WHERE YOU EXPORT MATTERS

EXPLICATIONS ON THE EXPORT SOPHISTICATION OF TURKEY AND ITS EXPORT DESTINATIONS

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I hereby certify that this thesis meets all the requirements of the Graduate School of Social Sciences for a Master's degree.

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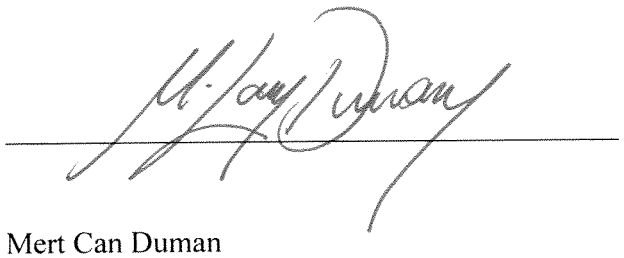

Mert Can Duman

ABSTRACT

WHERE YOU EXPORT MATTERS

EXPLICATIONS ON THE EXPORT SOPHISTICATION OF TURKEY
AND
ITS EXPORT DESTINATIONS

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This master thesis mainly aims to clarify the effects of export destinations of Turkey on product sophistication of its export basket with using Export data of Turkey between 1998 and 2011 with HS6 classification. Besides, effects of export destinations on technology usage of export products and how export products could be structured within country groups are also analyzed in this study by the light of the presence of relationship between export destinations and product sophistication.

This study shows that export destinations of Turkey significantly matter on sophistication and technology usage of export products such that as share of European Union from Turkey's total export increases, both share of mid-high and high technology export commodities from total volume and product sophistication of export basket increase whilst it is in the opposite way for MENA. Moreover, effects of other export destinations of Turkey on both sophistication and technology usage of export products are analyzed in the study.

Keywords: International Trade, Export Partner, Sophistication, Qualification

ÖZET

ÜLKELERİN NEREYE İHRACAT YAPTIĞI ÖNEMLİDİR
TÜRKİYE'NİN İHRACAT SOFİSTİKASYONU VE İHRACAT PARTNERLERİ ÜZERİNE YORUMLAMALAR

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Bu yüksek lisans tezi temel olarak Türkiye'nin ihracat partnerlerinin ihracat sepetinin sofistikasyonu üzerindeki etkilerini araştırmaktadır. 1998-2011 dönemini içeren ve HS6 sınıflandırma sistemi ile elde edilen veriler kullanılarak ülke gruplarının Türkiye'nin toplam ihracatından aldıkları pay ile Türkiye'nin ihracat sepetinin niteliği arasındaki ilişkinin araştırıldığı çalışmada ayrıca, ihracat partnerlerinin ihraç mallarındaki teknoloji kullanımı üzerindeki etkisi de araştırılmaya çalışılmıştır.

Bu çalışma, Türkiye'nin ihracat partnerlerinin hem ihracat sepetinin sofistikasyonu hem de ihraç ürünlerinin teknoloji kullanımı üzerinde etkileri olduğunu göstermektedir. Örneğin, Avrupa Birliği'nin Türkiye'nin toplam ihracatından aldığı payın artması hem Türkiye'nin ihracat sepetinin sofistikasyonunu hem de ihraç ürünlerinde orta-ileri ve ileri teknoloji kullanımını arttırırken bu durum MENA Bölgesi için tam tersidir. Türkiye'nin diğer ihracat partnerlerinin ihracat sepetinin sofistikasyonu ve ihraç ürünlerinin teknoloji kullanımı üzerindeki etkileri de çalışmada ayrıca sunulmuştur.

Anahtar Kelimeler: Uluslararası Ticaret, İhracat Partneri, Sofistikasyon, Nitelik

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ABBREVATIONS

CIS: Commonwealth of Independent States

COMTRADE: United Nations Commodity Trade Statistics Database

EPRI: Economic Policy Research Institute

EU: European Union

GDP: Gross Domestic Product

HS: Harmonized System

MENA: Middle East and North Africa

OECD: Organization for Economic Co-operation and Development

RCA: Revealed Comparative Advantage

SITC: Standard International Trade Classification

TUIK: Turkish Statistical Institute

UNSTATS: United Nations Statistics Division

WB: World Bank

WITS: World Integrated Trade Solution

CHAPTER ONE

INTRODUCTION

After export-led growth strategies are proved to be essential in producing sustainable long-term economic growth in developing countries, improving foreign trade dynamics have become one of the main pillars of a successful economic program. Within this context, Turkey has almost quadrupled its export volume between 2001 and 2013 (from $31.3 to $151.8 billion), where favorable global conditions and a successful export diversification strategy have played important roles. This dramatic development in the export volume has also resulted in an important increase in the share of Turkey's export in global trade volume 0.51 percent to 0.84 percent for the same period.

Having said that, it is still a challenging task to achieve the ambitious export goal of $500 billion and a share of 1.25 percent as of 2023 Turkey Export Strategy and Action Plan, given the limited technological intensity and decreasing value added of the exports.

The above argument suggests that a successful structural transformation in exports require an increase in the value added and technological intensity, which can also be considered as export sophistication. There is a growing literature on the effective policies to be implemented for achieving these goals. Among these, the importance of foreign trade destinations to increase the sophistication of exports has emerged as a viable strategy, as documented in the seminal paper by Hausmann (2006). In addition, several other papers have contributed to the importance of export destination on improving sophistication such as Harding (2010), Bastos et al. (2010), Schott (2004), Hallak (2006) and Hummels et al. (2005). The second chapter provides a detailed and critical literature review for that matter.

Although the main challenge for the Turkish exports have been decreasing value added and limited technological intensity, the academia and the policymakers have remained silent on analyzing the importance of export destinations on improving foreign trade outcomes. In fact, as Chapters 3 and 4 elaborate, Turkey has the potential to serve as an excellent example, while nearly half of its exports are to the EU region, the richest continent in terms of GDP per capita and almost one third of its exports are to the MENA region, where the markets demand low and mid-tech goods. Therefore, there may be important implications from studying the geographical dynamics of Turkish exports both from policy and academic perspectives.

As a result, the main contribution of this study is to establish the link between geographical destinations of exports and its sophistication for the Turkish economy with a focus on the EU and the MENA regions. For that purpose, the methodology proposed by Hausmann (2005 and 2007) and COMTRADE data with HS6 product classification are employed for the period between 1998 and 2011 (Because of the volatility that gold export caused in Turkey's foreign trade volumes, 2012 and 2013 are not included in this study.). The obtained results will provide insights about the effects of the global economic crisis on the export composition and its average technological intensity as well as they will serve as a guideline to achieve the ambitious goals that are set by 2023 Turkey Export Strategy and Action Plan.

CHAPTER TWO

LITERATURE REVIEW

In this part of the study, researches that are related to this thesis are indicated and these researches are basically grouped as about the sophistication of the export good, how the export partner could affect this sophistication and the relationship between the productivity of firms, the quality of export goods and economic development.

2.1. Does What You Export Matter?

The main motivation of this study comes from Hausmann, Hwang and Rodrik's (2005) What You Export Matters in which it is mainly analyzed that how the productivity level of a good a country produces and exports matters by explaining it

through the fundamentals of the country and introducing some new phenomena. After examining this study, where the country exports became worth to analyze besides what that country exports matters.

In What You Export Matters, it is stated that although they have important role on production and export progress of the country, this specialization progress may be affected by any other factors which are peculiar. It is also stated in the study that government policies are also essential on production structure while specializing on production of some goods can provide higher growth rates to the country. It is already known that the productivity level varies between good types and some goods need higher productivity level than others. Countries which are producing these goods that need high productivity can perform better in economic development indicators than other countries do.

In order to investigate this productivity phenomenon of export and production structures of the country, two new concepts have been introduced to the literature which are PRODY and EXPY. It can be said that PRODY is basically sum of GDP per capita of all countries which exports the good weighted by RCA values of the countries in this good where EXPY is the sum of PRODY values of the goods in an export basket which is weighted by share from total export. The reason why EXPY concept is one of the basic subjects of this study is that EXPY and per capita GDPs are highly correlated according to the data from 1960s (Hausmann et al. 2005). In the literature, EXPY concept is also used in other studies with the implementation like that export of more sophisticated product is related to higher GDP growth rates (Harding, 2010).

The theoretical model in What You Export Matters is that there are fundamentals of production which are classified as physical capital, labor capital, natural resources and quality of the institutions and how the productivity level of the good plays important role on economy with modeling the production structure with different cases, such as there are externalities of information and different levels of the human and physical capitals.

The part of the study that is interested in is the explanation of EXPY and why it is important in the literature. Since it is weighted average of PRODY, the productivity/income level of the good, what countries export are highly correlated with productivity level of the goods and GDP levels that countries have. For instance, goods with lower PRODYs are exported from countries which have lower GDPs such as Sub-Saharan African countries whilst goods with higher PRODYs are exported from countries that have relatively higher GDPs such as Luxembourg. It is also questioned in the study that if all countries that are exporting resource intensive goods and stated that although Canada and New Zealand are natural resource exporters, they still have relatively higher EXPY levels. Therefore, the ability of EXPY in order to show the differences between countries in exporting of the primary good is another reason why it is used in this thesis.

According to all models that have been generated with both cross-national and panel data in Hausmann et al. (2007), EXPY has significantly positive effect on growth rate as ten-percent-increase in EXPY can provide a range of increase from 0.14 percent to 0.5 percent in growth. It is indicated in the study that EXPY has distinguishing performance among middle-income countries than among countries at their end of the

income spectrum (Hausmann et al. 2007). Since Turkey is admitted as a middle-income country, EXPY has also an important role in this thesis in order to investigate how this EXPY concept matters in export structure of Turkey. Results in the study show that growth is kind of resource transfer from lower productivity activities to the higher productivity goods and countries that export goods associated with higher productivity levels grow more rapidly. Since EXPY shows the income/productivity ratio for the goods countries export, it is also worthy to be analyzed for markets countries export.

2.2. Does It Also Matter Whom You Export?

With the motivation of What You Export Matters, it is questioned in Does It Matter to Whom You Export that positive correlation between productivity of export destinations and total factor productivity of exporting sectors in South Africa (Harding, 2010). Where Schott (2004) and Hausmann et al. (2007) investigate the correlation between export and growth with focusing on the quality of export and the structure of export spectrum, Harding (2010) also investigates the structure of export destinations. For this circumstance, this thesis resembles Harding (2010) on the subject of investigation of export destinations.

It is indicated in Loecker (2007) that higher productivity is correlated with exporting to more developed regions whilst Schott (2004) and Hummels et al. (2005) also imply. Besides, Harding (2010) suggests that there is an interaction between high

productivity spillovers and more productive export destinations. Moreover, it is stated that export has a beneficial role on development and the destination selection of an exporter that is related to his/her own productivity. Thus, they are also reasons why the destination of the export is thought to be important in this thesis.

Chuang (1998) suggests that both imports and exports are important sources for learning because of the interaction of exporter and destination. Therefore, the structure of where a firm exports has important role on development of firm and country in case. According to the OLS model that has been generated in Harding (2010) there is a positive correlation between total factor productivity and EXCY which is described as a weighted average of the productivity levels of the export destinations served by a particular South African sector in a year. A one-percent-increase in EXCY implies 0.15-0.22 percent increase in total factor productivity in Harding (2010), so it can be said that there is a positive correlation between where the firm exports and the productivity level of the firm (Harding, 2010). In the light of these explanations, there is a motivation in this thesis in order to look for a possible correlation between export destinations and productivity structure of Turkey between 1998 and 2011.

There is another case which also analyzes positive significant relation between productivity and structure of export destination which is called “The Quality of a Firm’s Export: Where You Export Matters”. In this paper, highly detailed data from Portugal for 220 export destinations in 7500 product categories in 2005 is used to investigate the correlation between firms’ productivity and importing-country attributes (Bastos, Silva, 2010). It is stated in the paper that productive firms choose

to produce higher quality goods with charging higher prices and these higher quality goods are tend to be shipped to countries that have higher income. In addition, it is also indicated that higher quality firms which are tend to produce and export higher quality goods are able to serve more distant markets.

As it is also mentioned in Harding (2007), Schott (2004) suggests that unit values increase systematically with the exporter's relative endowments of human and physical capital and especially GDP per capita within product (Schott, 2004). There are two dimensions of this concept which are demand and supply originated. Hummels et al. (2005) illustrates the supply originated condition with indicating that richer countries tend to export more units with higher quality. Hallak (2006), additionally, states demand originated condition with pointing out that richer countries tend to import relatively from partners that produce higher quality products. These circumstances and results are highly related with analyses in this thesis because it is found out that richer countries which are producing higher quality goods are able to export these higher quality goods to a given market such as MENA. In addition to these, according to analyses in this study, there is also a result such that richer countries are able to import from partners which produce higher quality goods. In order to indicate these circumstances, it is benefited from PRODY and EXPY concepts which were introduced in Hausmann et al. (2005) and EXCY from Harding (2010) that will be referred as IMPY in this study. In this respect, there is a significant relationship between this thesis and Bastos et al. (2010) with analyzing different countries for the same concepts.

Another study which has the subject that is related to this thesis was made in "Does the MENA region steal the EU's Role?" in Bilgic-Alpaslan (2013). In this study, the condition of changing shares of EU and MENA in Turkey's total export volume and possible reasons of this condition are tried to be questioned. As it is stated in Bastos et al. (2010), the relationship between productivity and export destination is studied with demand and supply originated circumstances in Bilgic-Alpaslan (2013) as well. EU is the primary partner of Turkey in export and the financial crisis in Europe affected trade volume between EU and Turkey. Therefore, it is indicated in the study that this condition is not the main reason of changing trade volume between EU and Turkey because it could be possibly occurred that demand structure of customers in EU could have been changed (Bilgic-Alpaslan, 2013).

As there are academic studies about how export destinations determine the structure of production and export of a country, there are also non-academic studies that try to specify this subject. Güven Sak, General Director of Economic Policy Research Institute (EPRI), indicated this subject in his column that was titled as "We shouldn't be like Iraq as long as we export to Iraq". Sak mainly states in the study that in order to keep its competitiveness power Turkey needs to have a well-rounded structural reform progress. Sak (2010) basically tries to emphasize important difference between diversification and sophistication.

It is indicated in Sak (2010) that since the economic crisis is deepening and the structure in EU market has been changed, naturally, the share of Europe in Turkey's export is decreasing as shares of other destinations are increasing. This result also implies that the export of Turkey has been diversifying by goods as it has been doing

by destinations. This diversification on destinations are being to less developed countries rather than to the developed countries and it is common knowledge that technological content of developed countries' demand is higher than technological content of less developed countries' demand. When export basket of Turkey and export baskets of the EU and other destinations are compared, it is seen that they are not too much compatible with each other which could be implied as Turkey cannot export qualified goods as Europe or other destinations demand. It is indicated in the column that if the market diversification that is mentioned above is not managed well, Turkey could become a country which produces lower quality goods.

It is stated in the previous parts of this chapter, the structure of export destination basically determines the structure of exporting country and the trade behaviors of it. For example, as it is mentioned in Sak (2010), since the development levels of Iraq and Germany are not the same, Turkey cannot export the same good to Iraq and to Germany at the same time. Thus, if Turkey would concentrate on trading with Iraq and begin to quit from German market, it would begin to produce less qualified goods which are more adapted to Iraq's consumption bundle. There is a trade-off for exporting country between increasing the volume of export and developing the quality of export bundle. Therefore, market diversification could cause negative effects on technological level of the production (Sak, 2010).

Sak (2010) briefly points out that if it is well managed, market diversification is a success and diversification towards to the outside of Europe should not mean quitting from European market. Turkish exporters could use European or American markets as an opportunity to increase their development levels. If there would be well

managed industry and trade policy, Turkey could keep and even increase its competitiveness level in the future (Sak, 2010).

Although it was a policy report which was published by EPRI in 2012, Cunedioglu (2012) also gives a good point of view in order to get this thesis being understood. In this paper, variety and quality concepts are main subjects the author tries to explain how the destination of a country's export matters. It is stated in the study that increasing the export volume could be accepted as a success indeed. However, in order to extend this success on a long run, variety and quality of export goods are also two essential determinants that show the performance of Turkey's export and they are helpful to comment about this export performance of Turkey. The concept of variety is defined as that increase in the variety could imply that sectorial independence and negative effects of demand reduction of any good might be decreased as the variety level increases. Moreover, the concept of quality focuses on which goods countries produce and export and how export bundles could converge to export bundles of developed countries, and it could be said that comparison between the quality of Turkey's export and export quality of countries which Turkey try to converge implies the level of sophistication with the concept of quality (Cunedioglu, 2012). In the study, additionally, the share of top 10 and 25 exporting sectors in total export volume are shown as an indicator for the variety and it is implied that these shares would decrease as the variety goes up. It is shown in the study that the variety of Turkey's export has been increasing since February 2012.

Cadot et al. (2008) and Bebczuk and Berrettoni (2006) show that there is an inverted-U relationship between the variety and GDP per capita and undeveloped countries are increasing the variety of export during the development progress whilst this variety of export begin to decrease after a specific maturity term. Thus, after completing the development progress, there are goods which have higher added values in the export bundle of developed countries. In addition to these, level of the variety of export becomes constant among developed countries as Germany has the same variety level of export between 2000 and 2010. Level of export variety in countries Turkey try to compete such as Czech Republic, South Korea, Hungary, Poland has been decreasing since these countries almost complete their development progress (Cunedioglu, 2012).

Countries which almost complete their development progress begin to specialize in exporting and begin to focus on producing and exporting goods that have higher added values. Thus, goods that have higher shares in total export volume are goods countries use high production skills to produce them and this concept is implied as the quality of export. Countries which are based on natural resources in production like Turkey could achieve to be among developed countries by producing and exporting high value added goods (Cunedioglu, 2012). For this reason, countries should focus on exporting to the markets which demand goods with higher added value in order to develop domestic production structure. If a country exports to a destination in which higher productivity and quality are demanded, this condition would affect the production structure of this country and it would begin to produce higher quality goods. Thus, it is a briefly implementation of this thesis in which it is stated that

exporting markets matters on structures of countries' production and export bundles. Similarly as many studies in the literature, PRODY is used to evaluate the effectiveness of a particular good, EXPY is used to evaluate the effectiveness of export bundle and state how similar this export bundle is to developed countries' and IMPY or EXCY is used the effectiveness of import bundle of a particular country. As it is mentioned in Hausmann et al. (2005) and Hausmann et al (2007), it is also stated in this study that there is a positive correlation between EXPY and growth.

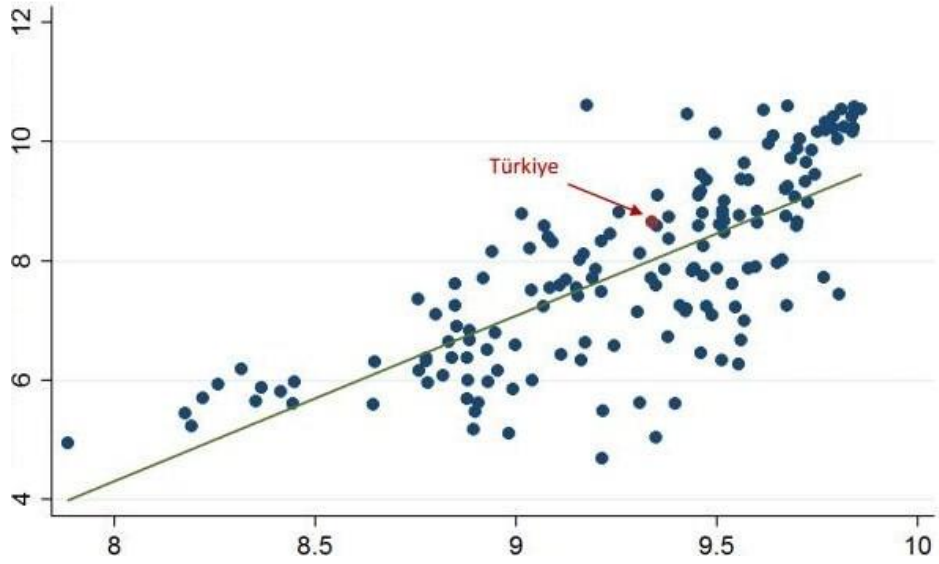

Figure 1 The relationship between EXPY and per capita GDP
(Horizontal axis shows EXPY level whilst vertical axis implies per capita GDP)

When it is looked at the econometric model that is generated in this study and try to explain per capita GDPs of countries in 2011 with EXPY levels of them in 1998, when EXPY level goes up 1% per capita GDP would increase by 2.76% which shows the positive relationship between the quality of export bundle and income level of the countries. Thus, export qualification is one of the determinants of income level in a country (Cunedioglu, 2012).

In 2012, gold export from Turkey becomes one of the most important parts of the total export volume and it also seems to be worthy to be studied in Cunedioglu (2012). It is indicated in the study that gold exporters are mostly countries which have lower incomes and this situation causes that PRODY level of the gold decreases whilst countries with lower income going on to produce it. Since gold export became one of the most important parts of the total export volume in Turkey it causes decrease of the EXPY level of Turkey in 2012. On the other hand, if we look at the EXPY level without gold export, it seems that it has been almost at the same level for a while which means that in order to achieve 2023 goals there should be some effective policies to get out of this inertia. As a conclusion, it is stated that the variety of the export is also important but Turkey should also try to complete its own development progress and begin to produce higher quality goods and export them to the markets which demand higher quality in order to achieve 2023 goals and compete with the other countries which are almost at the same income level with Turkey. As it is mentioned in Sak (2010), additionally, there should be effective industry policies in order to get out of the inertia in EXPY level of Turkey (Cunedioglu, 2012). The main importance of this study above on this thesis is that quality of export and ways to increase the total export volume effectively which means also increasing the quality of export while increasing the variety of goods and markets are stated in the study. Moreover, the indicators that are used to comment on productivity, income, level and effectiveness of production, export and import such as PRODY, EXPY and IMPY are also same with this thesis. Finally, the main ideas that are indicated in this study and this thesis are similar. In both studies, it is claimed that export destinations might be the most important part of

export and production structure of a country which means that the place where country export to matters.

2.3. Productive Firms Produces Higher Quality Goods

When it is looked at the literature, it is already well known that there is a strong relationship between firm productivity and production of higher quality goods. All Verhoogen (2008), Kugler and Verhoogen (2008) and Johnson (2009) show that more productive firms optimally choose to produce higher quality. Besides, Baldwin and Harrigan (2009) and Johnson (2009) also show that firms which are producing higher quality are able to serve more distant markets (Bastos et al., 2010). Econometric models and estimates, in a conclusion, show that within product categories, higher-productivity firms tend to export greater quantities at higher prices to a given market with higher quality and unit values within products increase with distance and tend to be higher to richer countries (Bastos et al. 2010). By the help of these analyses, it could be said what one of the important parts for this thesis is that export to richer countries is related to productivity in local market which could be described in other words that it matters where a country exports. Thus, there could be said that there is a vicious cycle among higher productivity, higher quality and export to richer countries such that exporting to richer countries could provide the production of higher quality goods which is related to higher productivity level.

