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# **ADJUSTING TO THE MFA PHASE-OUT**

The Case of the Turkish Textile and Clothing Industry

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## **ABSTRACT**

The end of the Multi-Fiber Agreement in January 2005 meant that quantitative restrictions within the textile and clothing industry were to be abolished. Quantitative restrictions had been used on the export of goods from low-wage countries which threatened producers in developed countries. With the end of the MFA the world market is significantly more accessible for textile and clothing producers and comparative advantages should regain their determinant role for where international production will take place. This study examines what developments that can be observed within the Turkish textile and clothing industry during the MFA phase-out. With two versions of Balassa's index of revealed comparative advantages it is shown that Turkey shows stronger comparative advantages within the labor-intensive segments of the supply-chain. The adjustment to the MFA phase-out implies an overall decrease in revealed comparative advantages. Since the data has been divided between two different trading partners vis-à-vis Turkey; EU15 and rest of the World, a pattern of a more profitable position towards EU15 than towards rest of the World has been revealed. Turkey shows stronger comparative advantages towards EU15 and the observed decreases in comparative advantages are less significant regarding EU15 than the decreases observed concerning the trade with rest of the World.

**Key words:** textile and clothing industry, Multi-Fiber Agreement, Turkey, revealed comparative advantages.

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## LIST OF ABBREVIATIONS

ATC	Agreement on Textile and Clothing
BI	Balassa Index
EEC	European Economic Community
EU	European Union
GATT	General Agreement on Tariffs and Trade
ITCS	International Trade Classification System
MFA	Multi-Fiber Agreement
OECD	Organization for Economic Co-operation and Development
RCA	Revealed Comparative Advantage
RoW	Rest of the World
UN	United Nations
VER	Voluntary Export Restraints
WTO	World Trade Organization

# 1. INTRODUCTION

## 1.1 Background and Aim of Study

January 1<sup>st</sup> 2005 meant a breaking point for the international textile and clothing industry. Years of discrimination against certain textile producing countries had come to an end. The Multi-Fiber Agreement (MFA) had experienced a period of out-phasing and with less quantitative restrictions within the international trade comparative advantages will regain their deterrent role for where international production should take place. The end of the MFA meant that producers in developed countries, which had been protected against the competition from low-wage countries during the MFA, now had to face a situation with strong competitors within particularly the labor-intensive segments of the industry.<sup>1</sup>

This study will focus on the case of Turkey. The country is a large actor in the international textile and clothing industry and the formation of a custom union (CU) between Turkey and the European Union (EU) in 1995 as well as the country's preparation for a full EU membership makes it an interesting country to study. The aim of this study is to examine how the Turkish textile and clothing industry has adjusted to the MFA phase-out. Underlying hypothesis is that with less quantitative restrictions present on the international arena, countries will focus their production and their export to segments of the industry where they possess comparative advantages. Overall competition will be tougher and low-wage countries that earlier have been somewhat excluded from the international trade will take considerable market shares in areas that are labor-intensive. As it regards to Turkey it is expected to be able to distinguish Turkey's area of specialization and to see an overall decrease in comparative advantages between the two periods as a result of the disruption that will affect the country as more countries will be present on the world market on more equal conditions. Since the data has been divided between two different trading partners vis-à-vis Turkey; EU15 and Rest of the World (RoW), it is also expected to see that eventual decreases in Turkey's comparative advantages will be more significant as regards to the trade with RoW, this is because of the existing CU between Turkey and the EU.

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<sup>1</sup> WTO, 1999, page 6

To examine the hypothesis the following questions will be posed. Where had Turkey its comparative advantages in the mid-90's and how has it developed during the period studied? How has Turkey been influenced by the structural changes in the textile and clothing industry that a trade liberalization during the period implies? What differences can be observed between the trade with on one hand the EU15 countries and on the other hand RoW. Finally, one question concerning the future, what can be predicted concerning Turkey's position as a textile and clothing producer after the year 2004?

## **1.2 Disposition**

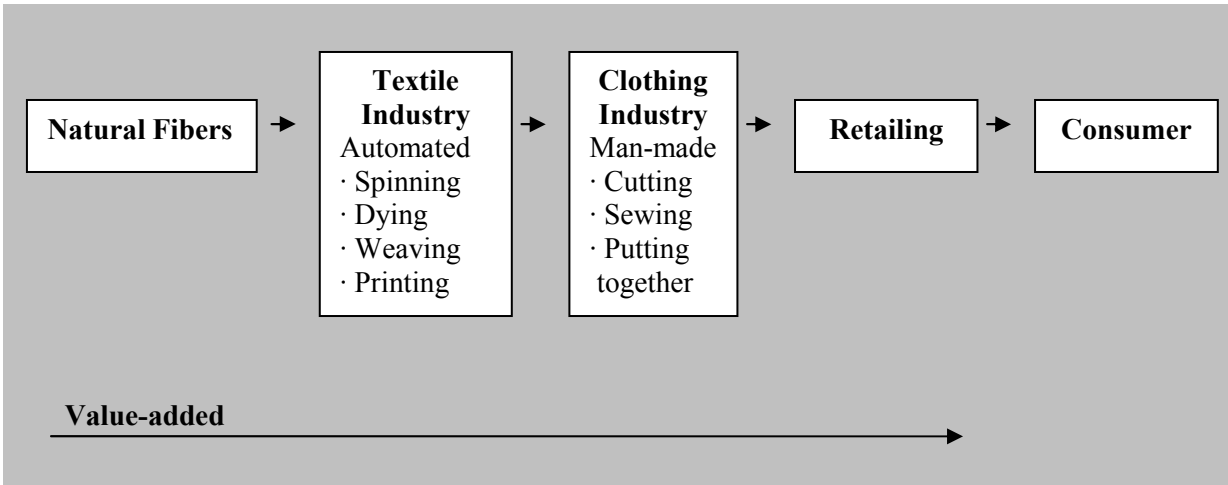
The first section will give a general background concerning the structure of the textile and clothing industry. In chapter two the most important trade agreements in the textile and clothing industry will be presented. Chapter three is designed as a presentation of the effects of a VER and the concept of comparative advantages. The core is chapter four where two versions of Balassa's index over revealed comparative advantages will be presented as well as the results with comments. The last part is dedicated to a summary, a conclusion and some thoughts about the post-MFA situation will also be revealed.

## 2. THE TEXTILE INDUSTRY AND TRADE POLITICS

### 2.1 The Textile and Clothing Industry

The textile and clothing industry represents a multifaceted set of sub industries. One way to describe the entire industry is to divide the study into the value-chain's different segments.

Figure 2.1 Value-chain



Source: Arndt & Kierzkowski, 2001; Audet, 2004

#### *Natural Fibers*

Examples of natural fibers that can constitute the base in the textile production are cotton, jute, silk, wool and sisal. Silkworms and sheep herding are areas that engage animal farming. Where these segments get located is determined by where access is to the factor endowments necessary for the various agricultural activities. Examples of necessary factor endowments can be; a region's climate, land quality, how the agricultural policies work in the area.<sup>2</sup> The synthetic fibers production is considered to be an extreme case of a capital and technology intensive segment.<sup>3</sup>

<sup>2</sup> Audet, 2004, page 10

<sup>3</sup> Arndt & Kierzkowski, 2001, page 210



### *Textiles*

In this sector manufacturing has a key role. The preparation processes of textiles from natural or man-made fibers has been subject for high productivity gains over the last decades, meaning that textile operations are now being conducted under a considerable higher speed. One type of textiles, technical textiles, is textiles that are not used in clothing applications. These textiles are not produced for an esthetical purpose; instead there are functional reasons behind the textiles. Medical textiles such as implants is one example, another is clothes that are produced for protection causes.<sup>4</sup> The importance of these technical textiles has grown and in developed countries this kind of textiles is the fastest growing sector within the total textile industry.<sup>5</sup> Compared to the segment of synthetic fibers, the textile manufacturing is less capital intensive in the production of finished textiles, while the production of yarns and fabrics is still considered relatively capital intensive.<sup>6</sup>

