Community accounts for around 65% of the Tunisian imports and 72 % of exports. The main products exported to the EU are manufactured goods, including clothing, machinery and transport equipment. As far as imports, these include machinery and transport equipment, textiles, chemical and energy products. The next figure present GDP % growth for Tunisia, which



Tunisia GDP % growth, created by the author. *Source:* World Banks, 2011

The FTA agreement between the EU and Tunisia plans immediate elimination of tariff for industrial products originating in the Tunisia, except for some exceptions. On the other hand, European products face gradual elimination of duties over a period of ten years. Furthermore, some agricultural and food products are getting their tariff rates reduced by half as of entry in force of the agreement. In the next graph the effectively applied tariff rates MFN rates are presented.

Weighted average of MFN and effectively applied tariffs on EU imports originating from Tunisia, created by the author *Source:* WITS, 2011

ANNEX III Regression Analysis Results

1. Regression Results with FTA dummy

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Date: 09/05/11 Time: 14:19

Sample: 1 24100

Included observations: 24100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.989096	0.004532	218.2410	0.0000
LN_GDP_DEST	0.905965	0.004534	199.8157	0.0000
LN_DIST	-0.495333	0.014044	-35.26916	0.0000
DUM_LANG	0.616891	0.033760	18.27256	0.0000
DUM_FTA	0.365652	0.031136	11.74373	0.0000
DUM_COL	0.743411	0.035504	20.93851	0.0000
MR_COLONY	-1.231424	0.115186	-10.69077	0.0000
MR_FTA	-1.133975	0.037801	-29.99846	0.0000
MRLANG	0.938926	0.127530	7.362377	0.0000
MRDIST	0.007077	0.000696	10.17328	0.0000
C	-25.84976	0.230468	-112.1620	0.0000

R-squared	0.722259	Mean dependent var	18.45650
Adjusted R-squared	0.722144	S.D. dependent var	2.374265
S.E. of regression	1.251524	Akaike info criterion	3.287057
Sum squared resid	37730.89	Schwarz criterion	3.290750
Log likelihood	-39598.04	Hannan-Quinn criter.	3.288255
F-statistic	6264.294	Durbin-Watson stat	1.939651
Prob(F-statistic)	0.000000		

2. Regression Results with Robust (White) Standard Errors with FTA dummy

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Date: 09/05/11 Time: 14:21

Sample: 1 24100

Included observations: 24100

White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.989096	0.006944	142.4301	0.0000
LN_GDP_DEST	0.905965	0.006264	144.6410	0.0000
LN_DIST	-0.495333	0.012008	-41.25132	0.0000
DUM_LANG	0.616891	0.034057	18.11328	0.0000
DUM_FTA	0.365652	0.025971	14.07915	0.0000
DUM_COL	0.743411	0.035170	21.13792	0.0000
MR_COLONY	-1.231424	0.103599	-11.88645	0.0000
MR_FTA	-1.133975	0.035848	-31.63255	0.0000
MRLANG	0.938926	0.114559	8.196032	0.0000
MRDIST	0.007077	0.000651	10.87767	0.0000
C	-25.84976	0.327416	-78.95084	0.0000

R-squared	0.722259	Mean dependent var	18.45650
Adjusted R-squared	0.722144	S.D. dependent var	2.374265
S.E. of regression	1.251524	Akaike info criterion	3.287057
Sum squared resid	37730.89	Schwarz criterion	3.290750
Log likelihood	-39598.04	Hannan-Quinn criter.	3.288255
F-statistic	6264.294	Durbin-Watson stat	1.939651

Prob(F-statistic) 0.000000

3. Regression Results with Robust (Newey-West) Standard Errors with FTA dummy

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Date: 09/05/11 Time: 14:23

Sample: 1 24100

Included observations: 24100

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 14.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.989096	0.007236	136.6903	0.0000
LN_GDP_DEST	0.905965	0.006361	142.4240	0.0000
LN_DIST	-0.495333	0.013950	-35.50812	0.0000
DUM_LANG	0.616891	0.031602	19.52062	0.0000
DUM_FTA	0.365652	0.027876	13.11707	0.0000
DUM_COL	0.743411	0.031479	23.61625	0.0000
MR_COLONY	-1.231424	0.125499	-9.812245	0.0000
MR_FTA	-1.133975	0.044704	-25.36616	0.0000
MRLANG	0.938926	0.140274	6.693524	0.0000
MRDIST	0.007077	0.000857	8.256075	0.0000
C	-25.84976	0.343305	-75.29671	0.0000