In recent years, export and improving export structure concepts have become so important among whole countries and economists have paid much more attention to investigate the ways of increasing export volumes as the market and good diversification and concentration on a country or a good are some of the ways of achieving this aim. Although there has been always conflict between economists and policy makers, they have tried to keep their ideas together in order to achieve the same goal in recent years. For this reason, there have been increasing number of studies which are analyzing bilateral or multilateral relationships between the countries in order to investigate if the place where a country exports does really matter.

By the light of these, there is also a study which is trying to investigate the trade relationship between African countries and China and was made in 2010 by Baliamoune-Lutz. The study which is titled Growth by Destination (Where You Export Matters) is using the panel data between 1995 and 2008 to investigate the growth effects of African countries' trade with China. According to the author, there are basically four results from this study. The first of them is that there is no empirically evidence that exports to China enhance growth unconditionally. Secondly, the results suggest that concentration on one commodity in exporting to China has more positive effects on growth rather than good diversification; implying that countries which export one major commodity to China benefit more than do countries that have more diversified exports (Baliamoune-Lutz, 2010). Even though it is a really good contribution to the literature, this thesis is not much related to this result since the effects of country which is used to export on growth are tried to be analyzed in this study. It is stated, thirdly, in the article that contrary to widely held view that increasing

imports from China would have a negative effect, the empirical results show that the share of China in a country's total imports has a positive effect (Baliamoune-Lutz, 2010). This result is also implied in this thesis because although it is accepted that China originated goods are not that much qualified, it is shown in this study that income/productivity of exports from China and imports by there have high values than other countries, even developed countries. Therefore, it is also supported by this thesis that exporting to China would have robust positive effects on growth. Fourthly and finally, it is stated in this paper that there is an inverted-U relationship between exports to developed countries and growth in Africa (Baliamoune-Lutz, 2010). Thought of having positive effect on growth by exporting to developed countries is also mentioned in this thesis. Moreover, a new concept of "growth by destination" is contributed to the literature which is another description of this thesis that analyzes how exporting countries matter on growth and economic development in a country.

It is mentioned in the study that although there are various channels through which the destination of a country's export could influence long-term growth and the patterns of development in theory, the study is focused on empirical results of trade behaviors on growth (Baliamoune-Lutz, 2010). It is a common thought that the structure of the country that is an export destination matters on economic development and growth of exporting country and the development level of the export destination would in general also may matter (Arora, Vamvakidis, 2005). For example, There is currently a significant debate about that China's interest in Africa is new and focuses primarily on the continent's wealth of natural resources (including land), historical facts indicate that Sino-African relations go back to ancient times and China has played

an active diplomatic and political role in Africa for over 50 years now, and its current engagement in Africa involves more than just trade in natural resources. It is also discussed in Gill and Reilly (2007) that China's current relationship between Africa is rooted in more than 50 years of friendly, respectful, and supportive relations between China and African countries (Baliamoune-Lutz, 2010). For this reason, the economic, political and geographical structure of the destination also matter.

In Baliamoune-Lutz (2010), there are also concepts that are not basically related to economics which are strategic, political and historical issues between African countries and China. Even though these kind of structural conditions also matter on the trade relationship between countries, it is avoided to focus on these parts of the subject rather than economic issues. In Baliamoune-Lutz (2010) trade data between 1998 and 2005 are used to explore the effects of exports to China on growth and mainly two questions, which are whether exports to China promote growth in Africa and export concentration matters to the relationship between export and growth, come to mind in the study. Questionnaire progress of these questions and answers of them could be helpful to understand the progress of this thesis which is about Turkey and export destinations of Turkey better. Baliamoune-Lutz (2010) mostly focusing on export concentration and possible outputs of this concept on the relationship between African countries' and China's trade and growth. For that, it is indicated in the study that some studies, such as Cline (1982, 1984 and 2002), Ranis (1985) and Martin (1993), examined the effect of exporting manufactures on growth if all (or most) developing countries try to export manufactures as an example of this export concentration issue. There are also other studies which focused on the composition of

exports and its impact on growth and development and are mentioned before in this chapter such as Hausmann et al. (2007).

Related to correlation between firms' productivity and export structure supply originated condition is another concept that is described in Bilgic-Alpaslan (2013) and according to this concept, firms could be classified into three categories such as highly productive firms, medium-productive firms and low-productive firms. It is stated in the study that after the financial crisis in Europe, only highly productive firms can go on exporting to the EU whilst medium-productive firms have to find another destinations because their productivity level is not adopted to Europe's standards. Exporters in MENA find this market as a new export destination in a subject of market diversification but it could be also possible that because the demand structure of MENA is more appropriate to productivity structure of exporters in Turkey medium-productive firms have become exporter. Thus, due to the specification concerns of the destination markets, the share of these two markets in Turkey's export could have been changed (Bilgic-Alpaslan, 2013).

In the study, moreover, differences and similarities between MENA, EU and Turkey in qualifications and productivity of goods by describing them with intra-industry trade and RCA concepts are being described. It is also pointed out that MENA and Turkey is more similar than EU and Turkey in GDP per capita levels and since market structures are also similar between MENA and Turkey, medium-productive firms could become exporters as long as MENA is being developed. This circumstance is also a motivation of this thesis because it is a good way to investigate the markets with productivity levels because it is known that higher quality export destinations are

related to higher productivity goods. Therefore, productivity/income levels of Turkey's exports and MENA's imports will be investigated to analyze the importance of MENA as an export destination for Turkey as well with the motivation from Bilgic-Alpaslan (2013). Markusen and Venables (200) suggest that Asian countries which have cheaper labor force relatively to other countries could have a chance to gain advantage in the production of goods. Although Turkey has cheap labor force advantage, it is not enough to gain advantage in export markets since adaptation, sophistication and specification have become more important as demand structures of markets have been changed. Thus, quality and adaptation to sophistication of the export destination became determinants of increasing trade volume to a given market. It has not been a bad scenario for Turkey because reforms and development of know-hows after the financial crisis in 2001 have helped Turkey in order to develop its export spectrum and to diversify it. For this reason, this condition has opened new gates to exporters in Turkey such as MENA. Additionally, with the negative effects of financial crisis that are still in charge in Europe, export volume to MENA has increased but when it is looked at the data, it is still not sustainable because of the instability in Arab Region. It is claimed that if roles would change between MENA and EU for export from Turkey, technological transformation progress would also be stopped and this would ruin the economy in the long run. For this reason, it is suggested that with catching up the standards and structure of European market, it could be good to export to MENA as well without quitting from the EU (Bilgic-Alpaslan, 2013). This idea is important for this reason because while the circumstances between EU, MENA and Turkey in trade concepts, it will also be suggested not to quit from European market in order to increase the trade volume in MENA.

Due to the fact that shares of two destinations, MENA and EU, in Turkey's export volume have been changed in recent times, it is worthy to analyze demand structures of these two markets in relation to that quality level of export destination could indicate the productivity level of the importer as it is mentioned in many studies. In this study, with the help of the concepts that is introduced by Hausmann et al. (2007) and Harding (2010), market structures are analyzed and tried to be questioned that if there is a changing role between EU and MENA and what Turkey could do in regard to this development and change of demand structures in time (Bilgic-Alpaslan, 2013).

2.4. Does Export Diversification Have an Impact on Growth?

There is also a study that indicates empirical evidence in support of a nonlinear link between export diversification and per capita income, with developing countries benefiting from diversifying their exports, whereas most advanced countries perform better with export specialization (Hesse, 2008). Similarly, Baliamoune-Lutz (2009a) obtains empirical evidence suggesting that openness to trade may have adverse effects in fragile states (in Africa) in the presence of high export concentration. In addition to these, Carrére et al. (2009) find an inverted-U relationship between economic development and export diversification where the turning point occurs around $24000 per capita (PPP). Additionally, Agosin (2008) finds that export diversification alone and interacted with the volume of export has a highly significant positive impact in a sample including Asian and Latin American countries (Baliamoune-Lutz, 2010).

It is indicated in (Baliamoune-Lutz, 2010) that there are positive correlations between exports to China and growth in Africa and export concentration and growth. Besides, there is also positive impact of African countries' exports to China and OECD which could be called as growth by destination in the paper. As it is said in this chapter before that this paper mostly focuses on export concentration and it is stated that export concentration enhances the growth effects of exporting to China. This paper, additionally, indicates that only countries with highly concentrated export seem to benefit from exporting to China after which important policy questions may come through (Baliamoune-Lutz, 2010). Although Baliamoune-Lutz (2010) tends to pay attention on sophisticated subjects on trade between African countries and China and seems to be unrelated to studies that are planned to be done in this thesis, it is a good view to see that there are different ways of exporting structure's impact on growth. The structure of the country where another country exports to has influence on economic development and growth. For this reason, Baliamoune-Lutz (2010) is another example of this influencing progress. Moreover, it is indicated in the study that relationship between export concentration and growth is not automatic as there are examples from Latin America (Baliamoune-Lutz 2010). Thus, it is also stated that it should always be considered that how strong that importing country is and the structure of this country are essential in analysis of these subjects. For instance, if the importing country is fragile to the financial economic issues, analysis of the relationship between exporting country and this export destination could be difficult to be done. Therefore, it is tried to found out that how the effects of export from Turkey to developed countries or markets in which Turkey's rivals also take part are and how these effects vary between the markets that are studied.

CHAPTER THREE

INTRODUCTION TO THE MODEL
ANALYSES ON TURKEY'S EXPORT STRUCTURE AND ITS EXPORT DESTINATIONS

Especially for a few years, the concept of export-led growth has been more and more important in Turkey's economy policy. According to Turkey's future project for 2023, it is aimed that the total export volume will be equal to $500 billion per annum. Moreover, because whole growth policies are based on increasing export level, the structure of export policies has been important year by year. It is well known that what a country exports really matters from the study made by Hausmann et al. (2005) and Hausmann et al. (2007) and in these studies it is tried to explain that where the country exports matters as well. In this chapter, it is studied that if there is a difference between MENA and Europe markets in the qualification of goods and how Turkey could adapt to this possible difference with its export structure. In addition to these, how Turkey

could compete with its rivals among the markets and what results competition within different markets could cause about integration to the others are also tried to be studied.

3.1. General Overview on the Export Structure of Turkey

Although the concept of export-led growth was born earlier in economy literature, it became more important especially in 2000s in Turkey. The prospect of the government in charge for 2023 entails export based economy policies' being that much essential. It is stated by Turkish Ministry of Economy that since the globalization process is getting deep and rival countries create different strategies to integrate to export markets in order to increase their market shares, a new economy policy about export structure is necessary. For this reason, the export-led growth policy which will provide that policies about investment-production and export chain in good and service markets are considered as a whole should be created (Ministry of Economy).

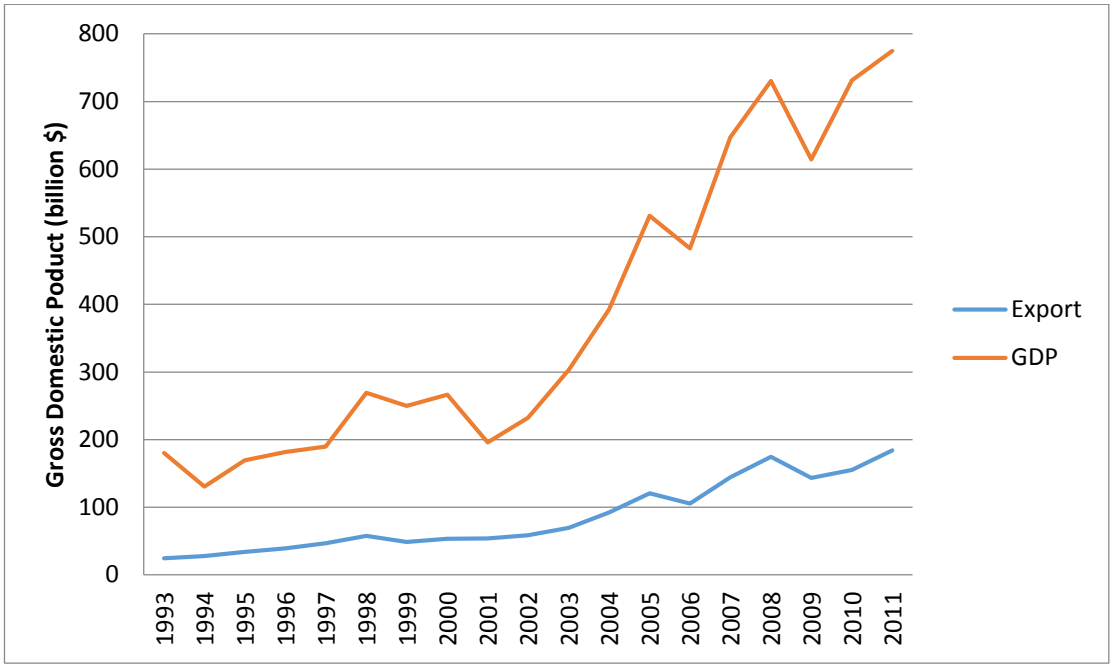

Figure 2 Export Volume and GDP per Year

It could be easily seen from the figure that Turkey has been increasing its volume of export as having higher income level. This situation can be thought as a success but when we look at the share of export in GDP, it is seen that we cannot achieve to increase the share of export in GDP for a quite long time. While the country have been breaking its own records for export volume, the share of export in GDP is stuck between 20 and 25 percent. This inertial of export share in GDP can be seen in Figure 3.

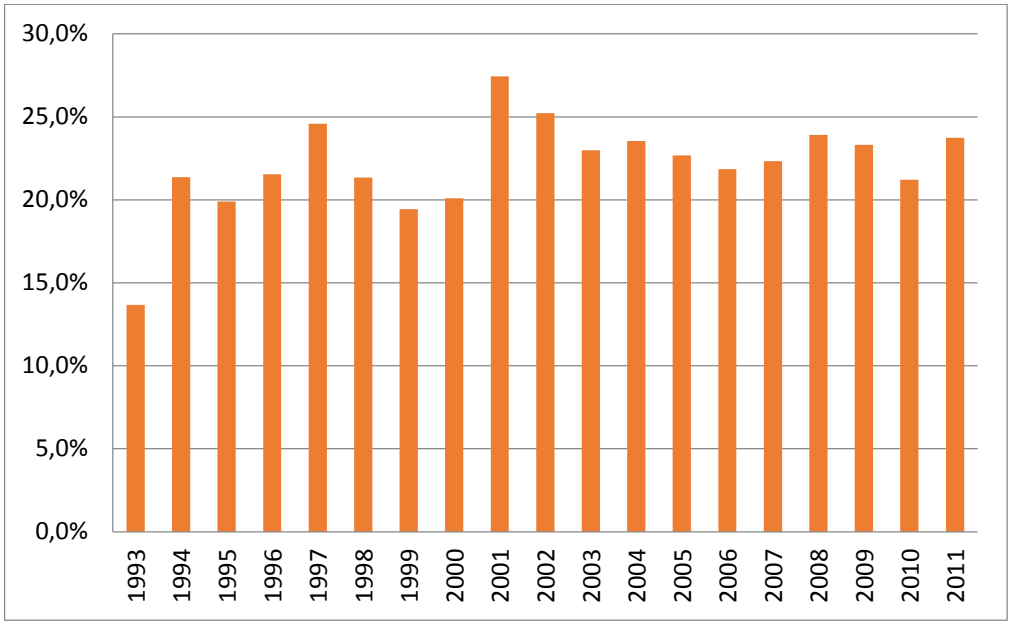

Figure 3 The Share of Export in GDP per Year

While it is that much important for Turkey to increase its export volume in order to achieve to have higher growth rates, what it exports surely matters. In Hausmann et al. (2007) it is shown that the concept of EXPY illustrates a qualification level of export of a country and it is highly related to growth rate for middle-income countries. Therefore, it is stated in the study that the countries that export goods associated with higher productivity levels grow more rapidly and growth is the result of transferring resources from lower-productivity activities to the higher-productivity (Hausmann et al. 2007). For this reason, in order to achieve to have higher growth rates, the country should produce more productively and export these goods which have higher productivity.

3.1.1. What Does Turkey Export and Import?

Besides the knowledge of the literature and general view on export structure of Turkey, it would be also beneficial to make implementations on what Turkey export and imports since it is said in the previous chapter that qualification of export is one of the most essential determinants of export structure in a country that closely related to the higher productivity and higher growth rates and the positive correlation between EXPY level and per capita GDP level of the countries (Hausmann et al. 2007).

It could be seen in Table 1 that clothing and apparel, automotive parts and components and iron and steel products have the highest three shares from the total export volume of Turkey between 2001 and 2012. These sectors are also the sectors which also have the biggest shares from the total export volume of Turkey to Europe and MENA markets particularly as it is mentioned above. These three sectors have 44.4 percent of whole total export volume of Turkey which is almost the half of total amount. It is also important to focus on that sum of these ten sectors' shares which have the biggest shares from the total export volume of Turkey is equal to 88 percent.

If it is particularly focused on the design of export and import baskets of Turkey, it is seen that machinery, electronic and transportation equipment are on the first place in exporting. Both to Europe and MENA markets, machinery, electronic and transportation equipments have the biggest share from total export volume to these markets, 33 percent and 35.7 percent respectively. However, there is a mismatch of the weight of the sectors in total export volume of Turkey and total import volume of

Europe and MENA markets. While the weight of textiles in total import volume of Europe is equal to 6 percent, it has 28 percent share from the total export volume of Turkey. Moreover, chemicals have 16 percent share from the total import volume of Europe, they have only 7.5 percent from the total export volume of Turkey. In addition to these, there is also a mismatch between productivity/income levels of these markets' imports and productivity/income level of Turkey's exports Therefore, this mismatch situation could be implied as that there are adaptation and competitiveness problems in trade.

Table 1 Import of Regions by Hanson Classification

(2010, %)	MENA + CIS	Europe	America	Asia	Other	Turkey
Agriculture, meat and dairy, seafood	8.0	4.8	3.2	3.5	4.2	2.5
Food, beverages, tobacco, wood, paper	8.0	7.1	5.1	4.2	7.4	4.4
Extractive industries	13.7	17.5	18.4	26.0	20.1	18.1
Chemicals, plastics, rubber	12.6	16.5	13.4	11.3	12.5	16.4
Textiles, apparel, leather, footwear	6.4	6.0	5.9	4.1	5.0	8.0
Iron, steel, and other metals	10.8	9.0	6.4	10.5	6.9	15.0
Machinery, electronics, transportation equipment	35.7	33.0	40.5	34.8	38.4	31.8
Other industries	4.7	6.1	7.0	5.7	5.4	3.8

Import of machinery, electronics and transportation equipment has the highest share in total imports of the regions. Extractive industries are the second for all region groups and the other sectors have different ranks in different region groups.

Table 2 Export of Turkey to the Regions in Hanson Classification

(2010, %)	MENA + CIS	Europe	America	Asia	Other
Agriculture, meat and dairy, seafood	7.0	4.6	4.5	4.2	5.0
Food, beverages, tobacco, wood	9.1	4.0	6.0	8.8	13.2
Extractive industries	14.0	7.4	13.0	26.7	16.8
Chemicals, plastics, rubber	10.3	7.5	7.7	10.6	10.1
Textiles, apparel, leather, footwear	12.0	28.5	18.2	9.5	6.1
Iron, steel, and other metals	24.2	9.8	19.6	23.0	20.0
Machinery, electronics, transportation equipment	19.9	36.0	28.1	14.8	26.6
Other industries	3.4	2.2	2.9	2.5	2.3

For MENA market, while machinery, electronics and transportation equipment sectors have almost 36 percent share in import of the market, Turkey could only export 20 percent of its all export. Moreover, while textiles, apparel, leather, footwear have only 6.4 share in total import for MENA, they have 12 percent in export of Turkey and as iron, steel, and other metals have only 11 percent share in import of MENA, it has 24 percent share in export of Turkey.

It is the same with Europe market as well. While only 6 percent of total import in Europe is for textiles, apparel, leather, footwear, they have 28.5 percent share in export of Turkey to Europe. In contrast to this, while chemicals, plastics, rubber have 16.5 percent share in import of Europe, they have only 7.5 percent share in export of Turkey in 2010. Besides, Turkey cannot export in extractive industries while they have 16.5 percent share in import of Europe market.

While only 6 percent of total import in America is for textiles, apparel, leather, footwear, they have 18.2 percent share in export of Turkey to America. Moreover; iron, steel, and other metals have only 64 percent share in import of America while they have almost 20 percent share in export of Turkey.

In the light of the things those are mentioned above with figures and explanations, it could be easily seen that Turkey could not adapt effectively to other region groups. While a sector group has high share in import, Turkey cannot adapt to this and this sector has fewer shares in export of Turkey or while a sector group fewer share in import, Turkey has higher share in its export. These two different stories could cause one and only result: lack of competitiveness. If Turkey cannot adapt effectively and in a true way to import designs with its own export design, it cannot easily compete with other countries which are also trying to export to same regions more efficiently.

3.1.2. Where Does Turkey Export?

Between 1998 and 2011, European Union countries have the biggest share in total export volume of Turkey whilst the second place has been changing between MENA and North American countries.

In the beginning of 2000s, European Union had a range of share between 60-63 percent of total export volume of Turkey, MENA had 12-15 percent and North American countries had 8-12 percent. North American countries had 12.4 percent share from total export volume of Turkey in 2000 whilst EU countries had 61,4 percent and MENA countries 11,7 percent. However, the share of North American countries had been decreasing after 2002, from 12.4 percent to 3.8 percent in 2008. Share of Asian countries from the total export volume of Turkey had been almost doubled

between 2004 and 2011. Asian counties had 5.3 percent share from the total export volume of Turkey in 2004 whilst they had 10,1 percent share in 2011.

In addition to these, there have not been big changes in shares of other regions such as Africa, Latin America and Oceania. Share of African, Latin American and Oceania countries from the total export volume of Turkey had been changing between 1,3 and 3,2 percent, 1,3 and 1,9 percent and 0,3 and 0,4 percent, respectively.

As it is well known that biggest markets of Turkey's exports are EU and MENA countries which have approximately 72 percent of total export volume of Turkey together. Thus, it would be beneficial to focus on these two markets in order to analyze where Turkey exports.