### *Clothing*

The clothing segment involves several steps in the process of making the final product – clothes; with activities from the creation of the design and the patterns to the process involving the cutting of individual textile components. The later part, the cutting process has experienced a revolution and today this industry involves computer-assisted methods and computer-aided design. Although these technical progresses, the clothing segment still involves a large part of manufacturing processes and the processes of putting together pieces to a final product are still represented by steps that require a delicate hand-craft and can not be left to automated processes. Better needles and improved fabric techniques have contributed to productivity gains but the techniques being used today are still rather comparable to the techniques that were used hundred years ago. The clothing industry represents something unique in the way that it has a low ratio of capital equipment in relation to labor input. The structure of this segment is highly labor-intensive and reallocation of processes within this segment has been to labor-abundant countries with a low-wage structure.<sup>7</sup>

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<sup>4</sup> [http://en.wikipedia.org/wiki/Technical\\_textiles](http://en.wikipedia.org/wiki/Technical_textiles)

<sup>5</sup> Audet, 2004, page 10

<sup>6</sup> Arndt & Kierzkowski, 2001, page 210

<sup>7</sup> Ibid

### *Retailing*

The last part of the chain is retailing, which is a capital intensive sector with demands of high technology.<sup>8</sup> The boundaries between retailers, manufacturers and brand name managers have faded out and today the different retail fractions have been intensified to large, integrated retail organizations.<sup>9</sup>

This study will focus on the three first parts of the supply chain and details concerning retailing will not be treated.

## **2.2 Development of Trade Restrictions within the Textile and Clothing Industry**

### **2.2.1 Multi-Fiber Agreement**

During the '50s there was a significant increase in export from developing countries to the industrialized part of the world regarding textile and clothing. This was the result of a general liberalization within the General Agreement of Tariffs and Trade, (GATT). To protect domestic producers in developed countries, developing countries were persuaded to introduce voluntary export restraints (VER). A VER cause problems since it distorts an efficient allocation of the industry. In 1960 safeguard measures for treating the textile and clothing industry were established. In 1961 the Short-Term Arrangement Regarding International Trade in Cotton Textile was signed which meant a move towards a supervised trading system regarding the textile and clothing industry.<sup>10</sup> This was followed by the Long-Term Cotton Textile Arrangement between 1962 and 1973 which limited the growth of the import of cotton products.<sup>11</sup>

The MFA was signed in 1974, the aim of this arrangement was to offer the producers in developed countries the possibility to adapt their industries to a tougher competition and

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<sup>8</sup> Arndt & Kierzkowski, 2001, page 210

<sup>9</sup> Audet, 2004, page 11

<sup>10</sup> Hoekman & Kostecki, 2001, page 226

<sup>11</sup> WTO, 1999, page 9 & Hoekman & Kostecki, 2001, page 227

reconstruct their industries to be more efficient. This strategy to protect the industrialized countries' textile and clothing industries resulted in a distortion of the geographical location of the industry. Comparative advantages were no longer the major determinants for where production would take place since the market structure was determined by fixed quotas.<sup>12</sup> The initially limited arrangement was gradually expanded; it developed from including only cotton fabrics to include man-made fibers, wool, silk blends and vegetable fibers. With the expansion of the MFA, the basis for the trade between developed and developing countries came to be MFA instead of the proposed most favored nation.<sup>13</sup>

### **2.2.2 Agreement on Textiles and Clothing**

Agreement on Textile and Clothing (ATC) was signed in 1995 as a result of the primary demands from the developing countries during the Uruguay Round (1986-1993). The ATC content involved the member states to reach a trade regime that on a multilateral basis could coexist with the World Trade Organization's (WTO) basic principles of non-discrimination and national treatment. Two methods were to be used; a gradual elimination of the existing quota categories and a continuous increase of the quota quantities.<sup>14</sup> The ATC was decided to have a ten years implementation period; January 1<sup>st</sup> 1995 to January 1<sup>st</sup> 2005. It was decided to have four phases of reductions regarding the quantitative restrictions. The first goal was to achieve a situation where 16 per cent of the products were consistent with the WTO principles in 1995. The objective with the second phase was to by the end of 1998 have achieved a situation where an additional 17 per cent of the products now were accepted by WTO standards and then further 18 per cent by 2002. This means that 49 per cent of the member states' policies were left to fulfill the WTO requirements of a non-discriminatory trade policy within a period of three years before the end of 2004.<sup>15</sup>

January 1<sup>st</sup> 2005 meant that all quantitative restrictions were to be abolished and one can expect comparative advantages to regain a determinant role for the location of the textile and clothing industry, thus an efficient allocation. This in turn contributes to a situation where the

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<sup>12</sup> Chaponnière, 2004, page 4

<sup>13</sup> Hoekman & Kosteckí, 2001, page 227

<sup>14</sup> CGD, 2005, page 1

<sup>15</sup> Chaponnière, 2004, page 4

earlier protected industries in developed countries will lose parts of the market, a development which is observed for the early liberalized products.<sup>16</sup>

Although the ATC had influence on the world trade pattern, several other activities during the 90's changed the trade structure. The US and the EU signed more and deepened forms of preferential trade agreements. Concerning the US, they formulated agreements with very strict rules of origin to cope with the less significant MFA. Another change that clearly affected the international trade was that China joined the WTO in 2001. By doing this the country augmented its world market share from 9 per cent to 18 per cent.<sup>17</sup>

### **2.2.3 MFA Phase-Out**

The Chinese industry is supposed to be one of the clearest winners of trade liberalization. With a large workforce and a constantly increasing capital endowment, the country constitutes a strong competitor on the world market. Countries in the risk zone of losing market shares as a result of China's strong position are Mexico and countries in Latin America. These countries have a relative high wage level; additionally these countries have not succeeded in creating full-package services that would have strengthened their position. Concerning these full-package services China is an example of a region that has been capable to construct firms that can manage the whole production-chain from acquiring material to labeling.<sup>18</sup>

There was a concern that the MFA phase-out would have a discriminatory nature, and the fear was shown to be entitled. It turned out that the areas left to the final phase of the liberalization process were the areas of great importance for the developing countries, thus the labor-intensive parts of the industry. This treatment was made possible since the countries were free to choose in which order to liberalize the different categories during the process. The areas that were liberalized in the earlier stages had already in the beginning of the process an unrestricted nature.<sup>19</sup>

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<sup>16</sup> Chaponnière, 2004, page 4

<sup>17</sup> CGD, 2005, page 2

<sup>18</sup> Ibid

<sup>19</sup> Hoekman & Kostecki, 2001, page 229ff

## 2.3 Turkey and the European Union

One example of the discriminatory behavior of the EU is the formation of the CU with Turkey in 1995. This CU was preceded by two important agreements. The Ankara Agreement was put into force in 1964. The purpose of this agreement was to make the two partners, Turkey and EEC, more similar in their manner of treating economic and trade questions. The Ankara Agreement had a crucial impact on the structure of the Turkish import. Between 1964 and 1973 the share of the Turkish import that came from the EEC area increased from 29 per cent to 42 per cent. In addition the agreement included free mobility of capital, labor and services and with this, the agreement still forms the legal ground for the association of Turkey into an EU membership. The Ankara protocol put up guidelines for the import of EEC's goods into Turkey; the goods traded in opposite direction were treated in the Additional Protocol of 1970. This protocol meant that the goods entering the EU from Turkey were to be liberalized from quantitative restrictions and tariffs, although restrictions on some kind of textiles were to remain.<sup>20</sup> Turkey is considered to be a newly industrialized country and the Turkish exporters are present on all markets and the country has succeeded in creating a relatively competitive industry compared to many other international producers.<sup>21</sup> Turkey has also been target for the reallocation of some parts of the European industry that are relatively labor-intensive.<sup>22</sup>

Figures from WTO illustrate how Turkey's position as one of the top three exporting countries to the EU regarding both textile and clothing products has developed between 1995 and 2003. For the textile products there has been a significant increase in Turkish goods entering the EU. As regards the clothing products there has not been any change. China on the other hand has experienced an important increase in their clothing export to the EU.