R-squared	0.722259	Mean dependent var	18.45650

Adjusted R-squared	0.722144	S.D. dependent var	2.374265
S.E. of regression	1.251524	Akaike info criterion	3.287057
Sum squared resid	37730.89	Schwarz criterion	3.290750
Log likelihood	-39598.04	Hannan-Quinn criter.	3.288255
F-statistic	6264.294	Durbin-Watson stat	1.939651
Prob(F-statistic)	0.000000		

4. Regression Results with MFN rates and NTBs

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Sample (adjusted): 13 22456

Included observations: 1667 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.618749	0.016208	38.17543	0.0000
LN_GDP_DEST	0.662481	0.014474	45.77075	0.0000
LN_DIST	-0.400857	0.023204	-17.27570	0.0000
DUM_LANG	0.817854	0.076306	10.71805	0.0000
DUM_COL	-0.270023	0.074681	-3.615693	0.0003
MFN_RATES	-1.072142	0.323645	-3.312707	0.0009
NTM	-0.009431	0.001069	-8.822221	0.0000
MRLANG	-1.278775	0.158706	-8.057497	0.0000
MRDIST	0.004473	0.001033	4.328742	0.0000
MR_COLONY	0.931430	0.139686	6.668037	0.0000
C	-9.682941	0.651188	-14.86965	0.0000

R-squared	0.786241	Mean dependent var	21.72319

Adjusted R-squared	0.784951	S.D. dependent var	1.579939
S.E. of regression	0.732672	Akaike info criterion	2.222339
Sum squared resid	888.9544	Schwarz criterion	2.258096
Log likelihood	-1841.320	Hannan-Quinn criter.	2.235590
F-statistic	609.1056	Durbin-Watson stat	2.457055
Prob(F-statistic)	0.000000		

5. Regression Results with Robust (White) Standard Errors with MFN and NTBs

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Sample (adjusted): 13 22456

Included observations: 1667 after adjustments

White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.618749	0.106452	5.812470	0.0000
LN_GDP_DEST	0.662481	0.033766	19.61993	0.0000
LN_DIST	-0.400857	0.038121	-10.51531	0.0000
DUM_LANG	0.817854	0.061785	13.23708	0.0000
DUM_COL	-0.270023	0.093569	-2.885824	0.0040
MFN_RATES	-1.072142	0.835057	-1.283914	0.1994
NTM	-0.009431	0.001058	-8.913101	0.0000
MRLANG	-1.278775	0.299238	-4.273440	0.0000
MRDIST	0.004473	0.002108	2.121596	0.0340
MR_COLONY	0.931430	0.319555	2.914772	0.0036
C	-9.682941	3.418009	-2.832919	0.0047

R-squared	0.786241	Mean dependent var	21.72319
Adjusted R-squared	0.784951	S.D. dependent var	1.579939
S.E. of regression	0.732672	Akaike info criterion	2.222339
Sum squared resid	888.9544	Schwarz criterion	2.258096
Log likelihood	-1841.320	Hannan-Quinn criter.	2.235590
F-statistic	609.1056	Durbin-Watson stat	2.457055
Prob(F-statistic)	0.000000		

6. Regression Results with Robust (White) Standard Errors with MFN and NTBs

Dependent Variable: LN_TRADE_FLOW

Method: Least Squares

Sample (adjusted): 13 22456

Included observations: 1667 after adjustments

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 8.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_ORIGIN	0.618749	0.107062	5.779370	0.0000
LN_GDP_DEST	0.662481	0.033650	19.68756	0.0000
LN_DIST	-0.400857	0.037404	-10.71682	0.0000
DUM_LANG	0.817854	0.062691	13.04582	0.0000
DUM_COL	-0.270023	0.090996	-2.967429	0.0030
MFN_RATES	-1.072142	0.820564	-1.306592	0.1915
NTM	-0.009431	0.001076	-8.768748	0.0000

MRLANG	-1.278775	0.298869	-4.278710	0.0000
MRDIST	0.004473	0.002148	2.082091	0.0375
MR_COLONY	0.931430	0.319166	2.918324	0.0036
C	-9.682941	3.433046	-2.820510	0.0049

R-squared	0.786241	Mean dependent var	21.72319
Adjusted R-squared	0.784951	S.D. dependent var	1.579939
S.E. of regression	0.732672	Akaike info criterion	2.222339
Sum squared resid	888.9544	Schwarz criterion	2.258096
Log likelihood	-1841.320	Hannan-Quinn criter.	2.235590
F-statistic	609.1056	Durbin-Watson stat	2.457055
Prob(F-statistic)	0.000000		