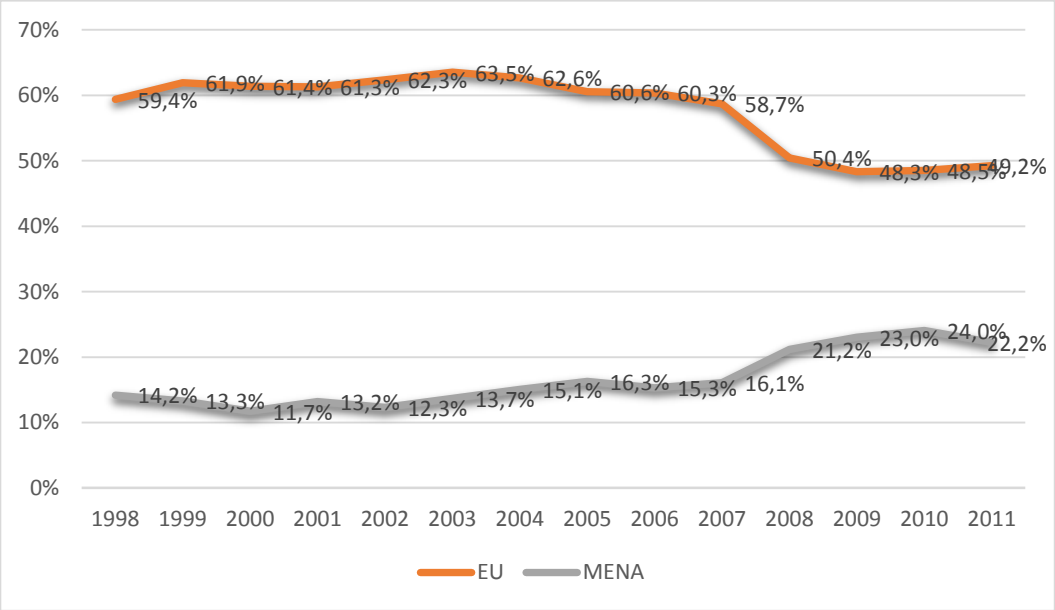

Figure 4 Share of EU and MENA from Total Export Volume of Turkey

As it could be seen in Figure 4 that EU and MENA countries are the biggest export destinations of Turkey and their share from the total export volume of Turkey had been changing since 2007. Between 2007 and 2008; the share of European Union

countries from the total export volume of Turkey decreased 8.3 percent whilst the share of MENAP countries increased 5.1 percent. As a result of this change, the share of EU countries from the total export volume decreased to 50.4 percent from 58.7 percent and the share of MENA countries from the total export volume increased to 21.2 percent from 16.1 percent.

Eventually, European Union countries has 49.2 percent and MENA countries 22.2 percent from the total export volume of Turkey in 2011.

3.2. Analysis on Export Structure of Turkey by Country Groups

Just before the beginning of the explanation of the model, it is thought to be beneficial to mention the economic role of Turkey in its biggest export markets; Europe and MENA and the comparison of these two markets. The economic role of Turkey in Europe and MENA markets is indicated in the Section 3.2.1 whilst the comparison of these two markets is stated in the Section 3.2.2.

3.2.1. What Is The Economic Role Of Turkey In Europe and MENA?

In the previous sections, it is discussed that Turkey could not export as qualified goods as MENA or Europe demands with the analysis of EXPY and IMPY values. In this section, it will tried to find out that how much share Turkey could take from the

total import of MENA and Europe with its current export qualification level. Moreover, tables will show us how Turkey's current rivals in economy take role in MENA and Europe economies with their export qualifications level.

Table 3 EXPY Values, Shares from Total Import in MENA in 2011

Reporter Name	Share (%)	EXPY11
China	11.97	16157
Germany	6.07	19499
United States of America	6.06	17473
United Arab Emirates	5.04	15009
Italy	4.96	18065
France	4.70	18601
Korea, Rep. of Korea	4.25	18534
Turkey	3.96	14248
Japan	3.91	19501
India	3.79	13625
United Kingdom	2.87	18903
Spain	2.48	16041
Brazil	2.31	10302
Russian Federation	2.20	13467
Switzerland	2.10	18766
Saudi Arabia	1.82	15490
Malaysia	1.58	13830
Iran	1.56	14664

In the Table 3, we can see that how countries which have role in MENA economy could create EXPY comparing with their shares from the total import in MENA. Developed countries as Germany, Japan, and France can export to MENA with high qualified goods as it could be seen from EXPY values. Although Turkey has quite strong role in the total import of MENA, it unfortunately cannot export to this market with high qualified goods. The average EXPY value of Table 3 is equal to 16330 while Turkey can create only 14248 EXPY value. It was seen in the previous sections that Turkey could not export to MENA as qualified as the structure of MENA's import design is and it is also seen that Turkey could not export goods as qualified as other countries do in MENA market.

Because of its geographical position which should be used to have advantages in trade, Turkey has had an important role in MENA for last decades. However, we could achieve to export to MENA with more qualified goods to protect our share from the total import of MENA, since the import design of MENA shows us that they demand more qualified goods. Besides, we should also improve our export qualification to MENA in order to protect our competitiveness because it is shown that our rivals in economy are more adaptable with the import design of MENA.

Similarly to MENA analysis, we can see that how countries which have role in Europe economy could create EXPY comparing with their shares from the total import in Europe in Table 4. Same with MENA, developed countries as Germany, Japan, and France can export to MENA with high qualified goods as it could be seen from EXPY values. In this table, Ireland seems to be the most successful with its EXPY and share from the total import values.

Table 4 EXPY Values, Shares from Total Import in Europe in 2010

Reporter Name	Share (%)	EXPY11
Germany	13.81	18955
China	7.63	16519
France	5.71	18567
Italy	4.54	17556
Russian Federation	4.39	13584
United Kingdom	4.23	17795
United States of America	3.89	19876
Poland	2.45	16806
Switzerland	2.15	21281
Czech Republic	2.09	17949
Japan	1.98	19985
Hungary	1.36	17909
Turkey	1.25	14175

The other essential point from Table 4 similarly to Table 3 is that Turkey stays behind from its rivals in economy. It is found out that EXPY value of Europe in

average is equal to 17906 in 2011. Hungary or Poland which are considered to be rival of Turkey in trade have both bigger share from the total import of Europe (1.36 and 2.45 respectively) than Turkey and they have greater level of EXPY than Turkey has. In addition to this, there are more rivals of Turkey which have greater level of EXPY than Turkey. For example, the EXPY value of Czech Republic is equal to 17949 while it has 2.1 percent from the total import of Europe.

As it is mentioned the position of Turkey in MENA, the circumstance is almost the same in Europe. The export structure is not pretty adaptable to Europe's import design so it is really difficult to earn more than other countries from exporting goods at this qualification level. We know that Europe is bigger market than MENA and there are more exporting opportunities but we should increase our qualifications for export in Europe as well in order to utilize this opportunities. If we would like to compete in Europe market, increasing the EXPY level while protecting share level from the total import one of the essential things to do.

3.2.2. To Which Market Should Turkey Focus On? MENA or Europe?

Among 1230 good types, there is a diversification of these goods as goods with higher qualification level than Turkey's average qualification level and goods with lower qualification level then Turkey's average qualification level. In this section, it is

analyzed that how the share of these goods with higher qualification level than Turkey's average qualification level in import of regions varies.

Table 5 The Share of These Goods with Higher Qualification Level than Turkey's Average Qualification Level in Import of Regions (2010)

	Import of High Qualified Goods (billion $)	Total Import (billion $)	Share (%)
MENA + CIS	778.8	1367.5	57.0
Europe	3825.3	6736.8	56.8
America	2207.2	3953.9	55.8
Asia	2784.4	5627.7	49.5
Other	372.7	729.3	51.1
Turkey	120.1	214.9	55.9
Europe excluded Europe	796.3	2498.7	31.9

Table 5 shows us that there is 57 percent share in MENA + CIS market in which there are with higher qualification level than Turkey's average qualification level and that share is also 57 percent in Europe. In the first view, it can be said that there is no difference between integration to Europe or MENA markets. However, although the shares are almost equal, there are much bigger opportunities in Europe market. There is $3.8 trillion-market in Europe where Turkey can export goods that have higher qualification level than Turkey's average. Therefore, it is kind of an opportunity for Turkey to produce more qualified goods and export to this huge market.

In MENA market, on the other hand, although the share is almost equal to Europe, the market size is much smaller than Europe market. There is only $779 billion-market in MENA where Turkey can export goods that have higher qualification level than Turkey's average.

At this moment, an antithesis could be produced to this situation. In Europe market, most of the import is coming from European countries. Therefore, there is a row which is called "Europe excluded Europe" in order to avoid this problem. If we

would like to compare Europe and MENA markets, even though we focus on Europe excluded Europe, we can see that these two markets are almost same levels of share and volume of import. Therefore, there is no reason to go out from Europe market to integrate to new markets. It is better to try to survive even European Zone is struggling with the economic crisis since Europe market is the biggest market in the world and there is really big opportunity for Turkey to export goods that have higher qualification level than Turkey's average.

It can be easily seen from Table 5 that the share of import of highly qualified goods in total import are almost equal to each other in MENA and Europe but if we focus on quantitative values of this import levels, we can see that there is much bigger demand for highly qualified goods. If Turkey can achieve to survive in these markets with right adaptation which is discussed in the previous section, there is no obstacle for Turkey to produce more qualified goods and export them to Europe and MENA markets.

CHAPTER FOUR

WHERE YOU EXPORT MATTERS

In this chapter, it is tried to be analyzed that there is a relationship between the income/productivity level which will be expressed as EXPY, share of country groups from Turkey's aggregate export and technological intensity of this export amount.

Data which were gathered from United Nations Commodity Trade Statistics Database (COMTRADE) for 200 countries that have trade statistics in the database between 1998 and 2011. Annual data between 1998 and 2011 which were used to be analyzed included export and import values of 200 countries to/from other 199 countries and all data consist approximately 571 million cells.

In the model, Harmonized Commodity Description and Coding Systems (HS) are used for classifying products countries produce and export. The Harmonized System is an international nomenclature for the classification of products. It allows participating countries to classify traded goods on a common basis for customs

purposes. At the international level, the Harmonized System (HS) for classifying goods is a six-digit code system. The Harmonized System was introduced in 1988 and has been adopted by most of the countries worldwide. It has undergone several changes in the classification of products. These changes are called revisions and happened in 1996, 2002 and 2007 (UNSTATS, 2014).

As it is well known that all products are not subject to trade statistics of all countries. Therefore, 1240 different four-digit-identification codes for groupings (HS4) are used in the analysis for the classification of products and technological intensity calculations for countries.

4.1. Methodology

In this study, there are 200 countries including Turkey which have trade statistics for the term between 1998 and 2011. The study is ended in 2011 since gold export in Turkey had a great amount in Turkish trade statistics and this great amount could change the structure, sophistication and technological intensity of Turkey's export.

4.1.1. Share of Country Groups from Turkey's Export

In this chapter of the study, share of country groups including 199 countries that have relationship in trade with Turkey is analyzed. There are eight different

country groups in this study which are Africa, Latin America, Asia, European Union, MENA, Europe, North America and Oceania.

Africa is the biggest country group with 59 countries, Latin America is the second biggest group with 42 countries and Asia is the third with 33 countries. According to the data of COMTRADE, Belgium and Luxembourg are defined as one country that is Belgium-Luxembourg, so trade statistics of this country is aggregate volumes of Belgium and Luxembourg. Since Croatia became a European Union member on 1st of July 2013, it is not defined as a country in European Union. Thus, there are 26 countries in European Union country group whilst Europe country group has 16 countries.

Shares of country groups are calculated as the following:

$$share_{it} = \frac{X_{it}}{X_t} \tag{4.1}$$

where

$\boldsymbol{X_{it}}$: $Export\ of\ Turkey\ to\ country\ group\ i\ in\ year\ t$

$\boldsymbol{X_{i}}$: $Total\ export\ of Turkey\ in\ year\ t$

4.1.2. Income/Productivity Level of Goods and Countries' Export Baskets

In this part of the chapter, the way in order to analyze the income/productivity level of producing and exporting of countries in Hausmann et al. (2007) will be tried

to be introduced. In order to calculate these levels, it is firstly needed to mention the concept of PRODY which was calculated in What You Export Matters (Hausmann et al. 2007).

PRODY is basically sum of GDP per capita of all countries which exports the good weighted by RCA values of the countries in this good and can be illustrated as:

$$PRODY_k = \sum_i \frac{\frac{X_{ik}}{X_i}}{\sum_i \frac{X_{ik}}{X_i}} Y_i \tag{4.2}$$

where

$\boldsymbol{X_{ik}}: Export\ of\ country\ i\ in\ sector\ k$

$\boldsymbol{X_i}: Total\ export\ of country\ i$

$\boldsymbol{Y_i}: GDP\ per\ capita\ of\ country\ i$

Similarly, the sum of PRODY values of the goods in a export basket which is weighted by share from total export gives the concept of EXPY.

$$EXPY_i = \sum_k \frac{X_{ik}}{X_i} PRODY_k \tag{4.3}$$

where

$\boldsymbol{X_{ik}}: Export\ of\ country\ i\ in\ sector\ k$

$\boldsymbol{X_{ik}}: Total\ export\ of\ country\ i$

$\boldsymbol{PRODY_k}: PRODY\ value\ of\ sector\ k$

In this study, the concept of EXPY is the main subject for the analysis of Turkey's export basket's sophistication since it defines the income/productivity level of the export basket for each country and it is a good value to compare countries with each other in regard to sophistication level of their export baskets. It is also stated in Hausmann et al. (2007) that EXPY is significantly related to higher growth rates. Therefore, it is also important for this study for this reason.

4.1.3. Technological Intensity of Countries' Export Baskets

Technological intensity is also important for the analysis for the sophistication of export baskets of countries and this intensity level is measured as the following in this study:

$$Share_{m,i,t} = \frac{X_{m,i,t}}{X_{i,t}} \tag{4.4}$$

where

$\boldsymbol{Share_{m,i,t}}$: $Share\ of\ tehnology\ level\ m\ in\ country\ i\ in\ year\ t$

$\boldsymbol{X_{m,i,t}}$: $Total\ export\ of\ country\ i\ in\ technology\ level\ m\ in\ year\ t$

$\boldsymbol{X_{i,t}}$: $Total\ export\ of\ country\ i\ in\ year\ t$

For defining technological intensity groups to HS4 groupings, concordance tables from WITS, OECD database and TUIK database are consolidated with SITC

classification in order to reach the most efficient correspondence table for the study. Since SITC classification includes products in manufacturing industry, technological intensities of countries are defined for their exports in manufacturing industry.

There are four different technological intensity groups that will be studied in this thesis: Low Technology, Middle-Low (Mid-low) Technology, Middle-High (Mid-high) Technology and High Technology. Commodities that are not subject to manufacturing industry such as food etc. are defined as "Other" in this classification.

4.2. Results

In this part of the study, results of the calculations that are mentioned above are indicated whether if there are relationships between the share of country groups from the total export volume of Turkey, the sophistication and the technological intensity of Turkey's export basket.

4.2.1. Country Groups' Shares from Turkey's Export

As it is also mentioned before that there is a significant change in shares of European Union and MENA countries from the total export volume of Turkey between 1998 and 2011. In 1998, European Union countries had 59.4 percent, MENA countries had 14.2 percent, Asian countries had 6.9 percent, European countries that are not

European Union member had 7.2 percent, North American countries have 9.6 percent, African countries had 1.3 percent, Latin American countries had 1.3 percent and Oceania countries had 0.3 percent from the total export volume of Turkey.

As it could be seen from Table 8, the share of European Union countries from the total export volume of Turkey hit the top in 2003 with value of 63.5 percent. Although share of EU countries had been increasing since 1998 until 2003, it began decreasing after 2003 to 2010 continuously, from 63.5 percent to 48.5 percent. The share of EU countries from the total export volume of Turkey was 48,5 percent in 2010, the second smallest value for the term between 1998 and 2011 after 48.3 percent in 2009 and it increased by 0.7 point in 2011, to 49.2 percent.

MENA countries are the second biggest export destination of Turkey after EU countries with 16.5 average percent share level between 1998 and 2011. MENA countries had 14.2 percent share from the total export volume of Turkey in 1998 and it began to decrease to 2000, to the smallest value of the term between 1998 and 2011. They had 11.7 percent share from Turkey's total exports in 2000 and this share began to increase continuously between 2000 and 2005. The biggest increase that is observed in the share of MENA countries from the total export volume of Turkey was between 2007 and 2008. Whilst the share of EU countries decreased to 50.4 percent from 58.7 percent between 2007 and 2008, the share of MENA countries moved in the opposite way with increasing to 21.2 percent from 16.1 percent in the same term. This increase also continued after 2008; the share of MENA countries increased to 24 percent which is the maximum value for the term between 1998 and 2011 in 2010. MENA countries

had 22.2 percent share from the total export volume of Turkey and this value is the third biggest value for this term.

Certainly, although deep negative effects of Global Economic Crisis in 2009 on European Union countries are one of the results of this alteration in shares of EU and MENA countries, foreign trade policy that Ministry of Economy in Turkey began to follow for the term between 2012 and 2013 is could also be defined as a result of this alteration. Ministry of Economy in Turkey defined "17 target countries" and "27 prior countries" in order to get into new markets while increasing shares in current markets under rising competitiveness conditions and providing the diversification of Turkish goods/services/markets with finding out new opportunities.

As it could be seen from Table 6, there are a few European Union member countries in the list of target and prior countries that were defined by Ministry of Economy in Turkey. Poland is the only target country whilst Germany, Romania, Slovak Republic and Sweden are in the list of prior countries.

Table 6 List of Target and Prior Countries

Target Countries (TC)	Country Group	Prior Countries (PC)	Country Group
Nigeria	Africa	**Kenya**	Africa
Republic of South Africa	Africa	**Ghana**	Africa
China	Asia	**Tanzania**	Africa
India	Asia	**Angola**	Africa
Indonesia	Asia	**Ethiopia**	Africa
Kazakhstan	Asia	**Turkmenistan**	Asia
Japan	Asia	**Azerbaijan**	Asia
Poland	EU	**South Korea**	Asia
Russian Federation	Europe	**Malaysia**	Asia
Ukraine	Europe	**Vietnam**	Asia
Brazil	Latin America	**Singapore**	Asia
Islamic Republic of Iran	MENA	**Germany**	EU
Egypt	MENA	**Romania**	EU
Libya	MENA	**Slovak Republic**	EU

Table 6 (continued)			
Target Countries (TC)	**Country Group**	**Prior Countries (PC)**	**Country Group**
Saudi Arabia	MENA	**Sweden**	EU
Iraq	MENA	**Norway**	Europe
the United States	North America	**Mexico**	Latin America
		Peru	Latin America
		Chile	Latin America
		Argentina	Latin America
		Colombia	Latin America
		United Arab Emirates	MENA
		Kuwait	MENA
		Algeria	MENA
		Jordan	MENA
		Qatar	MENA
		Canada	North America

There are five MENA countries in the list of both target and prior countries and this situation could mean that policy makers in Turkey have decided to focus on destinations in other markets such as MENA, Africa or Asia except European Union. Table 7 shows how many target or prior countries country groups have in "Coordination Structure of Entering into a New Destination" by Ministry of Economy in Turkey.

Table 7 Number of Target and Prior Countries by Country Group

Country Group	Number of TCs	Number of PCs
MENA	5	5
Asia	5	6
Europe	2	1
Africa	2	5
EU	1	4
North America	1	1
Latin America	1	5
Oceania	0	0

There are five MENA countries in the list of target groups for the term between 2002 and 2013: Islamic Republic of Iran, Egypt, Libya, Saudi Arabia and Iraq. There

are also five MENA countries in the list of prior countries: United Arab Emirates, Kuwait, Algeria, Jordan and Qatar.

To illustrate, export to countries that are in the list of target or prior countries, such as Libya, Egypt, Jordan, Iraq, Algeria, Kuwait, had had great level of development for the term between 2005 and 2011. Turkey's export to Jordan had increased 76 percent, to Algeria 82 percent and to Libya 95 percent for the term between 2005 and 2011. Additionally, export of Turkey to Saudi Arabia was equal to $962 million in 2005 and it was almost tripled and became equal to $2.76 billion with increase more than 180 percent.

Turkey exported to Iraq $2,8 billion in 2005 while it exported more than $8 billion and the increase in export to Iraq had reached 202 percent from 2005 to 2011. The biggest increase in export had been to Egypt within countries that are in the list for target and prior countries with the value of 301 percent. Turkey exported to Egypt $687 million while it exported $2.8 billion in 2011.

Table 8 Share of Country Groups from the Total Export Volume of Turkey (1998-2011)

Country Group	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
EU	59.4%	61.9%	61.4%	61.3%	62.3%	63.5%	62.6%	60.6%	60.3%	58.7%	50.4%	48.3%	48.5%	49.2%
MENA	14.2%	13.3%	11.7%	13.2%	12.3%	13.7%	15.1%	16.3%	15.3%	16.1%	21.2%	23.0%	24.0%	22.2%
Asia	6.9%	6.5%	6.4%	5.9%	6.0%	5.7%	5.3%	5.5%	6.0%	7.5%	8.8%	9.6%	9.7%	10.1%
Europe	7.2%	5.2%	5.1%	5.5%	6.2%	5.8%	5.6%	6.8%	7.9%	9.0%	11.0%	10.3%	9.4%	9.2%
North America	9.6%	10.2%	12.4%	11.0%	10.3%	8.8%	8.6%	7.7%	6.9%	4.6%	3.8%	3.8%	4.0%	3.8%
Africa	1.3%	1.3%	1.2%	1.3%	1.3%	1.4%	1.5%	1.9%	1.9%	2.1%	2.7%	3.1%	2.2%	3.2%
Latin America	1.3%	1.3%	1.4%	1.5%	1.3%	0.8%	0.9%	1.0%	1.3%	1.7%	1.8%	1.4%	1.7%	1.9%
Oceania	0.3%	0.3%	0.4%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Although European Union and MENA country groups are the main subjects of this study, there are also other country groups that could be beneficial to be analyzed. Asian countries had 6.9 percent share from the total export volume of Turkey in 1998 and the average level of export share of Asia is equal to 6.2 for the term between 1998 and 2011. Since 2004, share of Asian countries from Turkey's total export volume had been increasing continuously until 2011 and it reached its maximum value which is equal to 10.1 percent in 2011. Herein, since China is defined as a member of Asia country group in this study, increase in China's import volumes have had effect on increase in share of Asia country group. For example, Export to China had increased more than 300 percent between 2005 and 2011.

North America where the United States and Canada in it was the third biggest export market in 1998 with share value of 9.6 percent after European Union and MENA. Besides, it became the second biggest export market in 2000 with share value of 12.4 percent from Turkey's total export volume with reaching its maximum value for the term between 1998 and 2011 where EU had 61.4 percent and MENA had 11.7 percent. Although there was a small increase in 2010 by 0.2 point, share of North America from total export volume of Turkey had been continuously decreasing between 2000 and 2011 and it became equal to 3.8 percent which is the minimum value of this country group for this term in 2011.

There had not been any significant changes in shares of Latin America and Oceania countries although there are five countries in the list of prior countries above. Thus, it could be said that foreign trade policy for market diversification to Latin American countries has not worked so well until 2011.

4.2.2. Sophistication of Turkey's Export Basket

First of all, in this part of the chapter, it would be beneficial to define PRODY and EXPY concepts which are the main part of this thesis. As it is mentioned before, PRODY is basically sum of GDP per capita of all countries which exports the good weighted by RCA values of the countries in this good where EXPY is the sum of PRODY values of the goods in an export basket which is weighted by share from total export.

The reason why EXPY concept is one of the basic subjects of this study is that EXPY and per capita GDPs are highly correlated according to the data from 1960s (Hausmann et al. 2005). In the literature, EXPY concept is also used in other studies with the implementation like that export of more sophisticated product is related to higher GDP growth rates (Harding, 2010).

Since EXPY is weighted average of PRODY, the productivity/income level of the good, what countries export are highly correlated with productivity level of the goods and GDP levels that countries have. For instance, goods with lower PRODYs are exported from countries which have lower GDPs such as Sub-Saharan African countries whilst goods with higher PRODYS are exported from countries that have relatively higher GDPs such as Luxembourg.