**Table 2.1 Top Three Textile Exporters to the EU, 1995 and 2003**

	<b>1995</b>	<b>2003</b>
<b>Turkey</b>	10 %	16 %
<b>China</b>	9 %	11 %
<b>India</b>	9 %	7 %

Source: Nordås Kyvik, 2004, page 20

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<sup>20</sup> Ministry for Foreign Affairs, Turkey

<sup>21</sup> Chaponnière, 2004, page 10

<sup>22</sup> Ibid

**Table 2.2 Top Three Clothing Exporters to the EU, 1995 and 2003**

	<b>1995</b>	<b>2003</b>
<b>China</b>	14 %	20 %
<b>Hong-Kong</b>	10 %	8 %
<b>Turkey</b>	10 %	10 %

Source: Nordås Kyvik, 2004, page 20

The belief that China is an international actor that will gain large parts of the world market as a result of a liberalized trading system is visible in the figures for 2003, after eight years of out-phasing processes. The increased Chinese export to EU is particularly clear when studying the figures over the clothing industry where Chinese products represented 20 per cent of all imported clothing goods into the EU in 2003, compared to 14 per cent in 1995.

That Turkey shows such a significant increase within textiles and not in clothing is a result of the discriminatory nature of the MFA phase-out. The areas that were left to the end phase of the ATC were the labor-intensive segments that represent important areas for developing countries and where producers in developed countries no longer can cope with an increasing competition from these low-wage countries. Effects due to the out-phasing within the clothing areas might not yet be visible by the end of year 2003. That China although shows a strong progress should find its explanation in the fact that the country joined the WTO in 2001 and thereby strengthened its role in the international trade. The export of textile products shows a smaller increase than the export of clothing products and this give a guidance of the Chinese textile and clothing industry to be of a labor-abundant nature. Since the labor-intensive parts of the industry were left to the end-phase of the ATC, China would still have a lot to gain during the later parts of the liberalization process. Meaning that the development observed between 1995 and 2003 according to these WTO figures would give a vague indication of the size of the effects of the Chinese progress on the world market within the clothing segments.

### 3. QUANTITATIVE RESTRICTIONS AND COMPARATIVE ADVANTAGES

#### 3.1 VER as Means of Protection

During the MFA the developing countries were persuaded to introduce VERs. The VERs were introduced since the developed countries sought to limit their import of goods within the industry segments where they no longer could cope with the increased competition. A VER has similar implications as an import quota, although there is one difference between these two methods and that concern the quota right, thus the quota rent that will appear independently on which system being used. During a VER system the exporting country can apply a first-come, first-served basis for the allowed export. Alternatively the government in the exporting country can chose to auction out the quota right to the highest bidding. The receiver of the quota right will then accordingly get the quota rent. During a quota system, it is contrast the government in the importing country that has influence on who that will get the quota right. When analyzing the effects of a VER, the discussion is based on the fact that there is a tariff that can reproduce the effects on price and volume to describe the effects of a VER, in the same way as there is a tariff that will have the same implications during an import quota. Given this assumption the effects experienced by consumers and producers are rather similar during a VER and an import quota, the distribution of the quota rent constitutes the difference.<sup>23</sup>

The direct effect of Turkey introducing a VER is that in EU15 and RoW there will be quantitative limitations on the import of Turkish goods. The price of the exported Turkish goods will rise in the importing areas EU15 and RoW, it will be less profitable to acquire Turkish goods from the EU15's and RoW's point of view. In contrast the price will decrease on Turkey's domestic market. The decrease in price on the domestic market will also imply lower output hence decreasing employment. Producer surplus decreases in Turkey while consumer surplus will increase. Since the quota rent can not be assumed to compensate for the negative effects of the VER, the net effects on Turkey will be decreased national welfare.<sup>24</sup>

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<sup>23</sup> Bowen *et al*, 1998, page 173; <http://internationalecon.com/Trade/Tch90/T90-19.php>

<sup>24</sup> Ibid

## 3.2 Comparative Advantages

As underlying explanation to the trade patterns observed between Turkey and EU15 and between Turkey and RoW, the concept of David Ricardo's comparative advantages will be used. Comparative advantages have come to be one of the key elements to explain the advantages of free trade.<sup>25</sup>

The basic concept concerning comparative advantages is that even if a country has two industries in which they are less efficient in the production compared to another country, it will be mutually beneficial for the two countries to take part of trade if they differ in relative advantages. The reason behind this is that even if the production of both goods means relative disadvantages, the country would benefit by specializing in the production of one of these goods, thus exporting this good. Which good the country chose too specialize in is determined by where the country has the smallest relative disadvantage. This will also imply that the country will import the good in which production the country has the greatest relative disadvantage. The same discussion is applicable to a country that would have relative advantages in the production of both goods. This country should chose too specialize in the production and export of the good where the country has the greatest relative advantage. The country will then naturally import the good where the relative advantage is smaller.<sup>26</sup>

The basic theory that Ricardo prepared has been modified and some of his assumptions have been totally eliminated in newer versions of his theory. The Heckscher-Ohlin Theorem is one model that has developed the basic ideas of Ricardo.

### *The Heckscher-Ohlin Theorem*

Eli Heckscher and Bertil Ohlin developed Ricardo's model regarding relative advantages and introduced a second production factor. Since the model established by Heckscher and Ohlin is based on the relative endowments in countries of the two production factors capital and labor, the model is also know as the factor-proportion model. The model makes the following assumptions;

- Two production factors; capital and labor.
- Identical production functions in both countries; this assumption is made to eliminate

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<sup>25</sup> Senior Nello, 2005, page 63

<sup>26</sup> Ibid



the argument that international trade only should be based on different technologies.

- Constant returns to scale yields for the production functions of both goods, X and Y. Although the production functions that are taken as identical in both countries differ in the relative use of capital and labor.
- The two goods X and Y have different ratios of capital and labor in their production.
- Capital and labor are assumed to be perfectly mobile between sectors, but not between countries.<sup>27</sup>

The theorem states that a country will export the good which in its' production intensively uses the factor that the country is relatively more abundant of. A labor-abundant country A will export the labor-intensive good X, while the capital-abundant country B will export the capital-intensive good Y. Accordingly the countries will import the goods that use the country's scarce factor.<sup>28</sup>

When introducing a VER the comparative advantages that Turkey possess within the textile and clothing industry will not be reflected in the international trade, since the price of the good will rise on the import markets EU15 and RoW. With a gradual elimination of the VERs through the ATC, there will be a constant decrease in the price of the Turkish goods in the importing country until all VERs are eliminated. This implies as the hypothesis states; with international trade liberalization comparative advantages will regain an important role for the location of the international production of textile and clothing products. As the price of the goods decreases in the importing areas, it will be more profitable for EU15 and RoW to acquire textile and clothing products from Turkey and output and employment in Turkey will increase. Consumers in Turkey will though experience a decreasing welfare through higher prices but this negative effect should be compensated by the positive effects of an efficient allocation of the production and an overall increasing welfare. The positive effects from less significant VERs are not only observable in Turkey, the world market will be more open for all international producers, resulting in an increased international competition.

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<sup>27</sup> Markusen *et al*, 1995, page 99ff

<sup>28</sup> Ibid

## 4. ASSESSING CHANGES IN COMPARATIVE ADVANTAGES

### 4.1 Data Collection

The aim of this study is to investigate how the Turkish textile and clothing industry adjust to the MFA phase-out. Collected data seeks to answer the questions posed in the introduction. What structural changes has the Turkish textile industry experienced during the MFA phase-out? In what areas did the country had comparative advantages in the mid-90's and in what extension has it changed towards 2003/2004 when there has been international trade liberalization within the textile and clothing industry? Will it be possible to distinguish differences between the trade with EU15 and the trade with RoW and finally, what can be predicted concerning the post-MFA scenario?

Data has been collected from the OECD database International Trade Classification System, (ITCS) and from United Nations' UN Comtrade. On an aggregated level there are three main industry groups to study according to ITCS, Revision 3; 26, *textile fibers and their wastes*, 65, *textile yarn and related products* and 84, *articles of apparel and clothing accessories*. These groups are later divided into several industry subgroups at 3-digit level. Two periods of time will be considered, the average value for the years 1994/1995 and 2003/2004 respectively. The use of an average is motivated since it eliminates the risk for extreme temporary fluctuations to influence the result. The data is divided between Turkey's trade with EU15<sup>29</sup> and with RoW.

### 4.2 The Balassa Indexes of Revealed Comparative Advantages

To study how Turkey's textile and clothing production and the country's trade with its surroundings has developed Balassa's Index (BI) over Revealed Comparative Advantage (RCA) will be used. The BI from 1965 is the most common measurement and it only includes exports.<sup>30</sup>

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<sup>29</sup> It has been chosen to study the EU15 countries, i.e. the 15 member states before the accession of the ten new member countries per May 1<sup>st</sup> 2004. EU15; Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

<sup>30</sup> De Benedictis & Tamberi, 2001, page 324

$$\text{Balassa Index of } RCA_1 = (X_{ij}/X_{wj})/(\sum_j X_{ij}/\sum_j X_{wj})$$

Where  $X$  is the export,  $i$  is the country studied i.e. Turkey,  $w$  is the world or in this case divided by the two reference areas EU15 and RoW and  $j$  is the good studied.

The index is divided into two different parts where the first part,  $(X_{ij}/X_{wj})$ , measures the country's relative part of the world's export of a particular good. The second part,  $(\sum_j X_{ij}/\sum_j X_{wj})$ , measures the country's relative part of the total trade. Together these two parts will measure if the country exports relatively more of one good, in that case the country is said to have a comparative advantage in the production of that good, i.e.  $RCA_1 > 1$ . If the results show a  $RCA_1 < 1$ , the country has a comparative disadvantage in the sector studied.

There are some criticisms to this measurement; underlying trade distortions such as subsidies can cause misleading results concerning comparative advantages. In practice this means that a sector can prove to have a comparative advantage at the same time as it shows a comparative disadvantage. Since import usually hides more distortions than export, eliminating import in the  $RCA_1$ -index is an attempt to minimize these distortions. Excluding imports from the measurement will have another implication, namely that intra-industry trade will not be included in the discussion and this could hide true specialization.<sup>31</sup>

Based in the criticism towards the first version of BI, the  $RCA_2$ -index was developed. While the first BI considers the country's performance in relation to its surroundings and only uses the country's export sector, the  $RCA_2$ -index only considers the country studied but considers both the export and the import.

$$\text{Balassa Index of } RCA_2 = (X_{ij} - M_{ij})/(X_{ij} + M_{ij})$$

The same index notations yield here;  $i$  is Turkey and  $j$  is the good.  $X$  indicates the export and  $M$  the country's import.

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<sup>31</sup> Borzasi Dull, 2005, page 19

Since this measurement only considers the export and import of the country studied it is a way of measuring the country's own trade performance. The  $RCA_2$ -index varies,  $-1 < RCA_2 < 1$ , where 0 means an ambiguity, a result greater than 0 indicates a comparative advantage, while a result less than 0 means a comparative disadvantage.<sup>32</sup>

**Table 4.1 Classification of the Textile and Clothing Industry at 2- and 3-digit Level According to OECD, ITCS**

Chapter	Industry group	Chapter	Industry subgroup		
<b>26</b>	<i>Textile fibers and their wastes</i>	<b>261</b>	Silk		
		<b>263</b>	Cotton		
		<b>264</b>	Jute, other textile bast fiber		
		<b>265</b>	Vegetable textile fibers		
		<b>266</b>	Synthetic fibers suitable for spinning		
		<b>267</b>	Other man-made fibers suitable for spinning		
		<b>268</b>	Wool and other animal hair		
		<b>269</b>	Worn clothing and other worn textile articles		
		<b>65</b>	<i>Textile yarn and related products</i>	<b>651</b>	Textile yarn
				<b>652</b>	Cotton fabrics, woven
<b>653</b>	Fabrics, woven of man-made fabrics				
<b>654</b>	Other textiles fabrics, woven				
<b>655</b>	Knitted or croached fabrics, n.e.s.				
<b>656</b>	Tulles, trimmings, lace and other small wares				
<b>657</b>	Special yarn, special textile fabrics and related				
<b>658</b>	Made-up articles of textile materials, n.e.s.				
<b>659</b>	Floor coverings etc				
<b>84</b>	<i>Articles of apparel and clothing accessories</i>			<b>841</b>	Men's clothing of textile fabrics, not knitted
		<b>842</b>	Women's clothing of textile fabrics		
		<b>843</b>	Men's or boy's clothing of textile, knitted or crocheted		
		<b>844</b>	Women's clothing of textile , knitted or crocheted		
		<b>845</b>	Articles of apparel, of textiles, n.e.s		
		<b>846</b>	Clothing accessories of textile fabrics		
		<b>848</b>	Articles of apparel, clothing accessories, excluding textile		

Source: OECD database

The above presented groups will be treated in this study. To connect this table to the supply-chain; group 26 and related subgroups at 3-digit level belong to the first capital-intensive phases of the supply-chain as do 65 and its' subgroups. The last set of products, 84 and the subgroups of 84 at 3-digit level, are all in the clothing segment implying strong labor-intensity.

<sup>32</sup> Borzasi Dull, 2005, page 19

### 4.3 Results from $RCA_1$ -index and $RCA_2$ -index at 2-digit level

*RCA<sub>1</sub>-index*

**Table 4.2  $RCA_1$ -index at 2-digit Level for Industry Groups 26, 65 and 84**

$RCA_1$		95/96	03/04
26	EU15	1,558687	1,333481
	RoW	0,206405	1,895444
65	EU15	1,95295	6,045224
	RoW	1,021286	0,913665
84	EU15	9,423001	8,639975
	RoW	2,580000	1,690000

Source: OECD database, UN Comtrade, own calculations

For the first group 26, *textile fibers and their wastes*, the Turkish export towards EU15 represents a minor decrease but still a comparative advantage. In regards to the country's export to RoW, the situation for the second period shows a significant increase and is now represented by a comparative advantage instead of a comparative disadvantage as is the case for the first period.

65, *textile yarn and related products*, represents a clear increase in the  $RCA_1$ -index regarding the export to EU15, there has been a shift from a situation with clear comparative advantage for the first period to a situation with an even more significant comparative advantage for the second period. In regards to the Turkish export to RoW there has been a shift from comparative advantage to comparative disadvantage, the shift is however rather insignificant.

For the last group at 2-digit level 84, *articles of apparel and clothing accessories*, there has been a decrease towards EU15, although this trade still represents a clear comparative advantage for Turkey. The same pattern yields for the trade towards RoW, the second period means a comparative advantage with a weakening in the strength.