With a given PRODY level of commodities, EXPY gives opportunity to compare sophistication of countries' export baskets in a given year. Higher EXPY levels mean higher sophistication level of export baskets where it might also imply higher growth rates (Hausmann et al., 2007)

In this part of the chapter, PRODY level of top export sectors of Turkey in 2011 will be analyzed. Ten sectors Turkey exported most in 2011 could be seen at Table 9:

Table 9 Shares of Top Ten Sectors from the Total Export in 2010 and 2011

Sector Name	2010(%)	2011(%)
Automotive Parts and Components	15.29	15.16
Chemicals and Chemical Products	11.19	12.15
Clothing and Apparel	12.88	12.03
Iron and Steel Products	10.82	11.41
Electrical and Electronics	8.47	7.96
Textile and Raw Materials	5.74	5.91
Ferrous and Non-Ferrous Metals	5.10	5.21
Machinery and Accessories	5.59	6.24
Cereals, Pulses, Oil Seeds and Products	3.62	4.06
Cement and Soil Products	2.83	2.39

First, automotive parts and components sector had the biggest share from the total export volume of Turkey with value of 15,2 percent and its PRODY value was equal to 19828 in 2011 (It could be implied as automotive parts and components might be in countries that have $19828 GDP per capita at a high ratio). Second, chemicals and chemical products are the second biggest sector in Turkey's total export with share value of 12.2 and PRODY value of 22473. Chemicals and chemical products are the sector which has the greatest level of PRODY within top three sectors in export of Turkey in 2011.

Third, clothing and apparel had 12 percent share from the total export volume of Turkey in 2011 and it was the third biggest sector after automotive parts and components and chemicals and chemical products sectors. Within these top three sectors, clothing and apparel is the sector which has the smallest level of PRODY with value of 12451. Thus, as Turkey have tried to achieve, focusing less on exporting

clothing and apparel would be beneficial for increase of export sophistication of Turkey since it has relatively lower PRODY level than others.

Examining of Turkey's EXPY level between 1998 and 2011 is the main point of this chapter. EXPY level of Turkey ($EXPY_{TR}$) was equal to 11398 in the beginning year of the study, 1998. Total export volume of Turkey was equal to $27 billion in 1998 whilst it decreased by 1.4 percent in 1999 when it was equal to $26.6 billion. Although export volume of Turkey decreased in 1999, $EXPY_{TR}$ continued to increase so that it became equal to 11982 with increase 5.1 percent.

After 1999, both total export volume and $EXPY_{TR}$ increased continuously until 2008. Between 2000 and 2008, $EXPY_{TR}$ had increased by 258 points averagely whilst total export volume had increased by 19.8 percent on average. In 2008, EXPY level of Turkey decreased by 1.4 percent; from 14044 to 13852 and in 2009 both total export volume and $EXPY_{TR}$ decreased by 22,6 percent and 1,2 percent respectively. The only decreases in $EXPY_{TR}$ that are observed for the term between 1998 and 2011 were in 2008 and 2009. In 2008, it decreased 193 points whilst it decreased 168 points in 2009.

By the end of strong negative effects of Global Economic Crisis in 2009, both EXPY level and total export volume of Turkey began to increase again. $EXPY_{TR}$ increased by 274 points whilst total export volume of Turkey increased by 11.5 percent, from $102.1 billion to $113.9 billion. The second biggest increase in $EXPY_{TR}$ after 1999 was observed in 2011 with an increase in $EXPY_{TR}$ by 519 points, 3.7 percent (from 13958 to 14477). In the same year, total export volume of Turkey also increased by 18.5 percent, from $113.9 billion to $134.9 billion. The last year of the analysis,

$EXPY_{TR}$ was equal to 14477 whilst total export volume of Turkey was equal to $134,9 billion (Figure 5).

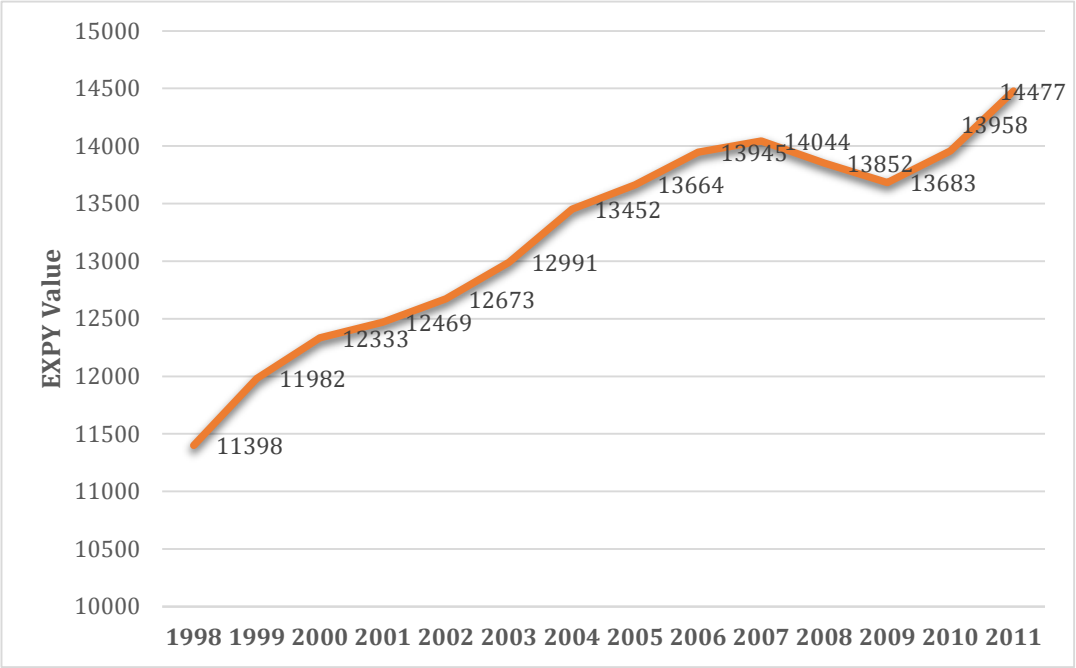

Figure 5 EXPY Value of Turkey between 1998 and 2011

Chad is the most successful country in increasing EXPY level between 1998 and 2011. EXPY level of Chad was equal to 3090 in 1998 whilst it was equal to 12706 in 2011. On the other hand, Somalia is the worst successful country between 1998 and 2011 in increasing EXPY level. EXPY of Somalia was equal to 9894 in 1998 whilst it became 2667 in 2011, with decreasing 73 percent for this term.

Table 10 shows how selected counties had performed in EXPY value between 1998 and 2011. India is the most successful country within 32 countries including Turkey with increasing its EXPY value by 35 percent from 1998 to 2011. Turkey is the fourth country among these selected countries whilst it has the 34th place within 200 countries that are subject of this study.

China increased its EXPY value to 17645 with increasing its share from total export volume of the world as well. Therefore, this situation means that China had succeeded to increase its both export volume and sophistication of export basket which provide itself great opportunities in foreign trade environment.

Table 10 EXPY Values of Selected Countries between 1998 and 2011

Country Name	$EXPY_{98}$	$EXPY_{11}$	Change
India	11503	15522	35%
Nigeria	11802	15216	29%
Romania	12494	15875	27%
Turkey	11398	14477	27%
Israel	16193	20362	26%
Latvia	12701	15498	22%
Greece	12871	15705	22%
China	14835	17645	19%
Bosnia and Herzegovina	11265	13365	19%
Poland	15075	17770	18%
Hungary	16562	19112	15%
France	18530	21191	14%
Lithuania	13969	15935	14%
Korea, Rep. of Korea	16595	18696	13%
Czech Republic	17219	19351	12%
Slovenia	17558	19679	12%
Slovakia	16587	18414	11%
Germany	19298	21133	10%
Norway	15220	16600	9%
Japan	19400	21025	8%
United States of America	18601	19886	7%
United Arab Emirates	13910	14375	3%
Brazil	13340	13770	3%
Russian Federation	14582	14908	2%
Chile	10504	9442	-10%
Cambodia	6839	5913	-14%
Afghanistan	10918	8249	-24%
Solomon Islands	7803	4068	-48%
Guinea-Bissau	7446	3881	-48%
Djibouti	13463	5370	-60%
Tuvalu	18950	7383	-61%
Somalia	9894	2667	-73%

EU countries such as Poland, Hungary and Slovakia which are similar export structure with Turkey had increased their EXPY values by 18 percent, 15 percent and 11 percent, respectively. Although Turkey succeeded to increase its EXPY value at a higher rate rather than these countries, however, all of these countries have higher EXPY values which provides opportunity in competitiveness in foreign trade and higher growth rates.

Table 10 shows that developed countries had performed worse than others in increasing its EXPY values between 1998 and 2011. For instance, the United States increased its EXPY value by 7 percent, from 18601 to 19886 whilst Japan did by 8 percent, from 19400 to 21025. In addition to that, Brazil which is one of the biggest natural resource exporter countries increased its EXPY value only by 3 percent for the term between 1998 and 2011.

It could also be seen from Table 10 that mostly African countries had the worst successful performance in increasing their EXPY values. As it is mentioned before, Somalia is in the last place within 200 countries in increasing EXPY value between 1998 and 2011. Last ten countries in the list of most successful countries in increasing EXPY value within 200 countries are from Africa. Moreover, most of 200 countries had succeeded to increase their EXPY values; there were decreases in EXPY values of only 43 countries within 2000 countries between 1998 and 2011.

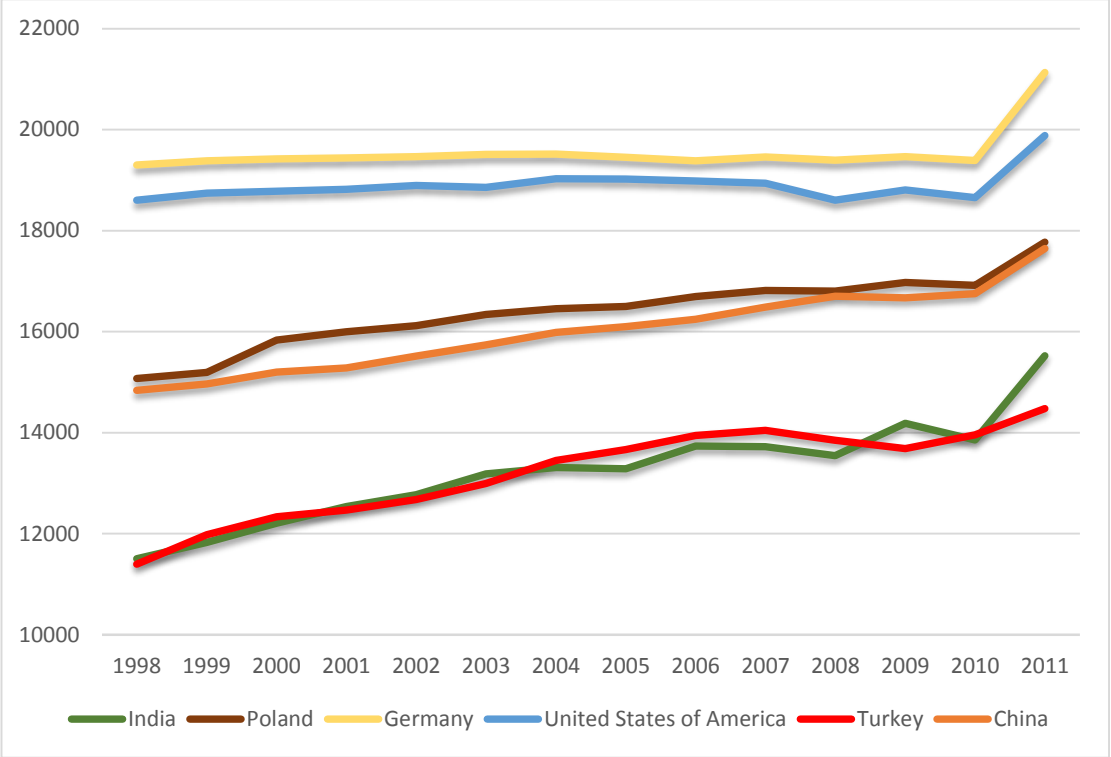

Figure 6 EXPY Value of Selected Countries between 1998 and 2011

4.2.3. Technological Intensity of Turkey's Export

Besides EXPY is a key concept for defining the sophistication level of countries' export baskets, their technological intensity is also essential to be analyzed in order to find out that how technologically intensive export baskets of countries are. In this chapter, technological intensity of Turkey's export by country groups that Turkey is in trade relationship is analyzed after analysis of technological intensity of Turkey's aggregate export between 1998 and 2011.

In order to examine the technological intensity of Turkey's total export, concordance tables from WITS, OECD database and TUIK database about technological intensity of export commodities were being consolidated with SITC classification in order to reach the most efficient correspondence table for the study. Since SITC classification includes products in manufacturing industry, technological intensities of countries are defined for their exports in manufacturing industry. Moreover, HS4 groupings were used to define and classify the commodities in order to study technological intensity in the next step of the study.

There are four different technological intensity groups that will be studied in this thesis: Low Technology, Middle-Low (Mid-low) Technology, Middle-High (Mid-high) Technology and High Technology. Commodities that are not subject to manufacturing industry such as food etc. are defined as Other in this classification.

4.2.3.1. A General View to the Technological Intensity of Turkey's Export

In the beginning of the term that is subject to this study, 56 percent of Turkey's export volume was low technology commodities (Figure 7). Mid-low technology commodities had 21 percent whilst mid-high technology commodities had 17.6 percent share from total export volume of Turkey. The other group technological intensity classification, high tech commodities, had only 5.5 percent from total export

volume of Turkey. This situation of high tech commodities' low share from total export volume had continued in every year that are subject to this study.

Share of low technology commodities from total export volume of Turkey had continuously decreased until 2009. Average decrease in share of low commodities was equal to 1.8 percent between 1998 and 2011. Whilst Turkey had begun to export less low technology commodities, share of mid-high technology commodities had increased more than other technological intensity groups in the same term. Share of mid-high technology commodities was in the third place in the beginning of this study but there had been increase by 73 percent in share of mid-high technology commodities until 2009.

As it could also be seen from Figure 7, shares of both mid-low and mid-high technology had increased by the effect of decrease in share of low technology commodities from total export volume of Turkey.

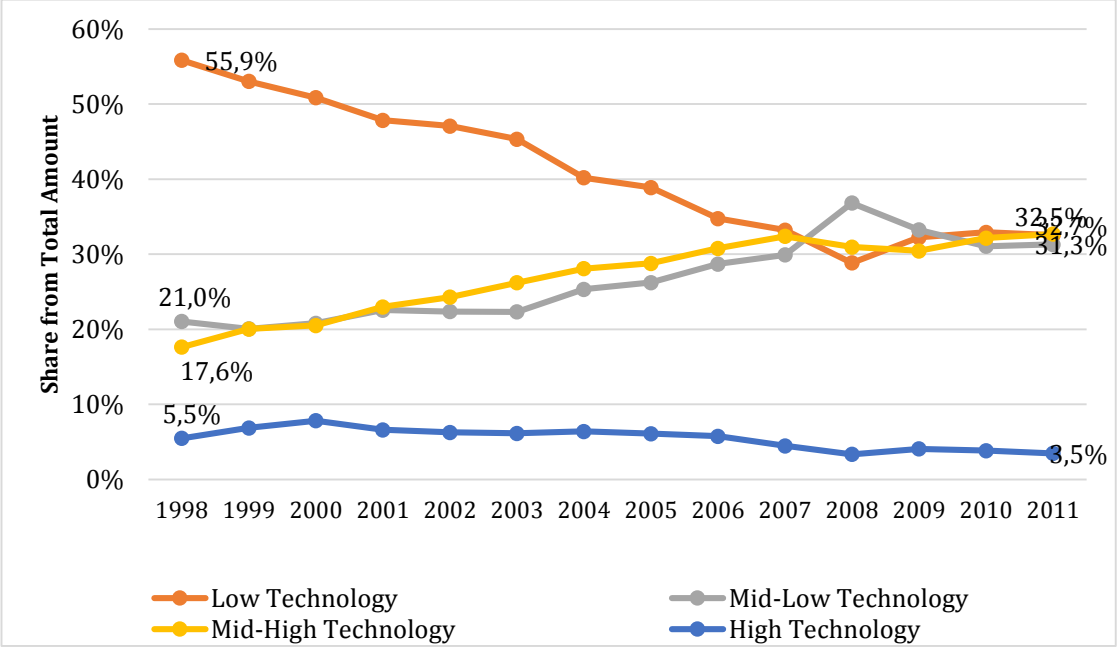

Figure 7 Technological Intensity of Turkey's Export between 1998 and 2011

The most important thing is in this situation that there had not been any significant change in the share of high technology commodities from Turkey's total export. Turkey became an exporter of mostly mid-low and mid-high technology commodities in 2011 rather than exporting low technology commodities in 1998.

As it was the same for shares of country groups' volume from total export volume of Turkey and $EXPY_{TR}$, there were opposite observations in 2009 in regard to previous years. It is mentioned in the previous chapters that both share of European Union countries from Turkey's total export and EXPY level of Turkey decreased in 2009 whilst share of MENA countries increased. Likewise, there was also an opposite movement in technological intensity of Turkey's export volume such that share of low technology commodities from total export volume of Turkey which had been continuously decreasing between 1998 and 2008 increased in 2009 by 3.4 point. In the same year, share of both mid-low and mid-high technology commodities decreased by 3.6 points and 0.5 points respectively. Another point that ought to be indicated in 2009 that share of high technology commodities from total export volume of Turkey increased by 0.8 point, from 3.3 percent to 4.1 percent.

Additionally; although share of low technology commodities also increased in 2010 by 0.7 point, from 32.2 percent to 32.9 percent, there could be seen an alteration between shares of mid-low technology and mid-high technology commodities. Share of mid-low technology commodities decreased by 2.2 point in 2010 whilst share of mid-high technology commodities increased by 1.7 point in the same year. Likewise, share of mid-high technology commodities continued to increase in 2011, from 32.2

percent to 32.7 percent, whilst share of mid-low technology commodities from total export volume of Turkey slightly increased to 31.3 percent from 31.1 percent.

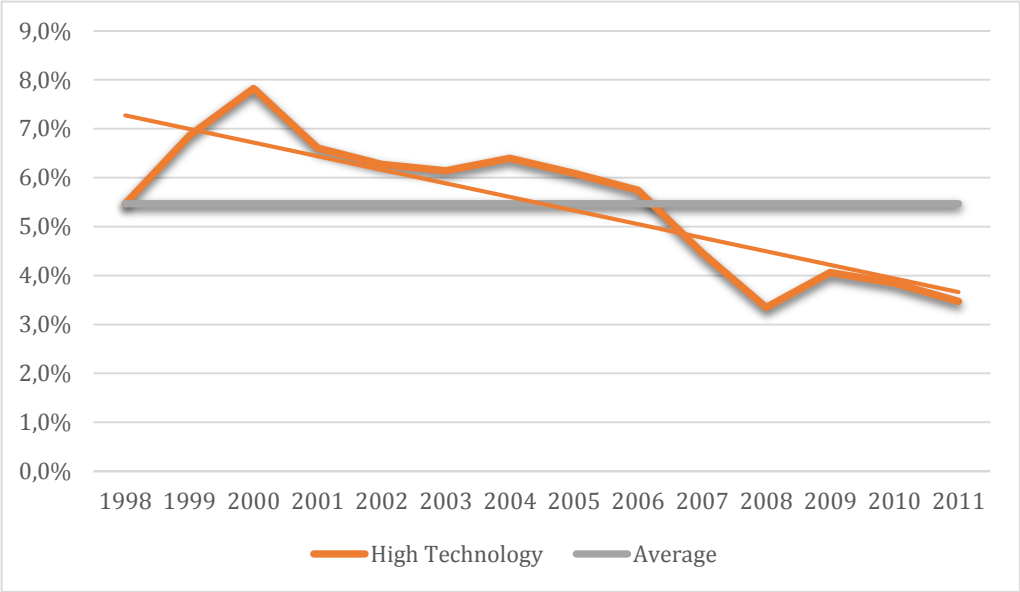

Figure 8 Profile of High Technology Commodities' Share between 1998 and 2011

Moreover, another point that could be indicated in 2011 that share of high technology commodities was equal to 3.5 which was equal to 5.5 percent in 1998 (Figure 8). Therefore, it could be stated that there had been a decrease in the share of high technology commodities from Turkey's export between 1998 and 2011.

It could be stated that Turkey had succeeded to decrease the share of low technology commodities in the total export volume of Turkey between 1998 and 2011; however, it could not succeeded to focus on exporting high technology commodities sufficiently. For gaining competitiveness opportunity in foreign trade within other countries, it should more focus on the way of producing and exporting high technology commodities which could provide higher added values for given export volume.

4.2.3.2. Technological Intensity of Turkey's Export by Country Groups

After examining share values of technological classes from total export volume of Turkey by year between 1998 and 2011 in the previous chapter, it will be tried to analyze the technological intensity of Turkey's export by country groups for the same term in this chapter. Analogous to analysis in previous chapters, manufacturing commodities are also subject to technological intensity analysis that are made in this chapter, according to SITC classification for manufacturing commodities with Harmonized Commodity Description and Coding Systems (HS).

Turkey exported low technology commodities to European Union with 61.5 percent share in 1998 whilst the share of low technology commodities in total export to MENA countries was equal to 42.7 percent. Share of low technology commodities in total export to European Union countries had been continuously decreasing between 1998 and 2008, from 61.5 percent to 34.6 percent. As it is mentioned before, share of low technology export in total export volume of Turkey had also been decreasing continuously, from 55.9 percent to 32.5 percent. Additionally, share of mid-low technology commodities had slightly increased between 1998 and 2011; with minimum value of 21 percent and maximum value of 31.3 percent.

Moreover, share of mid-high commodities in export to European Union countries had significantly increased between 1998 and 2011, from 16 percent to 37.5 percent. There was a minimum value of hare of mid-high commodities in export to

European Union countries which was equal to 16 percent and it reached its maximum value of 37.8 percent in 2010. For the term between 1998 and 2011, the average value of mid-high commodities' share from total export volume of Turkey to European Union is equal to 29.5 percent which is the second after average value of low technology commodities' share in export to European Union countries. In addition to these, export of Turkey to European Union countries has the second highest share value in export of high technology commodities after North America.