**Table 4.3 RCA<sub>2</sub>-index at 2-digit Level for Industry Groups 26, 65 and 84**

RCA <sub>2</sub>		95/96	03/04
26	EU15	0,132183	-0,19948
	Row	0,650016	-0,56826
65	EU15	0,480239	0,327186
	Row	0,325916	0,489716
84	EU15	0,960468	0,946155
	Row	0,974368	0,793295

Source: OECD database, own calculations

Group 26, *textile fibers and their wastes*, reveals a negative trend regarding both destination areas. As regards the trade with EU15, Turkey has experienced a shift from a minor comparative advantage towards a comparative disadvantage. The trade with RoW also represents a shift from comparative advantage to comparative disadvantage, although this shift is significantly larger. The interesting thing is that Turkey during the first period showed a stronger comparative advantage towards RoW than towards EU15 and that the development implies a shift to a more significant comparative disadvantage towards RoW than towards EU15.

Regarding industry group 65, *textile yarn and related product*, the index shows a slight decrease towards EU15. Vis-à-vis RoW, Turkey shows a clearer comparative advantage for the second period than for the first period.

Group 84, *articles of apparel and clothing accessories*, shows strong figures regarding both trading partners. There has been a minor decrease concerning the trade with EU15, although the figure is still very close to one, the extreme case of comparative advantage for the RCA<sub>2</sub>-index. Towards RoW, Turkey shows a more significant decrease, but also here the result that indicates comparative advantage remains strong and clear. This group reveals the clearest and most uniform result.

### 4.3.1 Discussion and Summery, 2-digit level

The results from the  $RCA_1$ -index and the  $RCA_2$ -index make it possible to comment on the structure of the Turkish textile and clothing industry referring to earlier descriptions of the supply-chain. 84 is Turkey's strongest group at 2-digit level and this sector is constituted of clothing articles, meaning that the Turkish industry ought to be of a relatively labor-abundant structure though clothing processes require large amounts of labor in relation to capital. 26 represents the first stages of the supply chain, thus the capital-intensive segments. According to the indexes Turkey has less comparative advantages in these areas which strengthen the picture of Turkey being a labor-abundant country. This is particularly clear when studying the  $RCA_2$ -index results.

The clearest and most uniform results are given by the indexes for group 84. According to these results Turkey has strong comparative advantages regarding its trade with both EU15 and RoW, although the figures are significant higher for the country's trade with EU15. The observed decreases over time reflect the higher competition that Turkey has to face for the second period, with more countries competing on more equal conditions. The negative trend is less significant regarding the trade with EU15 compared to the trade with RoW, this is a reflection of the CU between Turkey and the EU. When the country during the second period is subject for a tougher international competition due to the MFA phase-out, the CU works supportive for the Turkish producers as a guarantee of a large trading partner. In addition the Turkish producers should have their main competitors outside the EU where there is a large amount of labor in relation to capital, in contrast to the European industry that should be of a more capital-abundant character. A fact that strengthen Turkey's strong comparative advantages towards EU15 within the labor-intensive segments. The development seen for 84 validates the hypothesis, an overall decrease in comparative advantages is seen and the decrease towards RoW is more significant than regarding the trade with EU15.

The results from the two other groups are more diverse than the ones studied from group 84. 26 indicates comparative advantages for the trade with EU15 and RoW for the second period according to the  $RCA_1$ -index. The Turkish export to EU15 means a minor decrease while the export to RoW shows a clear increase and a shift from comparative disadvantage to comparative advantage. The  $RCA_2$ -index demonstrates decreases for the trade with both partners, implying changes from comparative advantages to comparative disadvantages. The

result regarding the trade with EU15 indicates a smaller shift than the trade with RoW and even though Turkey has comparative disadvantage regarding the trade with EU15 for the second period, the result shows a more profitable position towards the EU15 trading partner than towards RoW. The observed development according to the  $RCA_2$ -index finds its explanation in the two simultaneous changes, the formation of the CU with the EU in 1995 and the overall international trade liberalization. The CU explains the more modest change towards EU15 than towards RoW, while the trade liberalization explains the significant shift in figures regarding the trade with RoW. The shift that is confusing is the  $RCA_1$ -index result concerning the Turkish export to RoW, where Turkey has strengthened its position. The hypothesis stated that Turkey would show a stronger position towards EU15 than RoW. In this case Turkey has a decrease towards EU15, while a significant increase and a shift from comparative disadvantage to comparative advantages has been seen for the trade with RoW. The criticism to the  $RCA_1$ -index could be one possible explanation to the pattern seen for group 26. Since the results from the  $RCA_2$ -index show a pattern that is in perfect accordance with the hypothesis and gives more natural results of trade liberalization, the  $RCA_1$ -index's nature is though one possible explanation behind observed results.

Concerning group 65 Turkey shows strong comparative advantages towards EU15 according to the  $RCA_1$ -index, the results also reveal comparative advantages according to the  $RCA_2$ -index, although in this case a slight decrease is observable. Regarding the trade with RoW, the result from the  $RCA_1$ -index indicates a decrease and even though the decrease mean a shift from a comparative advantage to a comparative disadvantage, the shift in figures is that minor that it should be considered as negligible. Regarding the results towards RoW from the  $RCA_2$ -index, Turkey has strengthened its position. The development that Turkey shows regarding its export to EU15 according to the  $RCA_1$ -index is explained by the CU formation. The goods included in the agreements that would give preferential treatment through the CU ought to be goods where the European producers have natural and strong comparative advantages, the relatively capital-intensive segments. It is not realistic to believe that the European countries would agree to expose their own industries to an increased competition like the Turkish producers would offer within the more labor-intensive parts of the industry. Hence the increase in 65 is a reflection of Turkish capital-intensive goods experience preferential treatment through the formed CU. The minor decrease in comparative advantages regarding the export to RoW is a reflection of the liberalized trading system, thus a higher competition within the industry. The increasing figures that Turkey revealed regarding the trade with



EU15 for group 65 is not visible for group 84. This strengthens the picture that the Turkish products that get preferential treatment within the frames of the CU are the capital-intensive goods and that the CU to some extent excludes labor-intensive goods. The significant increase in comparative advantages regarding Turkey's export of 65 towards EU15 can also be seen in the table over the top three textile exporters to EU. According to these WTO figures, Turkey has increased its percentage of the total EU import from ten per cent in 1995 to 16 per cent in 2003. In addition to EU's strategy to exclude labor-intensive goods in the CU agreement, the discriminatory nature of the ATC should be mentioned. The ATC and the CU have similar strategies; both these trade agreements aim to at some extent exclude the labor-intensive goods, although ATC included these goods in the later phases.

To further comment the effects of the CU formed between Turkey and the EU. With the formation of this union the Turkish producers are guaranteed a large trading partner. This explains the overall stronger positions that Turkey shows vis-à-vis EU15 compared to RoW. The European importers will choose to acquire goods from the Turkish producers instead of from other low-wage producing countries as long as the formed union offers more attractive trading conditions than to acquire from outside the union. Although as seen from the figures, the Turkish producers will surely not be untouched in their trade with the EU by the new competition. The negative trend towards EU15 is though significant more modest compared to the trend towards RoW. The fact that the European countries have reallocated some of their labor-intensive parts of the industry to Turkey will have influence on the trade pattern seen between Turkey and the EU. The industry reallocation implies that the labor-intensive goods manufactured in these industries in Turkey will be guaranteed to be exported to EU15. This strengthens the picture of Turkey having a relatively labor-intensive export to the EU. In addition it should be said that with a reallocation of the labor-intensive parts of the industry to Turkey the European producers would probably intensify their own industry to the more capital-intensive parts.

To summarize the results seen for both Balassa indexes at 2-digit level, the results from the  $RCA_2$ -index show strong proofs for the hypothesis stated in the introduction. A majority of the figures indicate that Turkey has been affected by the MFA phase-out in a way that the Turkish producers have experienced weakened comparative advantages as regards to the trade with both EU15 and RoW. The negative trend has been less significant towards EU15. The results from the  $RCA_1$ -index are more diverse. The differences observed from the two indexes

are explained by the fact that the two indexes take different parameters into account, while the  $RCA_1$ -index considers Turkey's export in relation to the EU15's and RoW's export, the  $RCA_2$ -index measures Turkey's own trade performance. As regards the more diverse development seen from the  $RCA_1$ -index, the significant increase in 65 towards EU15 is explained by the basis of both the MFA and the CU. These two trade arrangements have to some extent excluded labor-intensive goods, with the implication that Turkey shows an increase in their export of capital-intensive goods, which has been directed to the EU where the goods will experience preferential treatment through the CU. The second observed result from the  $RCA_1$ -index that contributes to the more diverse picture from this index is the result from the trade in 26 with RoW. That Turkey has strengthened its position towards RoW at the same time as the Turkish producers have experienced a decrease towards EU15 is harder to explain. The natural development from the changes during the observed period should be that Turkey reveals a stronger position towards EU15. That Turkey shows a rather significant move from a comparative disadvantage to a comparative advantage for the trade with RoW, while the trade with EU15 indicates a minor decrease is a contradiction to the hypothesis.

## 4.4 Results from RCA<sub>1</sub>-index and RCA<sub>2</sub>-index at 3-digit level

When analyzing the results at 3-digit level comparative advantages will continue to be the indicator of Turkey's position, although comparative advantages must not be the only determinants for Turkey's choice of where to focus their production. Choices of specializing in a certain segment and large-scale advantages can be other underlying factors at this disaggregated level.

### 4.4.1 Raw Material, 3-digit level

*RCA<sub>1</sub>-index*

**Table 4.4 RCA<sub>1</sub>-index, Raw Material at 3-digit level**

RCA <sub>1</sub>		95/96	03/04
261	EU15	<b>1,769759</b>	0,141249
	RoW	0,000821	0,001345
263	EU15	<b>6,659211</b>	<b>19,25712</b>
	RoW	<b>20,38945</b>	0,993774
264	EU15	0,045197	0,067612
	RoW	0,004951	0,000148
265	EU15	0,019379	0,001015
	RoW	0,350103	0,1395
266	EU15	<b>3,94229</b>	<b>5,697566</b>
	RoW	0,52253	0,371776
267	EU15	0,47951	0,172522
	RoW	0,126846	0,06868
268	EU15	0,295376	0,941268
	RoW	0,615696	0,404223
269	EU15	0,494961	0,512584
	RoW	0,093726	0,298034

Source: OECD database, UN Comtrade, own calculations.

Most of the subgroups to 26 represent comparative disadvantages regarding Turkey's trade to EU15. The two groups that in contrast show comparative advantages are 263, *cotton* and 266, *synthetic fibers suitable for spinning*, where 263 represents an extreme high figure. 261, *silk*, is a group that during the first period of study showed a comparative advantage, but has over time developed to a comparative disadvantage. Although the other groups symbolize comparative disadvantages, the figures are in some cases so small that they should be categorized as ambiguity, for example groups 264 and 265.

Regarding Turkey's trade with RoW within these groups; 263, *cotton* is the only group that represented a comparative advantage for the first period and has developed to a situation with a much lower figure for the second period and has a figure < 1, meaning a comparative disadvantage. This is interesting since the cotton trade towards EU15 indicates a clear increase in the strength of the comparative advantage for Turkey. The rest of the groups show a uniform pattern as concerns the export towards RoW, comparative disadvantages. The two groups that had the strongest figures for the first period; 266, *synthetic fibers suitable for spinning* and 268, *wool and other animal hair*, both show a movement towards more significant comparative disadvantages.

#### *RCA<sub>2</sub>-index*

**Table 4.5 RCA<sub>2</sub>-index, Raw Material at 3-digit level**

<b>RCA<sub>2</sub></b>		<b>95/96</b>	<b>03/04</b>
<b>261</b>	<b>EU15</b>	-0,58205	-0,48812
	<b>RoW</b>	-0,93046	-0,86904
<b>263</b>	<b>EU15</b>	-0,06886	-0,28133
	<b>RoW</b>	-0,72287	-0,81692
<b>264</b>	<b>EU15</b>	-0,9524	<b>1</b>
	<b>RoW</b>	-0,90667	-0,62054
<b>265</b>	<b>EU15</b>	-0,95053	-0,99343
	<b>RoW</b>	-0,90644	-0,24232
<b>266</b>	<b>EU15</b>	-0,4338	-0,68818
	<b>RoW</b>	<b>0,169509</b>	-0,81555
<b>267</b>	<b>EU15</b>	-0,97245	-0,98546
	<b>RoW</b>	-0,98906	-0,97691
<b>268</b>	<b>EU15</b>	-0,84172	-0,49907
	<b>RoW</b>	-0,93064	-0,80305
<b>269</b>	<b>EU15</b>	<b>0,930803</b>	<b>0,988141</b>
	<b>RoW</b>	<b>0,044334</b>	<b>0,556139</b>

Source: OECD database, own calculations

The overall results from the RCA<sub>2</sub>-index reveal a pattern of comparative disadvantages. Regarding Turkey's trade with EU15 264, *jute, other textile bast fiber* is the only group that has moved from an extreme case of comparative disadvantage towards a value of 1, the extreme case of comparative advantage. Besides from this drastic change the other groups demonstrate modest variations between the periods. Two groups have experienced more drastic moves from extreme cases of comparative disadvantage to figures showing more modest comparative disadvantages, these groups are; 261, *silk* and 268, *wool and other animal hair*. The last group 269, *worn clothing and other worn textile articles*, is the only

group that is characterized by comparative advantages for both periods and both destination areas.

Concerning the trade with RoW a short majority of the groups have experienced a shift meaning a weakening in the comparative disadvantages, the figures will still though show rather significant comparative disadvantages. The only group within raw material which has moved from a comparative advantage to a comparative disadvantage is represented in Turkey's trade with RoW; group 266, *synthetic fibers suitable for spinning*.

The same overall pattern is visible according to the  $RCA_2$ -index as according to the  $RCA_1$ -index. Turkey shows a slightly stronger position towards EU15 than towards RoW, a result that is in accordance with the hypothesis. The differing results that although are visible are explained by the fact that the two indexes take different parameters into account. Particularly one group gives extreme differences depending on which index being used, 263, *cotton*, which according to the  $RCA_1$ -index has shifted from a clear comparative advantage for the first period regarding the Turkish export to EU15 to an extreme case of comparative advantage for the second period. The opposite development is observable concerning the trade with RoW, a shift from an extreme case of comparative advantage to a modest comparative disadvantage. This pattern is not visible according to the  $RCA_2$ -index where independent of the destination area and which period studied, Turkey has comparative disadvantages. The difference between the indexes reflects the fact that the  $RCA_1$ -index takes other countries' performance into account while the  $RCA_2$ -index is the reflection of Turkey's own trade performance. That cotton has experienced such an extreme shift according to the  $RCA_1$ -index is explained by other countries' increasing presence on the world market. China is one country worth mentioning here, as the world's number one cotton producer<sup>33</sup>, the Chinese producers should be the clearest winners of liberalization within in this area. The increase that is visible in comparative advantages regarding Turkey's trade with EU15 ought to be explained by the increasing competition on the world market that will make it more profitable for Turkey to direct their export to the EU, where Turkish goods will experience preferential treatment through the CU. It can also be added to this discussion, whether European cotton producers will consider it profitable to continue their cotton production, or if the pattern observed is an added sum of Turkish producers directing their trade towards EU at the same

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<sup>33</sup> <http://en.wikipedia.org/wiki/Cotton>

time as European producers decrease their production as a result from higher international competition particularly through China's progress.