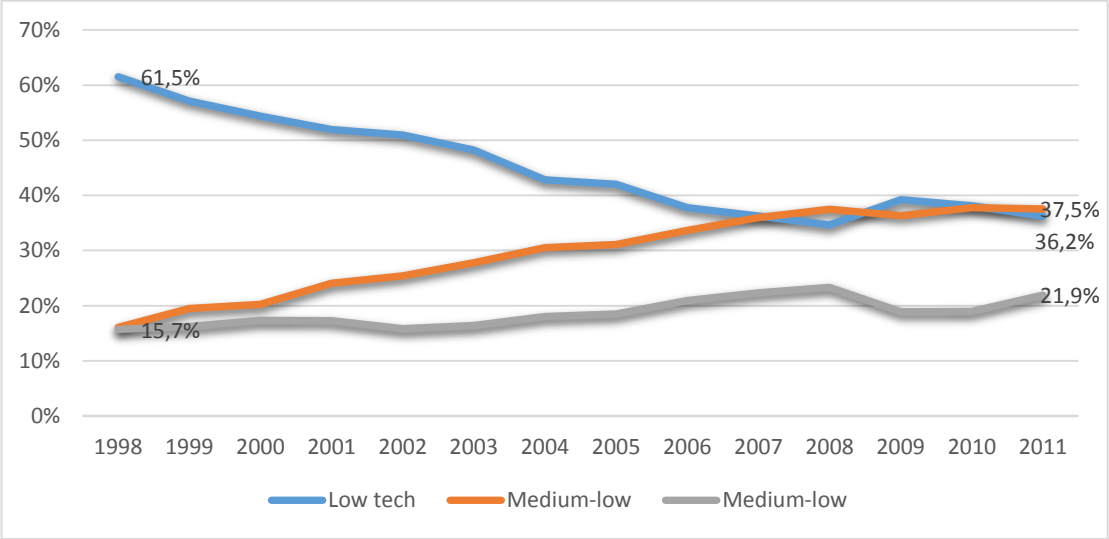

Figure 9 Technological Intensity of Turkey's Export to European Union between 1998 and 2011

Share of high commodity export in total export volume to European Union had fluctuated between 6.7 and 8.6 percent for the term of 1998-2006 but it began to decrease after this year, from 7.6 percent to 4.4 percent in 2011. Although it was equal to its minimum level in 2011 for the term between 1998 and 2011, it was still higher than that for MENA countries and average of other country groups. In 2011, share of high commodity export in total export volume to MENA countries was equal to 1.3 percent (Figure 9).

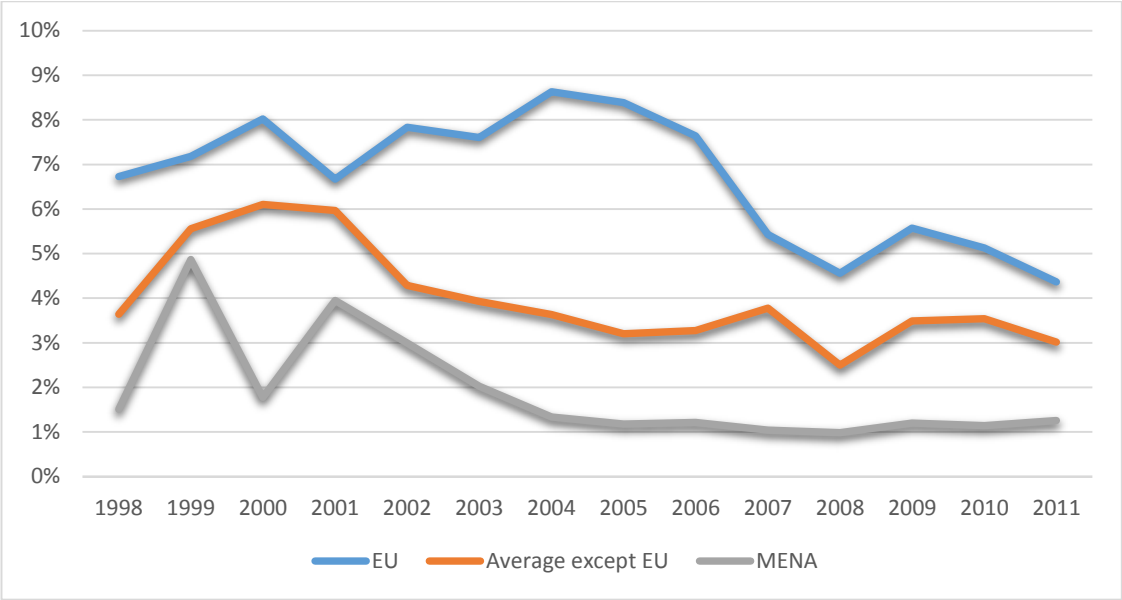

Figure 10 Share of High Technology Commodities in Turkey's Export between 1998 and 2011

On the other hand, this design of technological intensity of Turkey's export by country groups is not similar with European Union in MENA. The first point is that Turkey exported mid-low technology commodities to MENA at a significant level. Although it had decreased from 1998 to 2011, the share of mid-low technology commodities in total export volume to MENA countries was still higher than European Union. Share of mid-low technology commodities from total export volume of Turkey to MENA countries was equal to 58.6 percent in 2008 and 48.3 percent in 2009 when MENA countries began to increase their share from total export volume of Turkey (Figure 10).

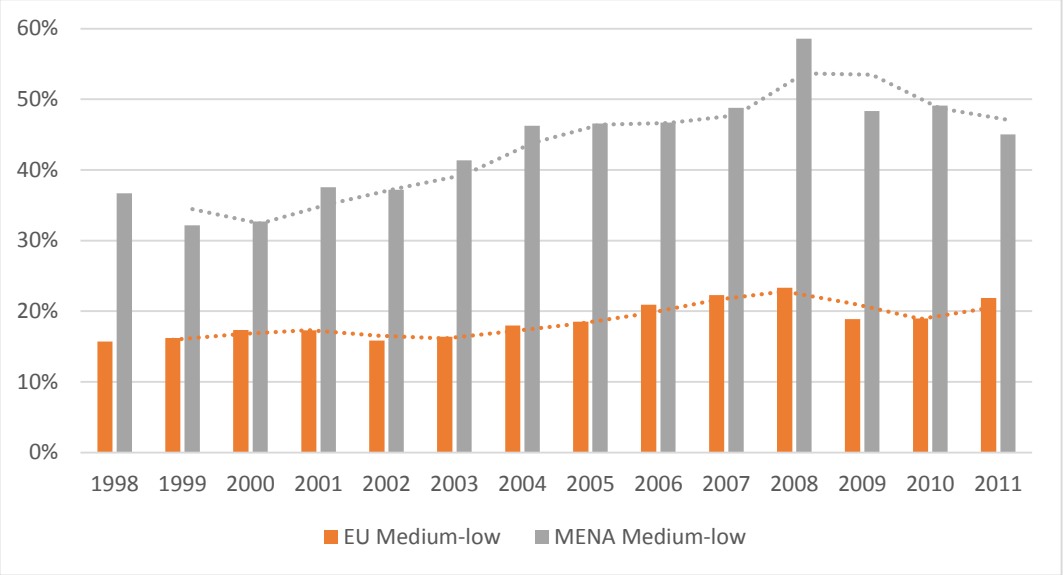

Figure 11 Share of Mid-Low Technology Commodities in Turkey's Export between 1998 and 2011

The second point is that in contrast to the significant increase in share of mid-high commodities export in European Union, it slightly increased in MENA countries, from 19.1 percent to 23.7 percent between 1998 and 2011. The third and the last point is that share of high commodity export in total export volume to MENA countries had been too low between 1998 and 2011. It was fluctuating between 1 and 1.2 percent for the term between 2007 and 2010 where MENA countries significantly increased their share from Turkey's total export.

Likewise, Asia, Europe and Africa are other country groups that had increased their share from total export volume of Turkey after 2004. Share of Asia increased to 10.1 percent in 2011 from 5.3 percent in 2004; share of Europe increased to 9.2 percent in 2011 from 5.6 percent in 2004 and share of Africa increased to 3.2 percent in 2011 from 1.5 percent in 2004. Similarly to previous analysis, Turkey could not increase the share of high technology commodity export by country groups. Among Africa, Asia

and Europe, share of low technology and mid-low technology commodities had been at high rates; e.g. 55 percent, 37.5 percent and 26.6 percent for share of mid-low technology commodities in Africa, Asia and Europe in 2011, respectively.

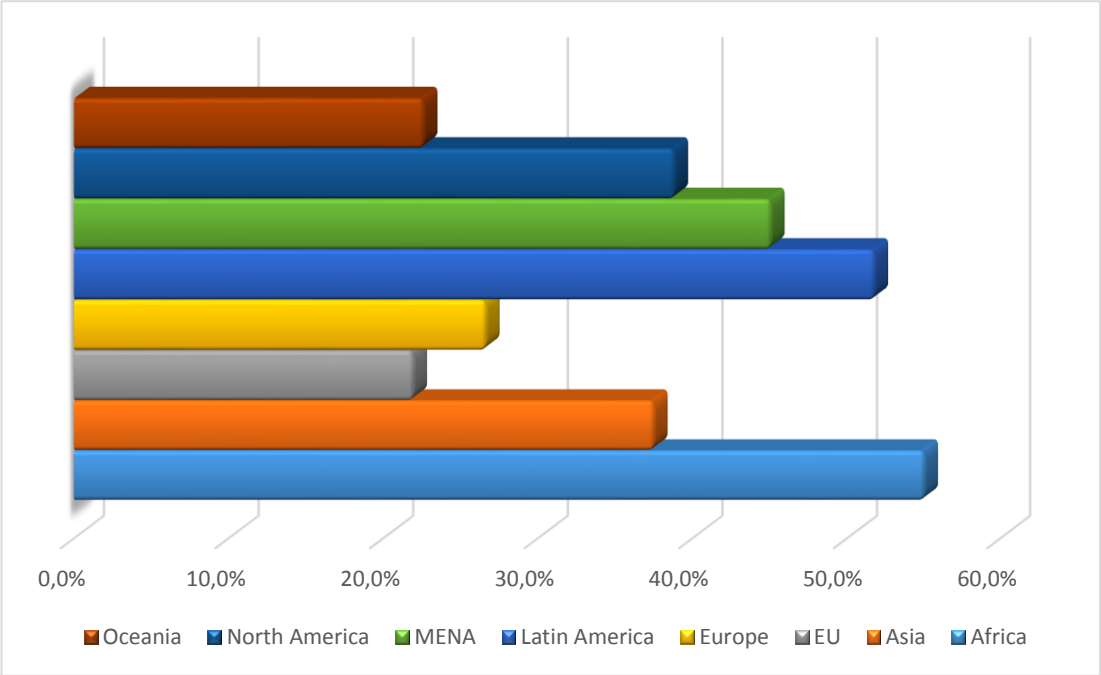

Figure 12 Country Groups' Share of Mid-Low Technology Commodities in Turkey's Export between 1998 and 2011

Finally, European Union was the first country group which has the biggest share of mid-high technology export from total export volume of Turkey in 2011 and it is also the country group that had increased its share from 1998 to 2011. European Union countries had 16 percent share in mid-high technology commodities export from Turkey's total export whilst they had 37.5 percent share in 2011. In the same term, MENA countries could achieved to increase this value by 4.6 percent.

As a conclusion, for the term between 1998 and 2011; Turkey exported mid-high technology commodities more to European Union whilst it exported mid-low technology commodities more to MENA, African and other European countries.

4.3. How Export Destination Matters: Interpretations

In this chapter of the study, it is tried to analyze how export destination matters on product sophistication of export basket of Turkey between 1998 and 2011. In Chapter 5.3.1., first, the relationship between share of country groups from total export volume of Turkey and technological intensity of Turkey's total export in manufacturing is analyzed whilst the relationship between technological intensity of Turkey's export and product sophistication level of export basket of Turkey which is defined as EXPY level of the country in the study is examined in Chapter 5.3.2. Moreover, the relationship between share of country groups from total export volume of Turkey and EXPY level which implies the sophistication level of export products is studied in Chapter 5.3.3. and this analysis is the root of whole thesis since it is supported in this study that export destination has essential role on sophistication level of export goods and the more developed the export destination is the more sophisticated export goods become. In this chapter, therefore, it is tried to sum up all these analysis that are made in the previous parts of the study.

According to analyses that are made in this chapter, there are correlations at different levels between variables that are generated to explain if export destination matters on sophistication of export products. As share of EU countries from Turkey's export increases, intensity of mid-high technology products also increases and this increase stimulates EXPY level of Turkey. As share of MENA countries from Turkey's export increases, on the other hand, intensity of mid-low technology products also increases and it could also be implied as decrease in EXPY level of Turkey.

4.3.1. Relationship between Share of Country Groups and Technological Intensity

It is proven in this chapter that there is a relationship between share of country groups from total export volume of Turkey and technological intensity of Turkey's export basket.

Share of EU countries from total export volume of Turkey had been fluctuating 58.7 percent to 63.5 percent between 1998 and 2007. In 2008, the year Turkish government decided to differentiate export destinations by the effect of economic crisis in Euro Zone, the share of EU countries from Turkey's total export decreases to 50.4 percent, by 8.3 points in regard to the value in 2007. This decrease also continued in 2009 by 2.1 points and the share of EU countries from Turkey's total export, from 50.4 percent to 48,3 percent. The share softly increased in 2010 to 48.5 percent and this increase continued in 2011 to 49.2 percent.

Share of MENA countries from total export volume of Turkey, on the other hand, had fluctuated around 14 percent between 1998 and 2006 whilst it increased to 16.1 percent in 2005 from 11.7 percent in 2000. After that, the share of MENA countries increased to 21.2 percent, by 5.1 points in 2008 and this increase continued to 23 percent and 24 percent in both 2009 and 2010 respectively.

Besides, share of low technology commodities in export basket of Turkey had been continuously decreasing from 1998 to 2011. The share of low technology

commodities in total export of Turkey was equal to 55.9 percent which is the maximum value for 1998-2011 and it decreased to 32.5 percent. It slightly increased to 32.2 percent in 2009 and 32.9 percent in 2010 and was equal to 32.5 percent in 2011. In addition to this, share of mid-low technology commodities in total export of Turkey had increased between 1998 and 2008, from 21 percent to 31.3 percent respectively. It increased by 6.9 points in between 2007 and 2008 which is the term that is studied attentively in this thesis.

Likewise, share of mid-high technology commodities in total export volume had been almost doubled in 12 years so that it was equal to 17.6 percent in 1998 and 32.7 percent in 2011. Share of high technology commodities had been at low value for 12 years in Turkey. The average of high technology commodity share in total export volume of Turkey was equal to 5.2 percent without 1999 and 2000. Additionally, share of high technology commodities in the total export volume of Turkey decreased to 3.3 percent from 4.5 percent in the term of 2007 and 2008 which is essentially analyzed in this thesis.

There is a relation between share of EU countries and MENA countries from total export volume of Turkey and share of high technology commodities from total manufacturing export of Turkey between 1998 and 2011 according to the data that were gathered from COMTRADE. A-one-point-increase in share of EU countries from Turkey's total export volume increases the share of high technology commodities by 0.88 point whilst a point of increase in share of MENA countries decreases the share of high technology products from total export volume by 0.89 points. Figure 13 and

Figure 14 show this relationship between share of EU countries, MENA countries and share of high technology products from total export volume of Turkey.

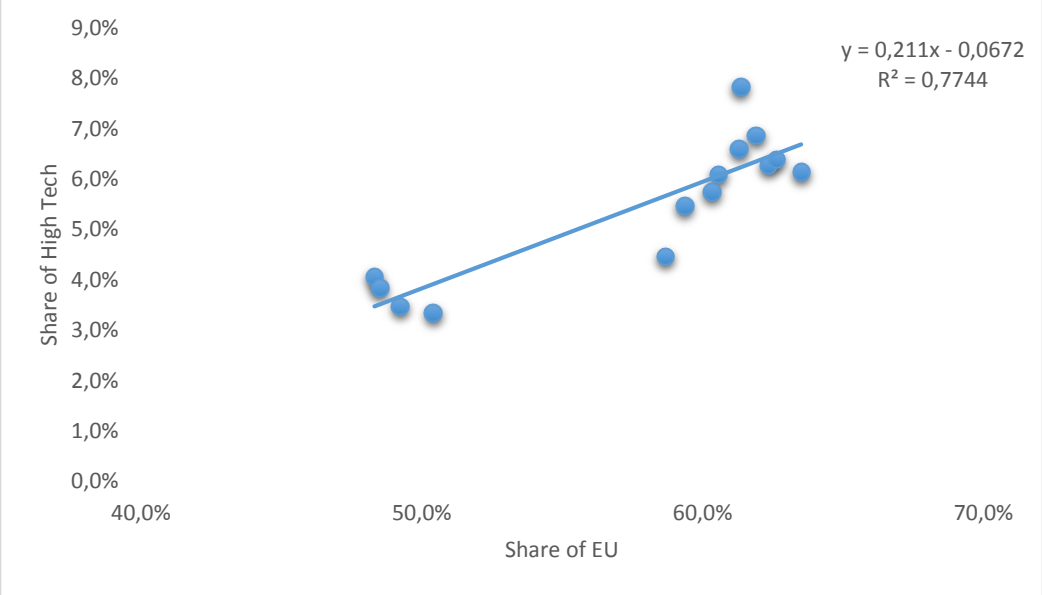

Figure 13 Relationship between Share of EU and High Technology Commodities

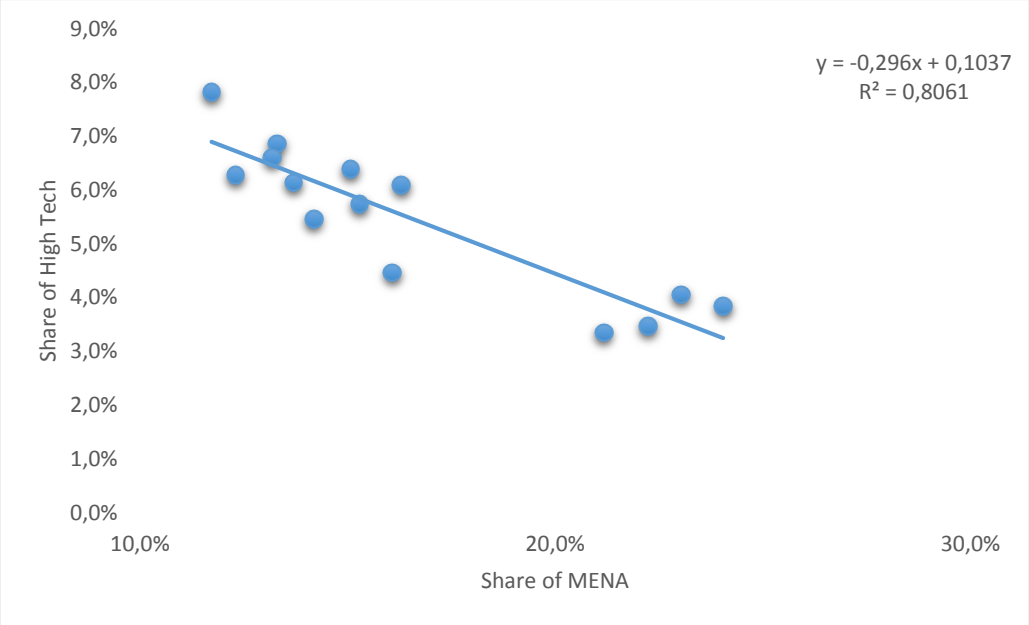

Figure 14 Relationship between Share of MENA and High Technology Commodities

Similarly, there is a relation between share of country groups from total export volume of Turkey and share of mid-low technology commodities from manufacturing product export of Turkey between 1998 and 2011. One point of increase in the share of EU countries from total export volume of Turkey decreases share of mid-low technology commodities from total manufacturing export volume of Turkey by 0.829 point for the term between 1998 and 2011 whilst one point of increase in the share of MENA countries from total export volume of Turkey increases share of mid-low technology commodities from total manufacturing export volume of Turkey by 0.87 point.

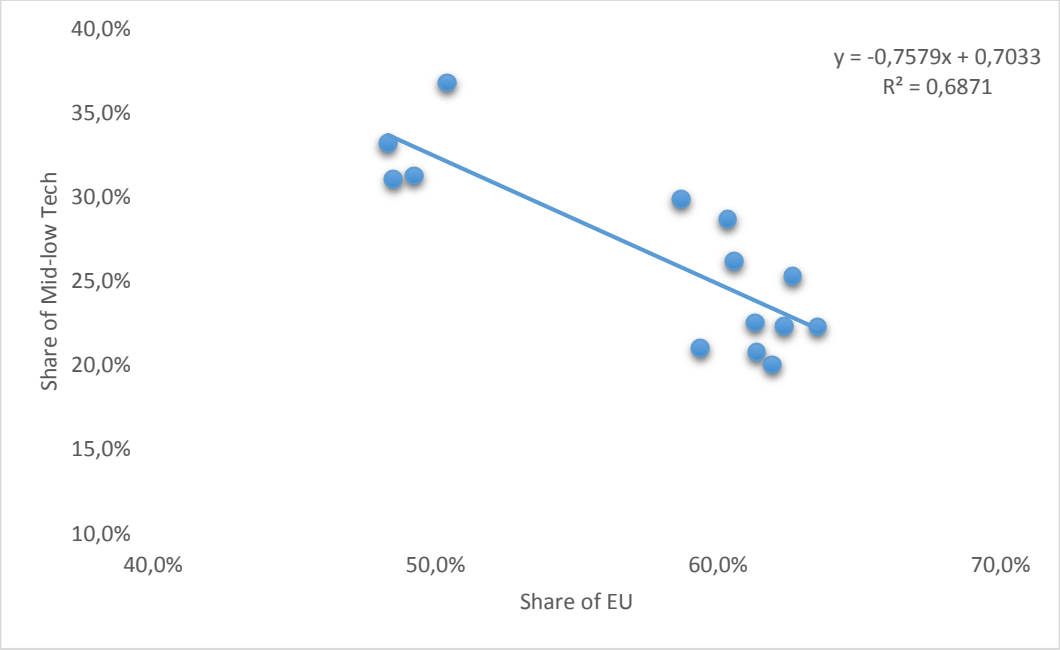

Figure 15 Relationship between Share of EU and Mid-Low Technology Commodities

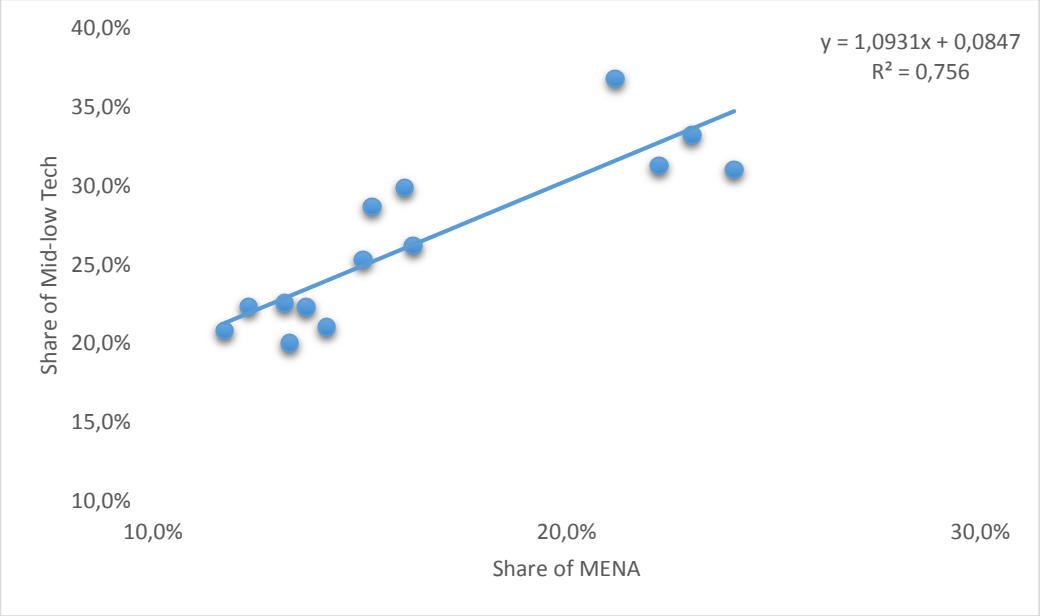

Figure 16 Relationship between Share of MENA and Mid-Low Technology Commodities

One of the main motivations that Turkey's export structure had between 1998 and 2011 was focusing on EU countries with mid-high technology products and these results show that export to the EU might increase the possibility of exporting high technology products while decreasing the possibility of exporting mid-low technology products. Similarly, export to the MENA might increase the possibility of exporting mid-low technology products while decreasing the possibility of exporting high technology products.