#### 4.4.1.1 Summery, Raw Material at 3-digit level

The two indexes show a clear similarity in their results over raw material at 3-digit level, comparative disadvantages. It is also observable that there has been a shift towards a situation where a clear majority of the groups according to the  $RCA_1$ -index and several groups according to the  $RCA_2$ -index have developed more significant comparative disadvantages. This is in accordance with the hypothesis presented in the introduction. However there are cases with shifts in the opposite direction towards less significant comparative disadvantages. These shifts are observable regarding the Turkish trade with EU15, that the positive effects are observed towards EU15 find its' explanation in the CU and the fact that the EU is the main market for the Turkish exporters.

#### 4.4.2 Textiles, 3-digit level

##### *RCA<sub>1</sub>-index*

**Table 4.6  $RCA_1$ -index, Textiles at 3-digit level**

$RCA_1$		95/96	03/04
651	EU15	<b>3,08428</b>	<b>2,977739</b>
	RoW	0,402802	0,315189
652	EU15	<b>1,808605</b>	<b>1,090388</b>
	RoW	<b>1,509105</b>	<b>2,607296</b>
653	EU15	<b>1,753063</b>	<b>1,295916</b>
	RoW	<b>2,765318</b>	<b>3,414179</b>
654	EU15	0,264314	0,306572
	RoW	0,368382	0,431989
655	EU15	<b>1,206177</b>	<b>1,387213</b>
	RoW	<b>1,178298</b>	<b>3,642703</b>
656	EU15	<b>1,50298</b>	<b>2,489881</b>
	RoW	0,765194	<b>1,848859</b>
657	EU15	0,355982	0,502405
	RoW	<b>5,260479</b>	<b>3,775292</b>
658	EU15	<b>10,74006</b>	<b>14,02506</b>
	RoW	<b>3,00283</b>	<b>3,843998</b>
659	EU15	<b>1,699813</b>	<b>1,069643</b>
	RoW	<b>4,908912</b>	<b>5,394946</b>

Source: OECD database, UN Comtrade, own calculations

Compared to the raw material subgroups, this set of industry subgroups to 65 means a clear pattern of overall comparative advantages regarding the trade with EU15. The only groups that represent comparative disadvantages concerning Turkey's trade to EU15 are 654, *other textile fabrics, woven* and 657, *special yarn, special textile fabrics and related*. The group that characterizes the clearest comparative advantage as regards to the export to EU15 is 658, *made-up articles of textile materials and n.e.s* which for the second period strengthens its position as a clear comparative advantage.

Regarding Turkey's trade towards RoW the country shows comparative advantages for a majority of the industry groups. The strength of the comparative advantages varies and several cases show that Turkey has revealed comparative advantages that are stronger towards RoW than towards EU15. 656, *tulles, trimmings, lace and other small wares*, represents the only industry group that has moved from a comparative disadvantage to a comparative advantage in Turkey's trade with RoW. There has been no movement in the other direction.

#### *RCA<sub>2</sub>-index*

**Table 4.7 RCA<sub>2</sub>-index, Textiles at 3-digit level**

<b>RCA<sub>2</sub></b>		<b>95/96</b>	<b>03/04</b>
<b>651</b>	<b>EU15</b>	<b>0,051865</b>	<b>0,12101</b>
	<b>RoW</b>	-0,31928	-0,40026
<b>652</b>	<b>EU15</b>	<b>0,43461</b>	<b>0,04204</b>
	<b>RoW</b>	-0,06639	-0,09267
<b>653</b>	<b>EU15</b>	<b>0,338242</b>	<b>0,335817</b>
	<b>RoW</b>	-0,12633	<b>0,183679</b>
<b>654</b>	<b>EU15</b>	-0,51385	-0,58669
	<b>RoW</b>	<b>0,259919</b>	-0,19366
<b>655</b>	<b>EU15</b>	<b>0,180585</b>	<b>0,351881</b>
	<b>RoW</b>	<b>0,336711</b>	<b>0,463578</b>
<b>656</b>	<b>EU15</b>	<b>0,180534</b>	<b>0,458388</b>
	<b>RoW</b>	<b>0,810082</b>	<b>0,81883</b>
<b>657</b>	<b>EU15</b>	-0,55906	-0,42882
	<b>RoW</b>	<b>0,237354</b>	<b>0,307355</b>
<b>658</b>	<b>EU15</b>	<b>0,953321</b>	<b>0,974299</b>
	<b>RoW</b>	<b>0,876988</b>	<b>0,919031</b>
<b>659</b>	<b>EU15</b>	<b>0,706775</b>	<b>0,387942</b>
	<b>RoW</b>	<b>0,888655</b>	<b>0,733135</b>

Source: OECD database, own calculations

According to the  $RCA_2$ -index it is also possible to see a majority of comparative advantages. Turkey's trade with EU15 is mainly represented by comparative advantages with varying strength. The results show an ambiguity in the development over time, although surprisingly many groups have strengthened their positions. 658, *made-up articles of textiles material, n.e.s.* is the group that shows the most significant comparative advantage.

Turkey's trade with RoW is furthermore characterized by a majority of comparative advantages. It is not possible to see a uniform pattern, some groups have strengthened their comparative advantages and some have had a weakening development. As is the case for the trade with EU15 a surprising amount of groups have developed clearer comparative advantages. It is the same group as for the trade with EU15 that shows the strongest comparative advantage, 658, *made-up articles of textiles material*. 653, *fabrics, woven of man-made fabrics*, has shifted from a situation with comparative disadvantage for the first period to a situation with comparative advantage for the second period. 654, *other textile fabrics, woven*, has moved in the other direction and is now characterized by comparative disadvantage.

#### 4.4.2.1 *Summery, Textiles at 3-digit level*

The fairly diverse pattern that was visible for the group 65 at 2-digit level is also observable for the subgroups at 3-digit level. Although it is possible to distinguish a summarized pattern where Turkey has slightly more comparative advantages towards EU15 than towards RoW regarding both indexes. This once again makes the picture clear that the CU has given Turkey a stronger position regarding the trade with the EU, compared to the trade with RoW. That there are several groups that indicate strengthened comparative advantages can be considered as unexpected and in contrast to the stated hypothesis. With the trade liberalization the most natural development should imply an overall decrease in comparative advantages as international increases. The development seen for textiles at 3-digit level is though explained, as for group 65 at 2-digit level, by the nature of the ATC and the CU. The CU ought to focus its' preferential treatment on more capital-intensive segments of the industry and the ATC liberalized the more capital-intensive segments of the industry in the earlier phases.



### 4.4.3 Clothing, 3-digit level

*RCA<sub>1</sub>-index*

**Table 4.8 RCA<sub>1</sub>-index, Clothing at 3-digit level**

RCA <sub>1</sub>		95/96	03/04
841	EU15	7,146306	6,965443
	RoW	1,807923	1,721505
842	EU15	8,143497	9,451115
	RoW	2,024152	2,067509
843	EU15	15,0118	9,42678
	RoW	2,721179	0,930546
844	EU15	26,92279	17,03502
	RoW	6,081759	2,461883
845	EU15	11,17008	10,48257
	RoW	2,216111	1,907828
846	EU15	3,069339	4,282617
	RoW	1,930996	3,941257
848	EU15	9,012076	3,146877
	RoW	1,930996	3,941257

Source: OECD database, UN Comtrade, own calculations

The first, overall remark from these figures is an almost untouched pattern of comparative advantages and further that the figures are considerably high. Only one subgroup shows a comparative disadvantage and that is 843, *men's or boy's clothing of textile, knitted or croched*, for the second period and regarding Turkey's trade towards RoW. Besides from this, the pattern from the RCA<sub>1</sub>-index reveals strong comparative advantages towards both EU15 and RoW, with a clear concentration of the extreme high figures to the trade with EU15.

The figures representing Turkey's trade with EU15 are all high, although there have been decreases in most of the groups between the two periods studied. Two groups have in contrast experienced increases; 842, *women's clothing of textile fabrics* and 846, *clothing accessories of textile fabrics*. The most extreme figures are represented by 844, *women's clothing of textile, knitted or croched*, for the first period this group had a revealed comparative advantage as high as 27, for the second period it has decreased to 17 but still represents by far the highest figure. Two other groups that represent considerable decreases are 843, *men's or boy's clothing of textile, knitted or croched* and 848, *articles of apparel, clothing accessories, excluding textile*.