Therefore, it could be said that export destination matter on technological intensity of export products in Turkey between 1998 and 2011 and EU could be a good option to be export destination that is focused on in order to achieve exporting more high technology products and less mid-low technology products.

4.3.2. Relationship between Technological Intensity and EXPY

Besides the relationship between share of country groups from total export volume of Turkey and technological intensity of Turkey's total export, there is also proven relationship between technological intensity of Turkey's total export and product sophistication of Turkey's export basket which is defined as EXPY value in this study.

Share of low technology commodities from total export volume of Turkey had been continuously decreasing between 1998 and 2008, from 55.9 percent to 28.9 percent which is the minimum value of share of low technology commodities from total export volume of Turkey for the term that is studied in this thesis. In 2009, share of low technology commodities increased by 3.3 percent, from 28.9 percent to 32.2 percent and it increased to 32.9 percent in 2010 as well. In 2011, it was equal to 32.5 percent. In this thesis, it is supported that the increase that is observed in the share of low technology commodities from total export volume of Turkey caused a decrease in the product sophistication of Turkey's export basket which is equal to its EXPY value.

In addition to this, as it is also mentioned in the previous section, share of mid-low technology commodities in total export of Turkey had increased between 1998 and 2008, from 21 percent to 36.8 percent respectively. It increased by 6.7 points in between 2007 and 2008 which is the term that is studied attentively in this thesis.

Likewise, share of mid-high technology commodities in total export volume had been almost doubled in 12 years so that it was equal to 17.6 percent in 1998 and 32.7 percent in 2011. Share of high technology commodities had been at low value for 12 years in Turkey. The average of high technology commodity share in total export volume of Turkey was equal to 5.2 percent without 1999 and 2000. Additionally, share of high technology commodities in the total export volume of Turkey decreased to 3.3 percent from 4.5 percent in the term of 2007 and 2008 which is essentially analyzed in this thesis.

It is supported in this thesis that there is a direct relationship between share of technology groups from total export volume of Turkey and product sophistication of Turkey's export. First, Figure 17 shows the relationship between share of low technology commodities from Turkey's total export and export sophistication of the export basket of Turkey. A one-point-increase in the share of low technology commodities causes an decrease in EXPY value of Turkey's export by 0.96 point. It is well-known from analyses that were made in the previous chapters that product sophistication is related to the usage of technology at higher levels. Thus, it was also expected that increase in share of low technology commodities can cause a decrease in product sophistication of Turkey's export.

The correlation value between share of low technology commodities from total export volume of Turkey and export sophistication value of Turkey's export which is defined as EXPY level is high; it is equal to -0.96. Therefore, it shows that EXPY level can be affected by the increase in share of low technology commodities almost directly.

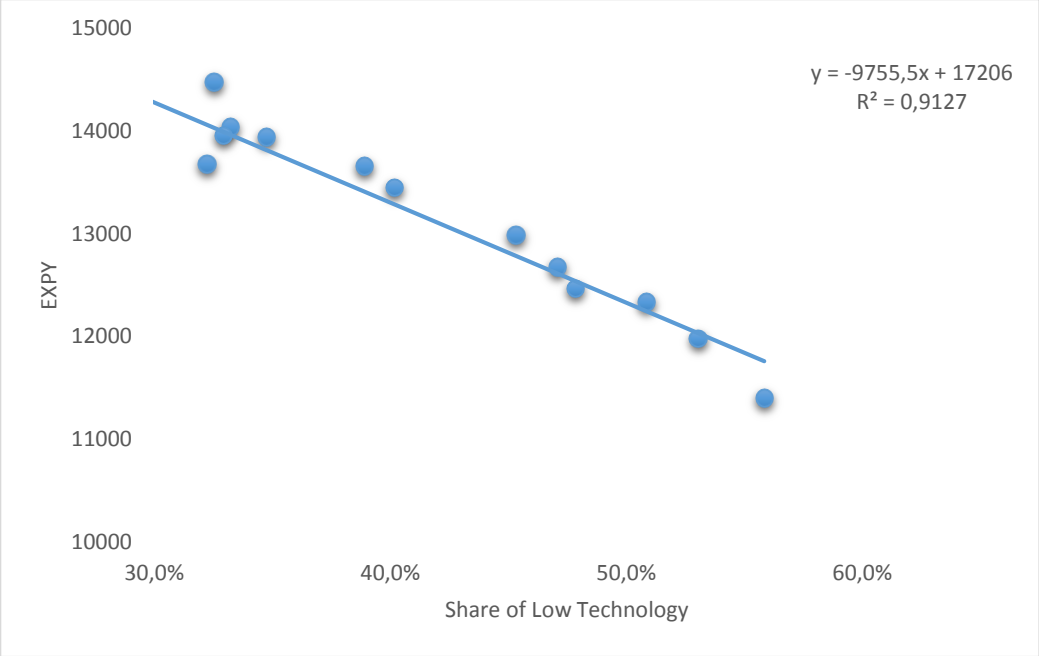

Figure 17 Relationship between Share of Low Technology Commodities and EXPY Value

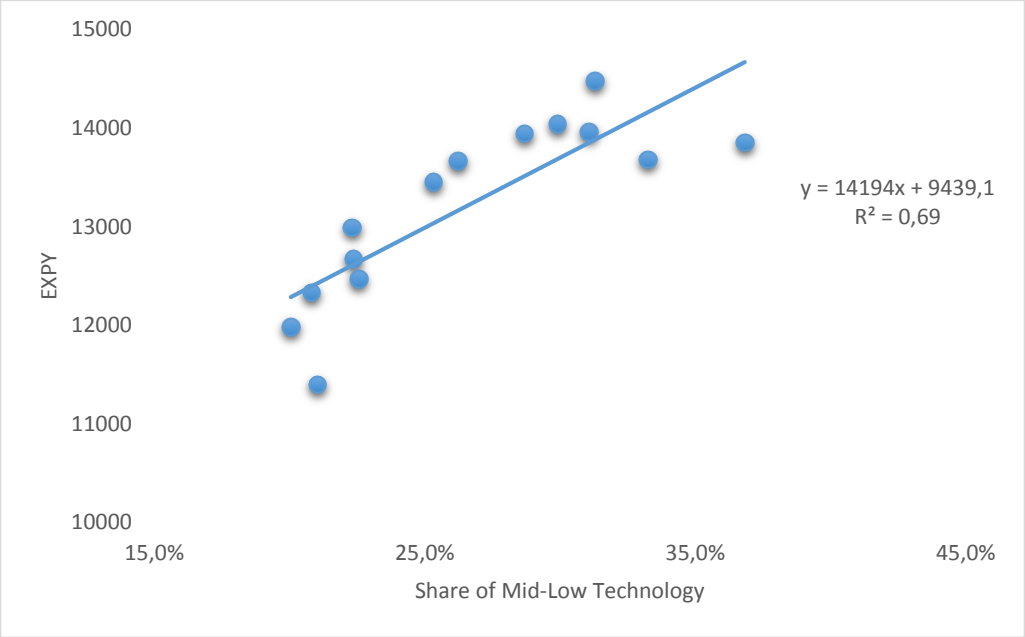

Figure 18 Relationship between Share of Mid-Low Technology Commodities and EXPY Value

Figure 19 shows the relationship between share of mid-low technology commodities from total export volume of Turkey and EXPY value of Turkey's export between 1998 and 2011. In contrast to the relationship between share of low technology commodities and EXPY value, there is a positive correlation between share of mid-low technology commodities from total export volume of Turkey and EXPY value of Turkey's export. Results indicate that a one-point-increase in share of mid-low technology commodities provides an increase in EXPY value by 0.83 point (Figure 18).

Similarly to this result, there is also a positive relationship between share of mid-high technology commodities from total export volume of Turkey and EXPY value of Turkey's export basket. A one-point increase in the share of mid-high technology commodities from total export volume of Turkey can raise EXPY value of Turkey's export basket by 0.99 point. Therefore, it could be stated that there is almost one-to-one relationship between share of mid-high technology commodities and EXPY value between 1998 and 2011 (Figure 19).

Although it was expected that there could be a strong relationship between share of high technology commodities and EXPY value, the correlation value is equal to 0.32 between 2006 and 2010 (Figure 20).

According to the analysis that was made by the World Bank in 2012 about export and competitiveness structure of Turkey, specialization in commodities that have higher quality and technology level could develop export volume in the long run and firms which could achieve produce and export higher quality commodities could

also perform better rather than others (World Bank, 2012). Thus, technology level is related to product sophistication in Turkey.

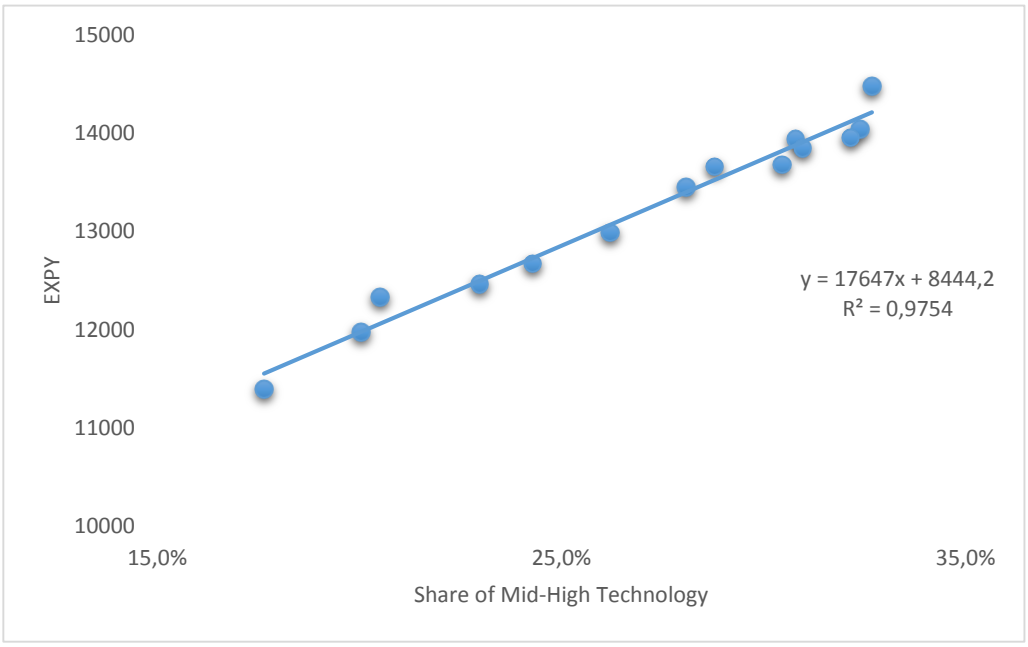

Figure 19 Relationship between Share of Mid-High Technology Commodities and EXPY Value

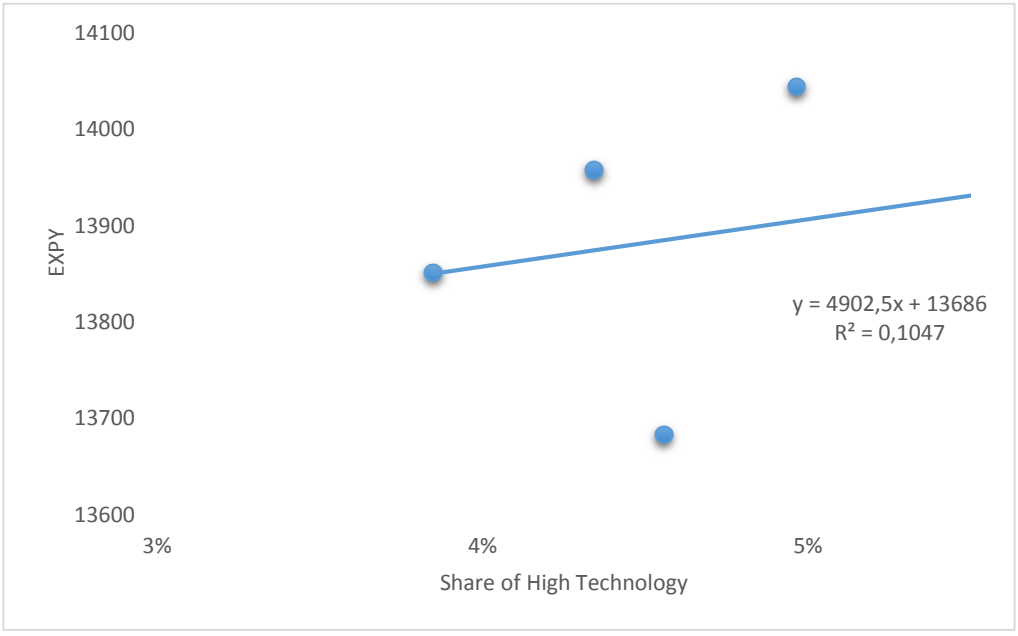

Figure 20 Relationship between Share of High Technology Commodities and EXPY Value

4.3.3. Relationship between Share of Country Groups and EXPY

After examining relationships between shares of country groups from total export volume of Turkey, technological intensity of Turkey's export and product sophistication level of export basket of Turkey, it is the key part of this study to analyze the relationship between share of country groups from total export volume of Turkey and product sophistication level of its export basket. It is tried to clarify in this section that if export destination matters on product sophistication of Turkey's export basket by the light of the relationship between share of country groups and technological intensity and how this effect occurs if export destination matters on product sophistication Turkey's export basket.

First of all, product sophistication of Turkey's export basket which is defined as $EXPY_{TR}$ in this study increases by the increase in the share of EU countries from total export volume of Turkey between 1998 and 2011. In the beginning of this analysis, $EXPY_{TR}$ was equal to 11398 whilst share of EU countries from total export volume of Turkey was equal to 59.4 percent. Although it had been fluctuating between 1998 and 2006, share of EU countries from total export volume of Turkey was equal to 60.3 percent which is so close to the value it had in 1998 whilst EXPY value of Turkey's export basket had continuously been increasing, from 11398 in 1998 to 13945 in 2006. After 2005, the relationship between share of EU countries from Turkey's export and its product sophistication level became strong by the effect of

both symptoms of economic crisis in Europe and market differentiation policy that was held by Turkish Government (Figure 21).

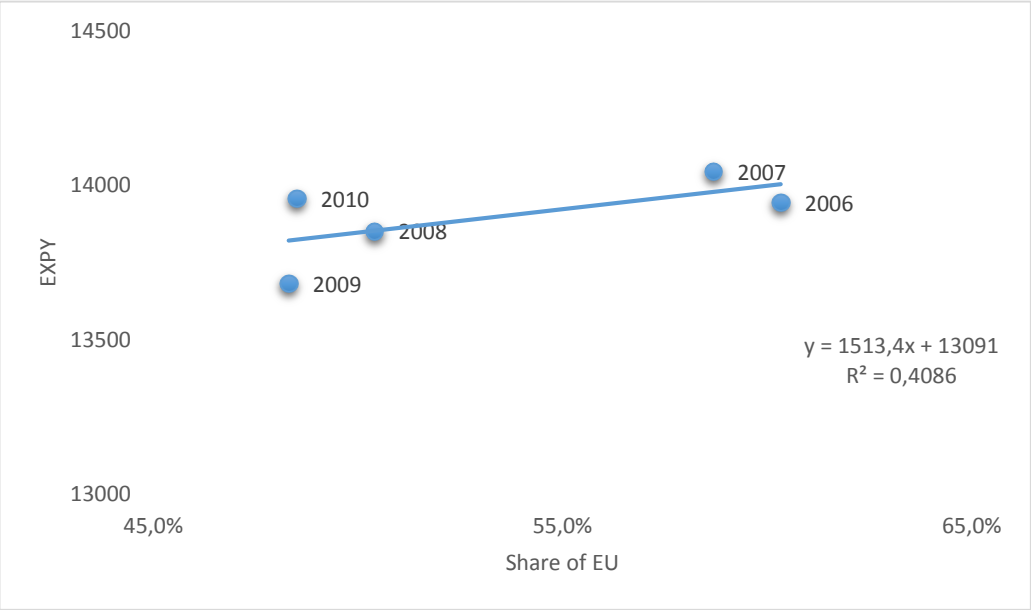

Figure 21 Relationship between Share of EU Countries and $EXPY_{TR}$ Value (2006-2010)

The essential part that must be indicated in this section could be seen in the following figure (Figure 22). It is supported in this study that export destination matters on product sophistication of Turkey's export basket and Turkey should not leave European Union as an export destination. As it could be seen in Figure 22 that share of EU countries had slightly decreased from 59.4 percent to 58.7 percent whilst $EXPY_{TR}$ increased to 14044 from 11398 between 1998 and 2007.

By the effect of both economic crisis in European Union and market differentiation policies, share of EU countries from total export volume of Turkey decreased by 8.3 points, from 58.7 percent to 50.4 percent in 2008 and it continued to decrease in 2009 as well. $EXPY_{TR}$, on the other hand, also decreased by 1.4 percent,

from 14044 to 13852 in 2008 and by 1.2 percent, from 13852 to 13683 in 2009. Areas with red lines indicates this direct relationship that is mentioned above (Figure 22).

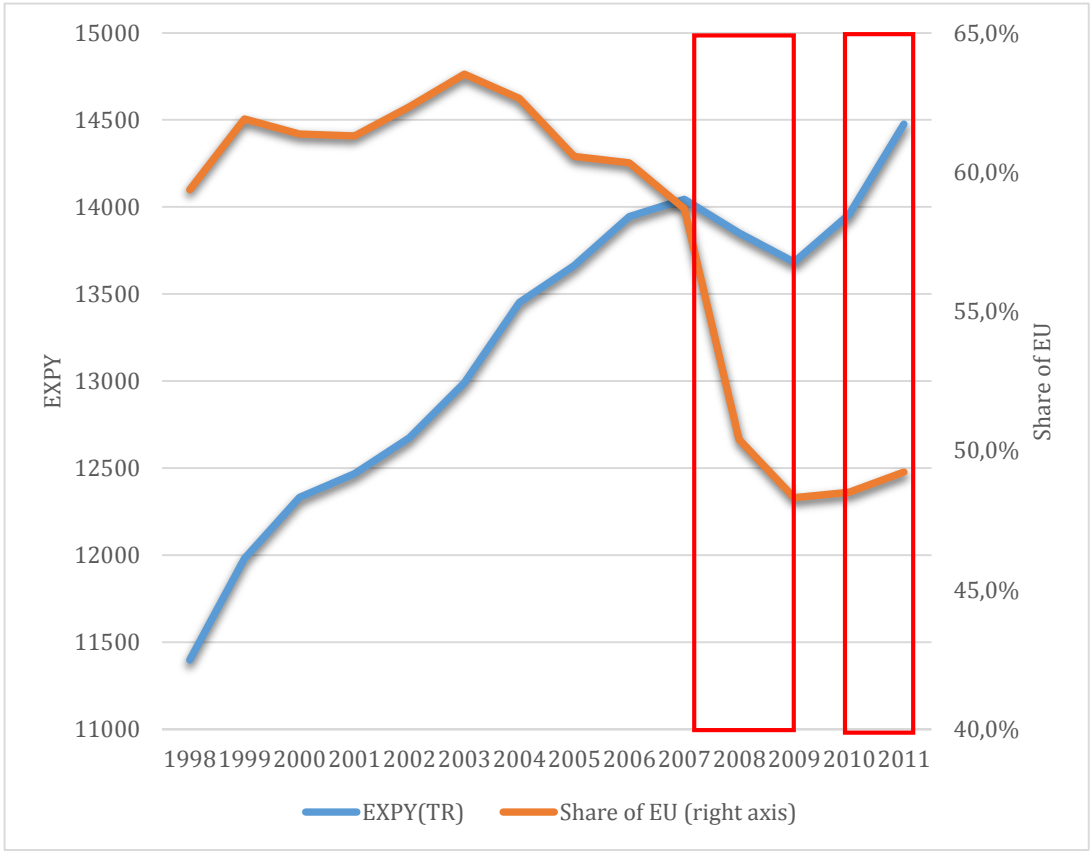

Figure 22 Share of EU Countries and $EXPY_{TR}$ between 1998 and 2011

After 2009, both share of EU countries from total export volume of Turkey and $EXPY_{TR}$ began to increase by 0.2 percent and 2 percent respectively. Share of EU countries ($share_{EU}$) increased to 48.5 percent from 48.3 percent in 2010 and to 49.2 percent from 48.5 percent in 2011 whilst $EXPY_{TR}$ increased to 13958 from 13683 in 2010 and to 14477 from 13958 in 2011. Correlation coefficient between changes of $share_{EU}$ and $EXPY_{TR}$ is equal to 79 percent between 2008 and 2011.

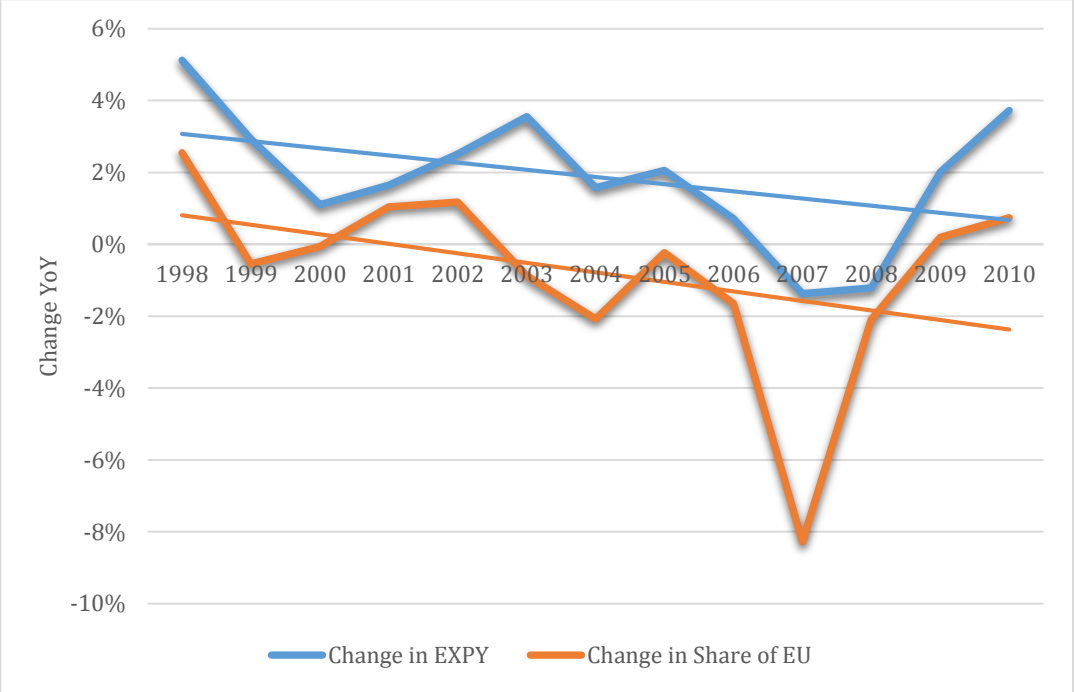

Figure 23 Changes in Share of EU Countries and $EXPY_{TR}$ between 1998 and 2011

Similar to the relationship between share of EU countries from total export volume of Turkey and EXPY value of Turkey's export basket, there is also a relationship between share of MENA countries and $EXPY_{TR}$ but in the opposite way. As share of MENA countries from total export volume of Turkey had increased between 2006 and 2010 by 8.7 points, $EXPY_{TR}$ was almost equal to the value it had in 2006. Slightly negative correlation between share of MENA countries from total export volume of Turkey and $EXPY_{TR}$ between 2006 and 2010 could be seen in the following figure (Figure 24).

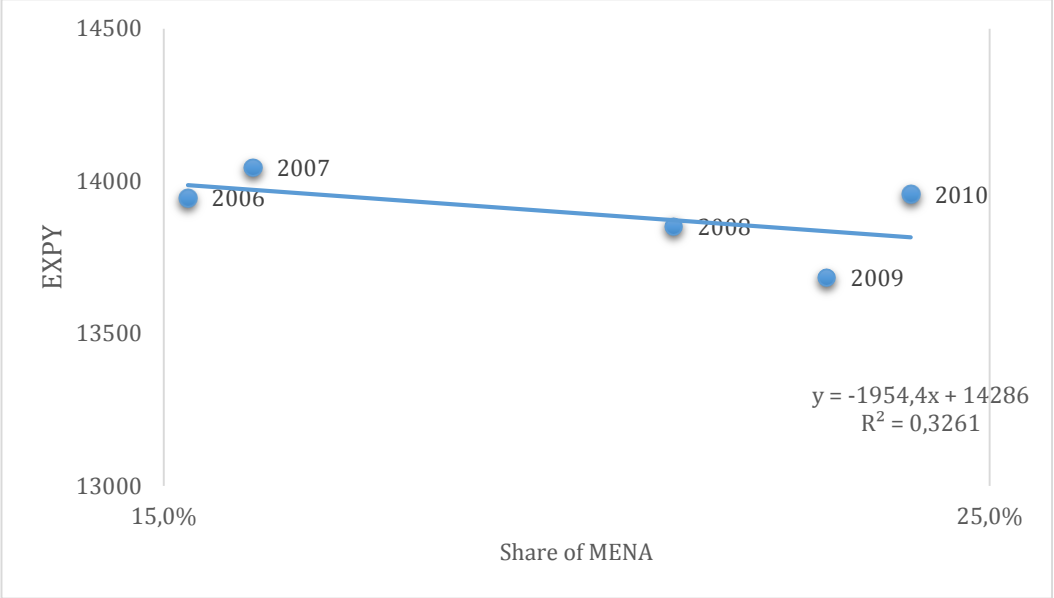

Figure 24 Relationship between Share of MENA Countries and $EXPY_{TR}$ Value (2006-2010)

As it could be seen in Figure 25, significant change in the share of MENA countries ($Share_{MENA}$) affected EXPY value of Turkey's export. $Share_{MENA}$ increased by 5.1 percent in 2008 and 1.8 percent in 2009 whilst EXPY decreased by 1.4 percent and 1.2 percent respectively. Areas with red lines indicates this direct relationship that is mentioned above (Figure 25).

It is stated in Figure 26 that increase in $share_{MENA}$ had decelerated while both $share_{EU}$ and $EXPY_{TR}$ began to increase after 2009. $Share_{MENA}$ increased by 0.8, 5.1, and 1.8 percent between 2007 and 2009 whilst $EXPY_{TR}$ increased by 0.7 percent and decreased by 1.4 and 1.2 percent respectively. Correlation coefficient between changes of $share_{MENA}$ and $EXPY_{TR}$ is equal to -0.13 between 2008-2011.

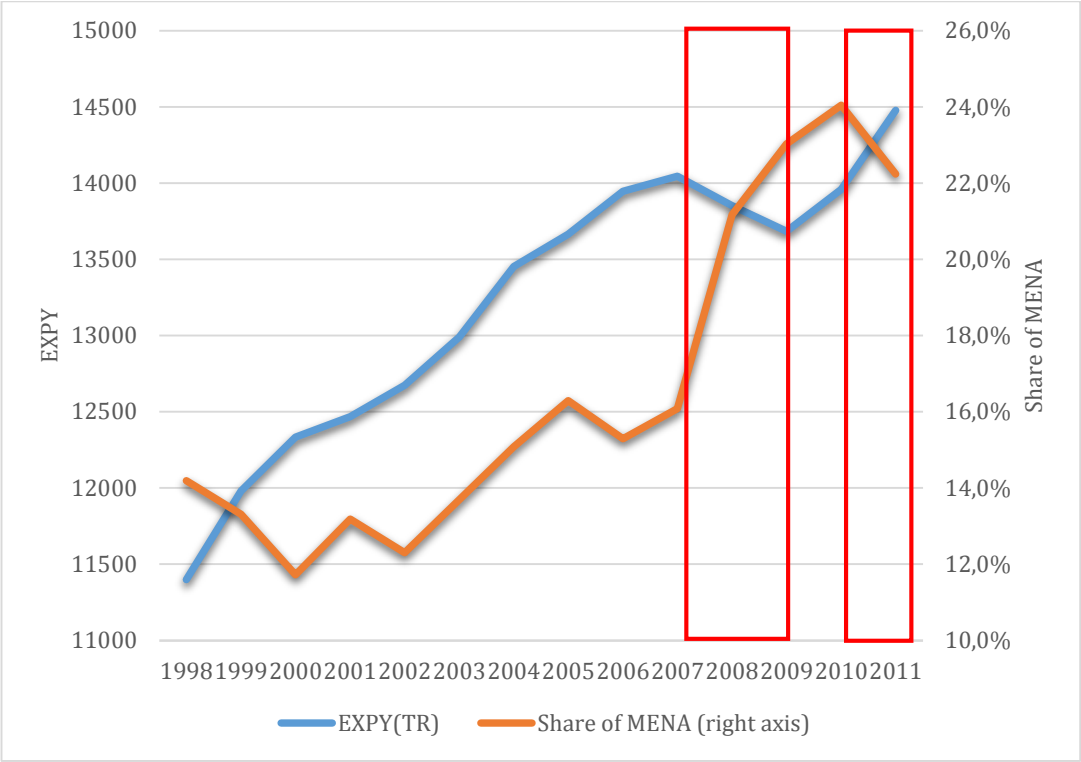

Figure 25 Share of MENA Countries and $EXPY_{TR}$ between 1998 and 2011

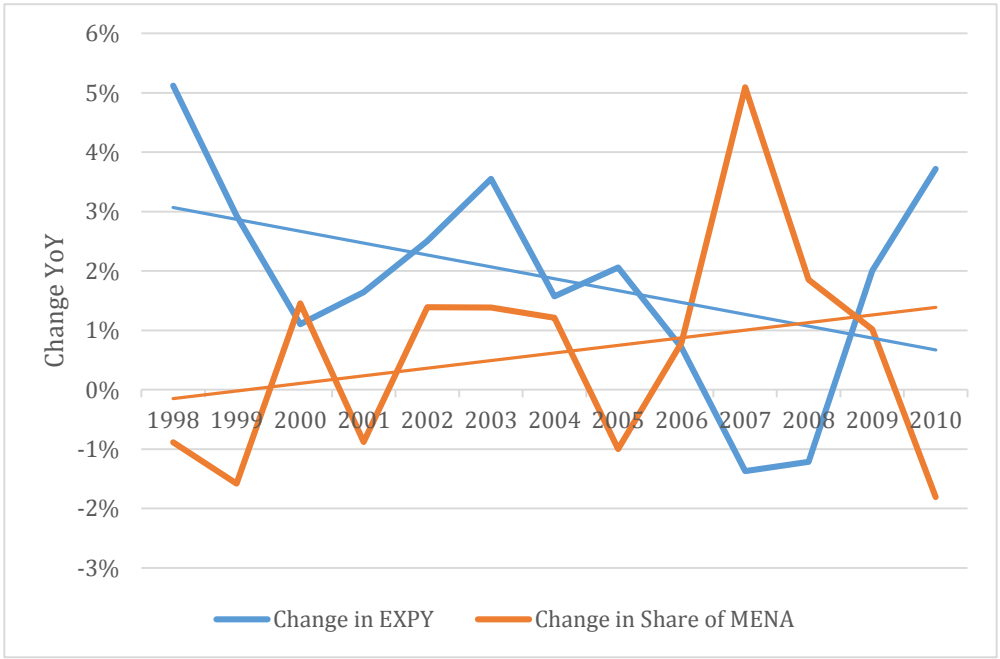

Figure 26 Changes in Share of MENA Countries and $EXPY_{TR}$ between 1998 and 2011

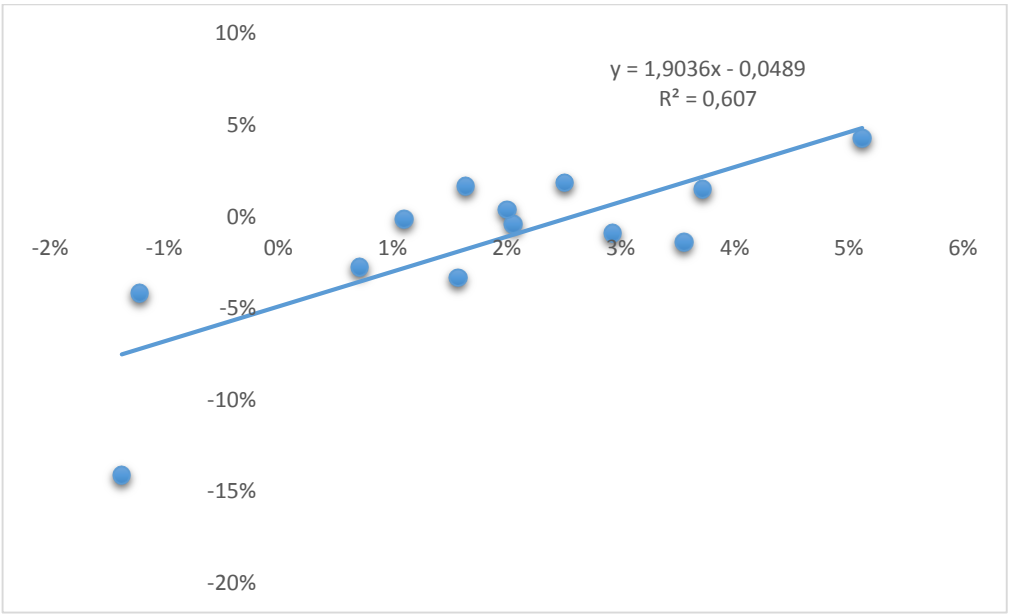

Figure 27 Relationship between Changes in Share of EU Countries and $EXPY_{TR}$ between 1998 and 2011

Figure 27 and Figure 28 indicate that there is a positive correlation between changes in $share_{eu}$ and $EXPY_{TR}$ whilst the correlation between $share_{MENA}$ and $EXPY_{TR}$ is negative.

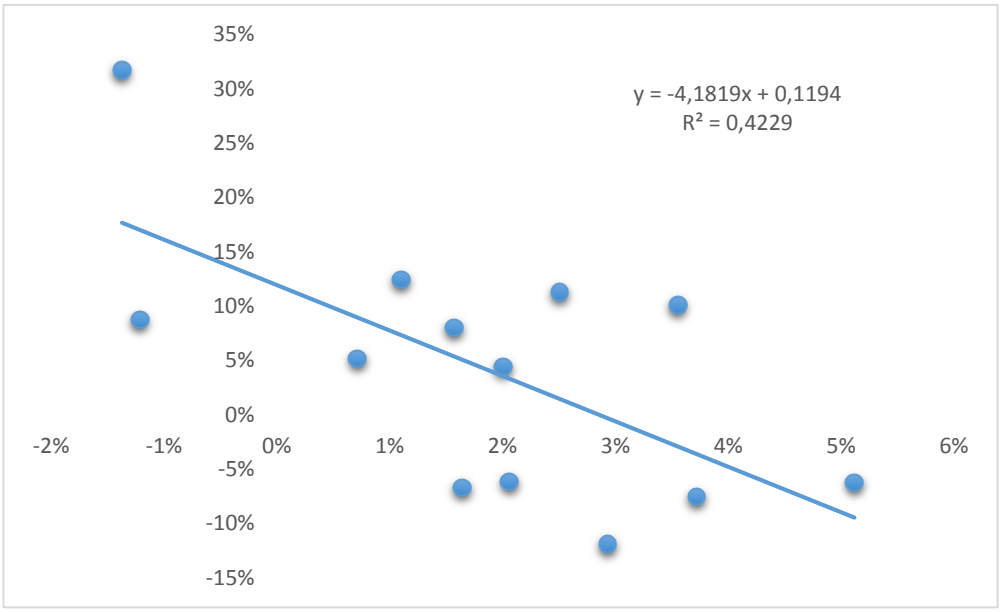

Figure 28 Changes in Share of MENA Countries and $EXPY_{TR}$ between 1998 and 2011

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{EU}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = \mathbf{0.78} \tag{4.6}$$

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{MENA}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = -\mathbf{0.65} \tag{4.7}$$

Since this study basically focuses on how export destination matters on product sophistication for essential export destinations of Turkey such that European Union and MENA countries; there are six other export destinations of Turkey which have less share from total export volume of Turkey. When the correlation between shares of these destinations and product sophistication of Turkey's export basket, only increases in shares of North America, Latin America and Oceania have positive impact on $EXPY_{TR}$ between 1998 and 2011 whilst those of Asia, Europe (Europe except EU) and Africa have negative impact on $EXPY_{TR}$. Correlations that are mentioned above could be seen in the following:

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{Asia}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = -\mathbf{0.61} \tag{4.8}$$

$$\boldsymbol{Corr}\left(\Delta \boldsymbol{share}_{\boldsymbol{Europe}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}}\right)_{\mathbf{1998,2011}} = -\mathbf{0.58} \tag{4.9}$$

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{North\ America}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = \mathbf{0.42} \tag{4.10}$$

$$\boldsymbol{Corr}\left(\Delta \boldsymbol{share}_{\boldsymbol{Africa}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}}\right)_{\mathbf{1998,2011}} = -\mathbf{0.14} \tag{4.11}$$

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{Latin\ America}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = \mathbf{0.05} \tag{4.12}$$

$$\boldsymbol{Corr}(\Delta \boldsymbol{share}_{\boldsymbol{Oceania}}, \Delta \boldsymbol{EXPY}_{\boldsymbol{TR}})_{\mathbf{1998,2011}} = -\mathbf{0.23} \tag{4.13}$$

Thus, it could be stated by the light of all these analyses that where Turkey exports matters on its product sophistication between 1998 and 2011. Exporting more to EU, North America, Latin America, Oceania could increase the level of product sophistication whilst exporting more to MENA, Asia, Europe and Africa could decrease the level of product sophistication of Turkey for the term between 1998 and 2011.

Finally, the World Bank's study that is called "Trade Competitiveness in Turkey: Preliminary Results" which was made in 2012 could also be a supportive argument for all these analyses that were made above (Figure 29).

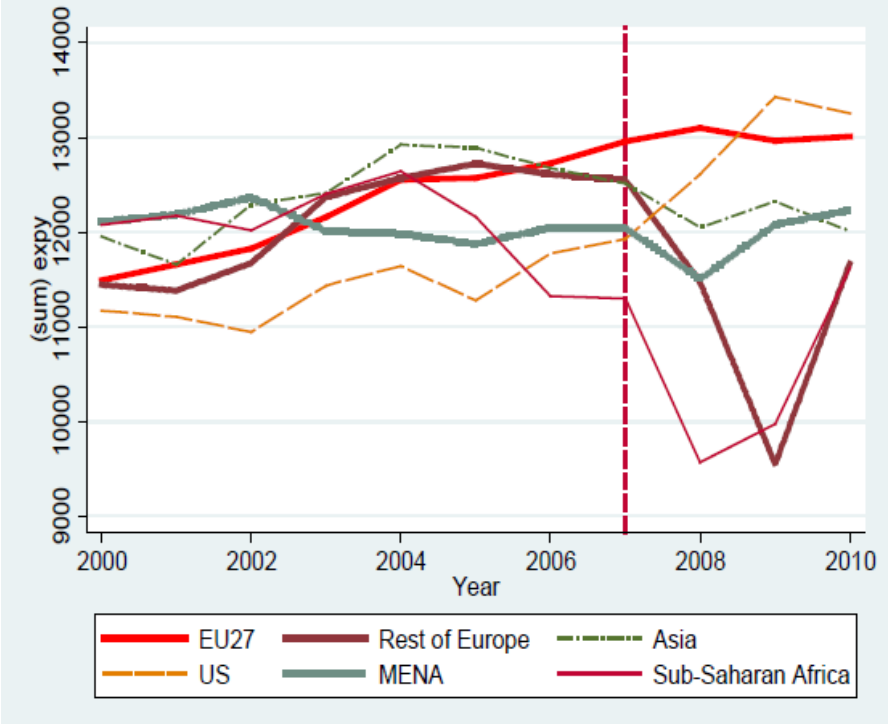

Figure 29 Product Sophistication by Regions between 2000 and 2010

Figure 29 indicates that Turkey exported more sophisticatedly to EU-27 countries, the US rather than other export destinations. Exports to Rest of Europe, MENA and Asia had become less sophisticated especially after 2007. Turkey could

export to MENA with approximately 12000 EXPY value whilst it could export to EU countries with higher EXPY value. It is worth to be stated that export to MENA is as sophisticated as Sub-Saharan Africa which had the minimum level of EXPY especially in 2009 and 2010.

Therefore, Trade Competitiveness in Turkey: Preliminary Results (2012) also supports that where Turkey exports matters on product sophistication as it is also mentioned above.

CHAPTER FIVE

CONCLUSION

This thesis analyzes the relationship between export destinations and product sophistication for the Turkish economy between 1998 and 2011, adopting the model framework proposed by Hausmann et al. (2005). Using the EXPY variable as a proxy for export sophistication, Hausmann et al. (2005) and other relevant studies such as Bastos et al. (2010), Hallak (2006), Harding (2010), Sak (2010), Baliamoune-Lutz (2010), Arora et al. (2005) and Gill et al. (2007) find a strong correlation between export destination and product sophistication.

The empirical findings suggest that the Turkish economy is also no exception: as the ratio of exports to the EU region increases, so does the technological intensity of the exports, which leads to a higher value added export performance.

It is also found that the global crisis which had its most negative effects on the EU region has significantly changed the export composition of Turkey, which led to a decline in export sophistication. With the recovery from the global economic crisis, it is still an open question whether Turkey will be able to regain its export share in the EU region and perform again at the pre-crisis levels. The answer to this question is also important for the achieving the ambitious goals set forth by 2023 Export Strategy Plan.

To sum up, the findings in this study can be summarized as follows:

1. Increase in share of EU from Turkey's export tends to increase the share of high quality commodities and to decrease the share of mid-low technology commodities from total export volume.
2. Increase in share of MENA from Turkey's export tends to decrease the share of high quality commodities and to increase the share of mid-low technology commodities from total export volume.
3. Increase in the share of low technology commodities tends to decrease EXPY while increase in the share of mid-high technology commodities tends to increase it. This relationship could be thought as it comes by definition of EXPY because besides PRODY, technological intensity could be an indicator of commodities' quality.
4. Increase in the share of EU from total export volume of Turkey tends to increase EXPY between 2006 and 2010 since EXPY level of Turkey decreased in 2008 and 2009 when the share of EU steeply decreased whilst EXPY began to increase again 2010 and 2011 while the share of EU also began to increase.

5. Increase in the share of MENA from total export volume of Turkey tends to decrease EXPY between 2006 and 2010 since EXPY level of Turkey decreased in 2008 and 2009 when the share of MENA steeply increased whilst EXPY began to increase again 2010 and 2011 while the share of EU also began decrease slightly.
6. When it is looked at the relationship between changes in share of EU and EXPY level of Turkey between 1998 and 2011, there is a positive correlation such that correlation coefficient is equal to 0.78.
7. When it is looked at the relationship between changes in share of MENA and EXPY level of Turkey between 1998 and 2011, there is a negative correlation such that correlation coefficient is equal to -0.65.
8. Besides EU and MENA, other export destinations also have impact of product sophistication of Turkey such that North America, Latin America and Oceania have positive impact on EXPY whilst Asia, Europe (Europe except EU) and Africa have negative impact on it.
9. Finally, Turkey could achieve to export to EU with respectively higher EXPY value rather than MENA, Asia or Africa (World Bank, 2012). Only the export to the US has greater value of EXPY rather than European Union.

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ANNEX A

DRAWBACKS OF THE MODEL AND SUGGESTIONS FOR THE FUTURE

A.1. Drawbacks of the Model

As it is mentioned above that PRODY and EXPY which is generated in Hausmann et al. (2005), these variables are used to express the sophistication and the quality of export commodities and export baskets of countries, respectively. PRODY is basically sum of GDP per capita of all countries which exports the good weighted by RCA values of the countries in this good whilst the sum of PRODY values of the goods in a export basket which is weighted by share from total export gives the concept of EXPY. There are a few drawbacks, however, if these concepts are focused in depth.

In order to avoid the problems about countries that produce and export resource-intensive manufacture and mineral fuels since these commodities have higher

RCA values in those countries that produce and export these commodities and these greater RCA values could imply biased PRODY values with higher GDP per capita in these countries.

As it is well-known that RCA value is being calculated as the proportion of share of a sector in a country and share of that sector in export volume of the world. Resource-intensive manufactures and mineral fuels are produced by a few countries and shares of these commodities from the export volume of producer countries are relatively higher than those in other countries. For this reason, PRODY value for these kinds of commodities might be calculated in a biased way; therefore, commodities like resource-intensive manufactures and mineral fuels are not subject in the study in order to avoid this possible bias in the calculation of PRODY for commodities.

Moreover, it is stated in Hausmann et al. (2005) that countries that could produce and export especially one or two specific items could achieve to have greater values of EXPYs rather than 'usual' countries. In addition to this, if that specific item has high PRODY value fortunately, the EXPY level of that country might be very high to be able to imply that the country has a very qualified export basket. It is indicated in Hausmann et al. (2005) that, however, PRODY and EXPY levels could be more trustful in such countries that could produce and export 'a commodity portfolio'. For instance, French Polynesia ranks in the top five among those with the largest EXPY by producing and exporting cultured pearl that has a heavy weight in the total export volume and this product has a relatively large PRODY value. Additionally, in regard to their GDP per capita values, a few countries also have larger EXPY values such as Mozambique and Swaziland. These countries could produce and export a few specific

products with higher PRODY levels, so they could achieve to have higher EXPY values in regard to their GDP per capita values (Hausmann et al, 2005). Therefore, these issues are being focused on while doing calculations on PRODY and EXPY.