Regarding Turkey's trade with RoW, the figures are more uniform and the changes are much more moderate. 844, *women's clothing of textile, knitted or croched* and 846, *clothing accessories of textile fabrics* represent the largest changes where 844 shows a decrease in comparative advantage while 846 has strengthened its status as comparative advantage.

*RCA<sub>2</sub>-index*

**Table 4.9 RCA<sub>2</sub>-index, Clothing at 3-digit level**

RCA <sub>2</sub>		95/96	03/04
841	EU15	0,943928	0,915528
	RoW	0,979257	0,772541
842	EU15	0,954382	0,940621
	RoW	0,983347	0,830757
843	EU15	0,9628	0,961211
	RoW	0,991552	0,873481
844	EU15	0,984504	0,973707
	RoW	0,964277	0,900602
845	EU15	0,973925	0,960143
	RoW	0,971249	0,776668
846	EU15	0,880844	0,923287
	RoW	0,946735	0,722042
848	EU15	0,94093	0,861872
	RoW	0,873258	0,587463

Source: OECD database, own calculations

The last set of commodities at 3-digit level all show positive numbers, meaning Turkey has comparative advantages in the trade of all goods, no matter the destination area. What is also clear is the extent of the comparative advantages, the groups all show results that are close to 1, implying strong comparative advantage. Compared to the other sets of subgroups; raw material and textiles this is the most consistent set of results, which is also reflected in the results at 2-digit level. When comparing the results for the trade Turkey-EU15 and Turkey-RoW one can see a clear development, the pattern has changed from being strikingly similar towards EU15 and RoW during the first period to a situation where Turkey shows clearer comparative advantages towards EU15 than towards RoW for the second period.

Even though Turkey's trade with EU15 displays extremely high and uniform figures, all groups except from 846, *clothing accessories of textile fabrics*, show slight decreases in the strength of the comparative advantages. The same pattern yields for Turkey's trade with RoW, although the decreases are more significant in this case.

#### *4.4.3.1 Summary, Clothing at 3-digit level*

Observed developments for the clothing subgroups are in perfect accordance with the hypothesis. It is shown that Turkey has experienced an adjustment to the MFA phase-out that means an overall decrease in visible comparative advantages. With the ATC the world market has become more accessible, but not only for the Turkish producers but for all textile and clothing producers meaning a tougher competition. The CU between Turkey and EU has to some extent reduced the effects of the ATC for the Turkish producers since the observed results reveal that the producers have managed to retain a stronger position towards EU15 than towards RoW. The trade with EU15 represents the highest figures and the decreases that are observable are more modest in regard to the EU15 trade. Overall the Turkish producers show exceptionally strong comparative advantages as regards to the clothing subgroups, thus the labor-intensive segments.

## 5. SUMMARY AND CONCLUSION

The aim of this study has been to explore the adjustments within the Turkish textile and clothing industry to the MFA phase-out. With support from theories regarding VERs, comparative advantages and two versions of Balassa's index of revealed comparative advantages have been used to examine the situation for the Turkish producers. Data is collected and compiled for two different periods, an average for the years 1995 and 1996 and an average for the years 2003 and 2004. The data is divided between two trading partners, EU15 and RoW as well as between two different industry levels; 2-digit level and 3-digit level. With no data available for the years after 2004 when MFA was to officially have ended, it has only been possible to make predictions concerning the definite post-MFA reality, although the changes during the ATC should give an adequate guidance to the post-MFA scenario. The hypothesis that has followed through the study is that with an out-phasing of quantitative trade restrictions in the textile and clothing industry, comparative advantages will regain their determinant role for where production within the industry should take place. Since comparative advantages are the reflection of the relative factor proportion in the country, it was expected to distinguish an overall structure of the Turkish industry. The liberalization process opened up the international market not only for the Turkish producers but for all textile and clothing producers hence an overall decrease in Turkish producers' comparative advantages ought to be a result of increased international competition. Finally it was expected to discern a more profitable situation for Turkey's trade with EU15 than with RoW, as a result of the custom union that Turkey formed with the EU in 1995.

The Turkish textile and clothing industry is proven to be labor-abundant, implying strong comparative advantages in the labor-intensive segments of the industry, thus the clothing segments of the value-chain. Overall it is seen that the Turkish producers have experienced a decrease in comparative advantages. The result from strong competitors being active on the international market with less quantitative restrictions present. Comparative advantages have regained an important role for where international production should take place, implying a more efficient allocation of the international production. As expected Turkey reveals a more profitable position against EU15 than RoW, explained by the CU. The CU works supportive for the Turkish producers and guarantees them a large trading partner. The CU influence the Turkish trade in two ways, first Turkey shows an overall stronger position towards EU15,

second the decreases in comparative advantages that are visible are less significant towards EU15 than towards RoW. In addition the basis of the CU and the ATC can explain the unexpected result that Turkey shows a significant increase in comparative advantages towards EU15 for the capital-intensive group 65. Both the CU and the ATC have offered capital-intensive goods a more favorable treatment than the labor-intensive goods.

The lack of data after January 1<sup>st</sup> 2005, makes it impossible to give definite judgments concerning the effects of the MFA phase-out. Though the ATC aimed to gradually phase out the quantitative restrictions, the pattern that has been visible during this period ought to continue after the MFA. A factor that can mean that the Turkish industry will experience a significant change after the definite end of the MFA is the discriminatory nature of the out-phasing process. The areas that represent important segments for low-wage countries were left to the final phases and since Turkish producers have proven to be particularly strong in these areas, the final steps of the out-phasing can mean significant gains for the Turkish producers after January 1<sup>st</sup> 2005. But there is also another aspect, that with a further liberalization process within the labor-intensive segments of the industry, other low-wage countries with a large workforce will mean increased competition within these areas. To come to a certain prediction concerning the impact from the end phase of the ATC is though difficult, it depends on how successful Turkey can handle the increasing international competition through keeping wages down to a level that implies a strong competitive role on the international arena. Within the capital-intensive parts of the industry, Turkey ought to already have experienced possible gains from the ATC by the end of 2004. Since the capital-intensive segments were not considered in need of particular protection, though developing countries do not have means to compete in these areas, the capital-intensive segments were the parts of the industry that experienced the earlier consequences of the ATC.

Although Turkey is integrated with a large market with the EU through the CU there should still be need for the Turkish producers to adapt their industries to the new situation with a liberalized trading regime, hence tougher competition. As mentioned Turkey is categorized as a newly industrialized country and as the country continues to develop and moves towards a clearer industrialized nation, the textile and clothing industry ought to follow this development and shift towards a structure meaning a more capital-intensive industry. This could be one way for Turkey to remain the strong role as they presently possess within the industry, shifting their now labor-intensive industry towards an industry marked by more

value-added segments. Doing this would mean that the country can more easily meet the competition from large low-wage countries that with a more liberalized system can threaten the labor-abundant Turkish textile and clothing industry. By developing a structure that can manage the more value-added segments would mean that Turkey can offer services within several of the different stages in the value-chain. To be able to effectively manage the whole production chain should make the industry far more competitive and give it advantages that today have been seen within the Chinese industry where the producers are capable to handle the different stages.

The Turkish textile and clothing industry has experienced a period of adjustments to the MFA phase-out. The country's labor-abundant industry has experienced an overall decrease in comparative advantages, with less significant decreases as regards the trade with EU15 compared to the trade with RoW. To be able to meet the competition from strong competitors the Turkish industry should develop a structure that is capable to manage several steps in the value-chain and then be able to offer full-package solutions which would make the Turkish producers more competitive.

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