Another drawback that could be seen in this model, secondly, is that PRODY value is calculated and accepted equal in every single country and thought to express the quality level of that commodity/sector. Although PRODY level of a commodity is thought to be equal in every country; however, the quality of that commodity/sector differs among countries in the real life. For example, shirt for men with 6105 HS4 code has $6249 PRODY value in 2010 for all countries that are in this study but it could be easily thought that the quality of men's shirts in Italy is relatively higher than that in other countries. Therefore, there could be said that PRODY could not express the quality level itself.

Besides, relative unit price for exporting sectors and commodities are studied by economists against this possible problem. Henn et al. (2013) indicates that average country-level quality is strongly correlated with income per capita and relative unit prices could also be an indicator for the quality of export products. Regarding these unit prices, countries could achieve to perform better in economic indicators with sector-specific policies rather than other countries (Henn et al, 2013, Kemeny, 2009). Therefore, unit prices could be a solution for the problem that PRODY value is calculated in a year for all countries and it might not express the exact quality level of the product among different countries.

Moreover to this criticism on the calculation of PRODY value, technological intensity of exporting products could also be an indicator for their quality and it could also be engaged into the calculation of PRODY besides GDP per capita. Economists agree that GDP level of countries imply their capacity of producing and exporting higher quality products but ability to use higher level of technology in producing process could also imply the right usage of this capacity. OECD has classified technological intensities of manufacturing products by four categories: low technology, middle-low technology, middle-high technology and high technology. These technology intensity levels could be engaged into the calculation of PRODY by focusing on the technological intensity that products use in the production process as well. Therefore, PRODY would imply whether exporting products have share from higher levels of technology intensities and how higher technology these exporting products include in their production processes.

The third drawback that could be stated in this study is that PRODY is calculated once in a study since otherwise there are turbulences among EXPY levels of countries in different years because of the nominal differences between years. It is well-known that quality levels of commodities and sectors have been differed for years such that exporting live horses was accepted as high quality export in the early 1970s since developed countries such as Great Britain, France were exporting them with higher RCA values and GDP per capita levels. In the 1980s, textile was the same with live horse export that was in 1970s and textile had higher PRODY values since developed countries ranked in the top of textile exporting. In the second decade of the 21st country, pharmaceutical products are being high quality products and developed

countries that are able to produce and export these products could achieve to have higher EXPY values. In order to avoid the turbulences in EXPY levels of countries because of the changing trends in product qualities, PRODY values for a specific study are accepted equal for all years that are subject to the study such that PRODY levels of the products in 2010 are accepted equal for the term between 1998 and 2011. However, changes in trends of product quality definitions and in PRODY levels could be the subject of another and detailed study in order to find out how these trend changes affect the quality of products and countries, respectively.

The last drawback of the model is that the calculation of PRODY and EXPY does not focus on spillovers through both products and countries. In the literature, it is indicated that producing higher quality products and exporting them to more developed countries could provide to produce higher quality products and export them to more developed countries respectively. Thus, there could be a spillover effect in a term of years among both the quality level of products and export baskets of countries and this issue could be indicated as a drawback of the model in which PRODY and EXPY levels imply the quality levels of products and export baskets of countries respectively.

A.2. Suggestions for the Future

This study tries to indicate the relationship between export destinations of Turkey and quality level of both exporting sectors and export basket between 1998 and 2011. Although there are numerous studies that state this relationship for other

countries, this study contributes to the literature by stating the relationship in Turkey. It is remarkable that share of European Union from the total export volume of Turkey steeply decreased in 2008 and 2009 whilst share of MENA from Turkey's total export steeply increased in the same years with the effect of both European Economic Crisis and 2023 Turkey Export Strategy and Action Plan in which it is stated that there would be subsidies to export to countries that are located in Middle East and North Africa. Therefore, it would be much more beneficial to develop this study in the future in order to provide with kind of policy suggestions and projections. In this section, there are suggestions and plans in order to develop this study in the future.

First of all, it is a pretty drawback that the study includes the data between 1998 and 2011, so the first suggestion for the future is to develop this study with expanding data for Turkey in order to observe the path of EXPY within years. Besides, it would be also easy to observe the path of technological intensity and share of country groups at the same time with greater data.

Secondly, it is planned to generate future projections in regard to 2023 Turkey Export Strategy and Action Plan just after developing the dataset of Turkey. There are growth projections of Turkey's export destinations that are generated by international institutions and future projections for EXPY level of Turkey are thought to be generated with using these projections.

In addition to these, one of the most important suggestions for future studies is developing this study with focusing on relative unit prices of exporting sectors in countries. As it is mentioned in the chapter in which the drawbacks of the model are

discussed, although PRODY values that express the quality level of commodities/sectors are accepted as equal for all countries, their quality differs in the real life among countries. For this reason, this study is planned to be developed by relative unit prices for exporting sectors in order to express the quality concept better than PRODY does.

It is thought by the author that if the relative unite prices are engaged into the study, there would be more detailed analysis for quality levels of sectors. Moreover, it is also thought to be developed that with this detailed analysis on quality levels of sectors, it is planned to generate growth projections with finding out which sector growth policies should focus on. If growth projections for Turkey focus on central sectors that have greater unit prices and potential to have greater growth rates, it would be easier to reach the goals that are indicated in 2023 Turkey Export Strategy and Action Plan. Therefore, it is thought that this study with its developed parts in the future might be a kind of policy suggestion for 2023 Turkey Export Strategy and Action Plan which is essential for future projections of Turkey.

Besides relative unit prices, technological level and the intensity of that level are also thought to be engaged into this study in the future in order to express how export destinations have effects on technological level and intensity of exporting sectors and commodities in depth. It is planned to generate a regression model in which technological level will be included by dummy variables and technological intensity level will be included in the model in order to explain how the relationship is between export destinations and technological intensity of exporting sectors and products.

Last suggestion for the future about this study is to find out spillover effects of both producing higher quality products and international relationship between countries. Firstly, it is indicated in the literature that countries that are able to produce higher quality products once, they would be able to produce them in the future more easily since they could expand their capacity to produce higher quality products and it could be called as spillover through products.

In addition to this, spillover effects of regional trade agreements between countries on the quality levels of these countries' export baskets are planned to be studied in the following studies. There are several trade agreements between countries and country groups that could affect the sophistication and the structure of these countries' export baskets such as Transatlantic Trade and Investment Partnership (TTIP) and Trans-Pacific Partnership (TPP). It is already proven that export destinations have effects on the sophistication and quality of countries' export baskets, and having new export destinations which have different structures in international trade would also affect the export baskets of countries that are located in these trade agreements in this regard.

To summarize, although this study has contribution about the relationship between export destinations of Turkey and its export basket's quality and sophistication, more studies are planned to be done in the future in order to develop this study and achieve to contribute more to the literature.

ANNEX B

WHY DO FIRMS AND COUNTRIES DECIDE TO EXPORT?

B.1. Why Some Firms Export?

In the literature, there are different reasons why firms decide to export and a few of these reasons are stated in this part of the study.

B.1.1. Export with Experience

Past experience of the firms is one of the most important factors about why firms choose exporting. There are lots of studies which mention that if firms have experience in exporting from the previous years, the probability of their exporting would increase in current or future time.

In Bernard et al. (2004), it is indicated that former exporting experience and productivity have positive effect on deciding to export. Last year's export experience increases the probability of the entry into exporting by 37% as export experience from two years ago does by 11.9% for U.S. firms. The study which was made for the U.S. firms between 1984 and 1992 shows that among 197000 manufacturing establishments, past experience have significantly positive effect on firms' decision to export (Bernard et al., 2004). In addition to this, there is also another study that examines the effect of firms' export experience to export decision which is Clarides, Lach and Tybout (1996). Micro data on developing countries which are used in Clarides et al. (1996) often show that exporting firms are more efficient than non-exporting firms and there is causality pattern between exporting and efficiency; flowing from exporting experience to improvements in performance. Since export history does not significantly affect the cost function, the association between exporting and efficiency is most plausibly explained as low-cost producers choosing to become exporters (Clarides et al., 1996).

In Alvarez et al. (2008), there are given two definitions that analyze the effects on export decision, learning from experience and learning from others. Learning from experience is defined as that it is known that exporting a certain product, or to a certain market, increases the probability of exporting the same product to a different market or a different product to the same market. It is indicated that firms exporting a particular product are almost 50% more likely to export the same product to other markets in the following year as a firm exporting to a particular market is approximately 47% more likely to export a new product to the same market in the

following year. Previous experience exporting a certain product or exporting to a certain market increases the probability that a firm will export those products to new markets, or export new products to the same markets (Alvarez et al., 2008).

According to Alvarez et al. (2008), learning comes from two different factors which are the number of firms that previously exported the same product to other markets and the number of firms that previously exported other products to the same market. Although Eaton et al. (2004, 2005), Bernard et al. (2005) and Damijan et al. (2004) studies the factors on export decision for France, USA and Slovenia, respectively, they did not study the potential role of learning. Besides the positive effect of previous experience exporting a certain product or exporting to a certain market, the likelihood of exporting new product increases the number of firms which have exported a certain product or catered to a certain market previously. Previous experience exporting a certain product or exporting to a certain market, eventually, increases the probability that a firm will export those products to new markets, or export new products to the same markets (Alvarez et al., 2008).

Tybout (2000) and Bigsten et al. (2000) state that as firms gain experience, they learn how to reduce their costs and become more competitive on foreign markets but this hypothesis is strongly rejected by Fafchamps et al. (2002) for Moroccan firms since in Moroccan manufactures, who export do so shortly after firm creation (42% in a year and 75% in three years). Besides, there is a part which seems to be essential and shocking that although there is a commonly held view which indicates that firms have to gain experience in domestic market before exporting but in this study it is stated that young firms also export. It is also found that among exporters, new products are

exported very rapidly after production has begun. The share of exported output increases 2-3 years after a new product is introduced (Fafchamps et al., 2002).

It is indicated in Clarides, Lach and Tybout (1996) that relatively efficient firms become exporters but firms' unit costs are not affected by previous export market participation, in contrast to the studies that state the positive effect of export experience.

If it is wanted to be summarized, it could be seen that although the significance level of the effect varies among countries and different market structures, previous experience of a firm in exporting might have positive effect on firms' decision to export. Firms that have been exported different products to a given market or given product to different markets could know the structure of product or market better than a firm that has not exported yet; so this familiarity of the firm which has exported different products to a given market or given product to different markets with the structures of the product or the market could help it to make the decision of exporting in current or future time.

Since it is well known that firms can also learn by exporting, the concept of learning-by-exporting could also be a type of gaining experience for firms. As long as firms export different products to a given market or given product to different markets, they gain experience with the ability of learning the structure of these export products or export destinations, so the more they go on exporting the better they learn.

Learning-by-exporting hypothesis which has been commonly indicated in many studies such as Baldwin and Gu (2003) for Canadian firms, Bigsten et al. (2000) for African firms. Aw et al. (2000) argues that firms which export gain more

information about the productivity techniques through their relationships with abroad. For instance, because firms face more competition abroad than at home, only productive firms can succeed in exporting (Bernard et al., 1999; Bigsten et al., 2000).

The progress of exporting from the production of the good to the sale of it could be defined as gaining experience from doing. Learning by exporting, therefore, could be stated in as learning by doing since it could be indicated that the more firms focus on producing the same product and exporting to different markets or producing different products and exporting to a given market, the more they could gain experience from this production and exporting progresses. In this study, thus, learning by exporting concept is stated in learning-by-doing part of this chapter as well.

B.1.2. Learning from Others and Spillovers of Neighboring

In Bernard, Jensen (2004), spillovers from the export activity of other plants are significant factor of increase of the entry into exporting probability. Similarly to Bernard et al. (2004), Krugman (1992) also states that activities of neighboring firms may reduce entry costs which could help firms to decide more easily to enter a foreign market. It is indicated in Bernard et al. (2004) that there are three studies that examine factors influencing the export decision which are Roberts and Tybout (1997), Aitken et al. (1997) and Clarides et al. (1998) and they state export participation and geographic and sectoral spillovers on export decision with the cases from Colombia, Mexico and Morocco.

In Alvarez et al. (2008), as it has been mentioned before, there are given two definitions that analyze the effects on export decision, learning from experience and learning from others. Besides learning from experience, learning from others is defined as that the number of firms exporting a product, or to a given market, increases the probability that a firm will introduce those products to a new markets, or different products to the same markets (Alvarez et al., 2008). This learning from others subject is closely related to the one that is mentioned in Bernard et al. (2004), Clarides et al. (1998) and Aitken et al. (1997).

Presence of other exporters might make it easier for domestically-oriented firms to break into foreign markets and this opens the possibility that export promotion policies are welfare improving. Presence of exporters, on the other hand, does not reduce the unit production costs of neighboring firms (Clarides et al., 1996).

Relationship between firms' entry and exporting activity by other firms is indicated by Hausmann and Rodrik (2001) as that new entrants may also erode potential profits and therefore reduce investments in new export-related activities (Alvarez et al., 2008).

The likelihood of exporting new product increases the number of firms which have exported a certain product or catered to a certain market previously (Alvarez et al., 2008). It could be, thus, given as an example of learning by others but not by other firms, by other products.

To conclude, firms might make the export decision while learning with other firms like learning from their experience. Although there are numerous studies that deny the positive effect of spillovers by other firms to the firm's export decision, there

are lots of studies that indicate that firm neighboring or the concept of learning by others has increasing effect on the probability of export decision which is given by firm.

B.1.3. Ability to Reduce Costs and Focusing on Productivity

In Fafchamps et al. (2002), productivity learning and market learning are factors of export decision for firms which also mean being able to have lower costs and design products, respectively. It is stated in the study that although productivity learning which also mean having lower cost has relatively little evidence, both market and productivity learning enable firms to export. It is widely accepted from the studies such as Hallward-Driemeier et al. (2002), Mengistae and Pattilo (2004), Alvarez (2004), Silvente (2005) and Wagner (2002) that a positive relationship exists between exports and the productivity. This situation could be also said like as manufacturing firms which export are on average more productive than non-exporters. Because Fafchamps et al. (2002) is made for Morocco, an example for developing countries, it is stated that firms in Morocco have to learn how to keep with rapidly changing consumer tastes and fashions and they also have to adapt on the European distribution system in which adherence to delivery dates and quality standards is crucial (Fafchamps et al., 2002).

According to the micro data that is used in Clarides et al. (1996) for developing countries, exporting firms are more efficient than non-exporting firms. Therefore, this

could be a result of cost reducing ability of learning-by-exporting concept. Moreover, plants from the studies in Colombia, Mexico and Morocco, which begin exporting, tend to have relatively low average variable cost (Clarides et al., 1996). In addition to this study, the effect of reducing sunk cost on export probability is studied for Colombian plants by dynamic model by Roberts and Tybout in 1997.

The cost of the entry into a new market, especially in order to export, plays role on the probability level of exporting for firms and it is also indicated in Bernard et al. (2004) that entry costs are significant on the export probability of the firms. It is stated that although geographical spillovers or neighboring of firms are not significant on the probability of exporting, entry costs are significant and important for export decision for firms.

Melitz (2003) and Bernard et al. (2003) have formerly developed some theoretical models in which trade costs (variable and fixed) can explain why only some firms export, why exporting and productivity are positively correlated, and how a trade liberalization is linked with increases in aggregate productivity and welfare. It is indicated in the study that once firms pay sunk cost to enter a particular market, they may be in a better position to introduce a new product to that market. Once firms pay the entry cost for introducing a new product, additionally, it has a higher probability of selling the same product to other markets.

As a conclusion of Fafchamps et al. (2002), a firm must be significantly productive before it can export and success in export depends on familiarity with export markets through productivity learning and market learning. There are also policy implications for Morocco in the study which are the argument that protection

of the domestic market is essential for firms to gain enough experience to compete in international markets does not appear valid and helping new firms is essential to maximize the manufacturing export response to changes in relative prices because they play role in trade liberalization primarily (Fafchamps et al., 2002).

It is indicated in the study that relatively efficient firms become exporters but firms' unit costs are not affected by previous export market participation, in contrast to the studies that are mentioned above (Clarides et al., 1996).

B.1.4. Market Familiarity and Government Export Promotion

Besides the other factors from numerous studies, Fafchamps et al. (2002) focuses on market familiarity that could be defined as familiarity with consumer tastes and market conditions. However, it is also stated in the study that firms first need to learn how to reduce costs before attempting to penetrate export markets (Prebisch, 1963, the references cited in Tybout (2000) and Fafchamps et al., 2002). Therefore, knowing the structure of market and consumer tastes is not enough on its own; firms could also know to adapt their production and export structures to these market structures and consumer tastes.

Bernard et al. (2004) states that state government promotion could be one of the factors on firms' decision in exporting. According to the continuous panel data for U.S. firms from 1984 to 1992 among 197000 manufacturing establishments, state export promotion has slightly positive effect on firm decision in exporting but this

effect is not significant because it is indicated in the study that the promotion policy might focus on mostly small or medium sized firms. Government export promotion, as a conclusion, has no noticeable effects on exporting decision in the study (Bernard et al., 2004).

B.1.5. Firm Size and Labor Force Composition

According to econometric model in Alvarez et al. (2008), the coefficient for firm size is positive and significant. Firm size is measured in terms of its export value in the previous period. Thus, it comes as no surprise that larger firms, which are likely to be more productive and earn greater profits, are also more likely to introduce a new product. Additionally, size may also be correlated with entry costs. Larger firms may, for example, have more foreign contacts and obtain better deals in contracts with foreign distributors (Alvarez et al., 2008). Roberts and Tybout (1997) also states that firm size is positively related to the propensity to export.

Besides the other characteristics of the firm such as product mix, productivity and past performance in exporting; labor force composition is also important increasing the propensity for entry into foreign markets according to the hypotheses that is stated in Bernard et al. (2004). Labor force quality which is also considered as labor quality in the study could be defined as that if exported goods are of higher quality and thus have a higher value-to-weight ratio, then it would be expected the

quality of the workforce to be positively related with entrance into foreign markets (Bernard et al., 2004).

B.1.6. Historical Issues

It is briefly indicated in Fafchamps et al. (2002) for Morocco that historical issues may also play role on the increase of firms' entry into foreign markets and their exporting activity. Another possible discussion process is suggested by the geographical concentration of Moroccan manufacture exports to France and Spain, two countries with a history of Moroccan immigration. It is conceivable that some returning migrants take advantage of their familiarity with French and Spanish tastes to invest in manufacturing exports (Fafchamps et al., 2002). Historical subjects, therefore, could play role on firms' decision whether to export and where to export.

B.2. Why Countries Need to Produce Higher Quality Goods?

While countries try to increase their export volumes to achieve higher growth rates, they should not avoid that the main part of increasing export volume belongs to producing higher quality goods because while producing higher quality goods the producer side gains more added value rather than the one who produces lower quality goods. Focusing on right goods in production progress lead countries have higher

export volumes that are supported by higher growth rates. Since the technology level over the world have been continuously increasing as it is effecting the production progress for all countries, such as goods could be produced much more easily rather than they used to be, and countries that could catch this increase progress of the technology and technology level in production progress could gain much more added value from the production and export.

This situation is surely related to income/productivity level of the production which is implied by PRODY concept in the previous parts of this thesis and the higher quality goods are in export bundles of countries, the higher PRODY and EXPY levels they have which could be implied as that those countries could have higher growth rates since it is shown before that higher EXPY levels are positively correlated with higher growth rates (Hausmann et al. 2007).

The share of the goods which have higher quality from the total volume of export matters for the countries because as it could be seen from the example from Turkey that if lower quality goods have more share from the total volume of export, this situation causes countries have lower PRODY and EXPY values with lower growth rates.

This situation has been also indicated by policy maker and commentators in Turkey. Zafer Caglayan, former Turkish Minister of Economy, has stated that Turkey cannot achieve to have $500 billion export with only porterage. In his opinion, the structure of production and export bundles are important because higher quality implies higher added value which means higher growth rates. He indicated that export gain of Turkey per kilo is equal to $1.58 whilst that value are equal to $3.5 in South

Korea and $4 in Germany which means that South Korea earns $3.5 and Germany earns $4 for a kilo of export while Turkey could only earn $1.58 for a kilo of export. This mismatch causes the lack of competitiveness for Turkey with other countries which also export in the markets Turkey is in. Therefore, it would be too difficult to achieve the goals for 2023 with current production and export structure, former Minister Caglayan states.

Another person who has always stated that this quality concern matters on countries' economic development through economic indicators is Guven Sak, Executive Director of Economy Policy Research Institute. Sak (2010) states that Turkey could not be rich with only exporting iron for construction sectors abroad. It is also indicated in the study that focusing on correct sectors which have higher added values, highly correlated with other sectors that could lead the country earn more from this correlation and which are highly open to be developed by industrial developments in the country could help Turkey to achieve the goals for 2023.

These two opinions about producing and exporting higher quality goods are also one of the main thoughts that are supported in this thesis because it is claimed in this study that in order to provide economic development, the production and export structure of Turkey should be developed and with this way Turkey could have higher PRODY and EXPY levels and conclusively higher growth rates.

It has been always said in this study that producing and exporting higher quality goods are like a must for the countries that have bigger aims in the future which could be achieved with higher growth rates and with doing these, increasing PRODY and EXPY levels are also essential for these kinds of countries. It could be asked, however,

that why they are so much important for Turkey? The answer of this question is in Hausmann et al. (2007) in which it is stated that EXPY levels of the countries are such an indicator for the countries that are developing such as Turkey. Since it is already known that there is a positive correlation between EXPY levels and growth rates and EXPY levels are kind of indicators for developing countries, in order to reach higher growth rates with increasing export could be only with developing production and exporting structure and increasing EXPY levels. It should not be forgotten that higher EXPY values imply higher per capita GDPs for developing countries such as Turkey.

In addition to these, Turkey would not be done after achieving to develop the production and exporting structure and increasing EXPY level because in order to make these Turkey should concentrate on right markets that could also handle with these higher levels of EXPY. It is exemplified in Sak (2010) that Turkey could not be rich with exporting iron for the construction sectors in Iraq because it is definite that Iraq has lower quality import bundle. Therefore, no matter how qualified the country produces, there should be a place for the country that it could export this qualified bundle. It is well-known that richer countries or markets could import more quality goods rather than relatively poorer countries or markets. Thus, even in during the increase the quality of production, it should be concentrated on right markets in order to achieve exporting these higher quality goods. If there would be still relatively poorer markets around, this increase in quality of production would not work.

In the previous parts of the study, it has been continuously stated that it is essential to produce higher quality goods which could be exported to richer countries rather than relatively poorer ones. It is underlined that Turkey's current export bundle

and production structure is a bit far away from it is wished to be, so it has been difficult to compete with other countries that are also exporters in Europe and MENA. It could be beneficial to develop production structure and increase the share of higher quality goods from the total volume of export and it would be also beneficial for increasing the EXPY value which is implied as the income/productivity level of the export bundle and in the light of the knowledge of the correlation between EXPY levels and growth rates, developing production and export structure would be one of the most helpful factors of achieving higher growth rates.

On the other hand, it could be a beneficial and helpful strategy to focus on richer markets previously and then shape the production structure according to this focusing. In this way, however, since world economy is always working and there is no time to lose with this adaptation progress, this progress would be harmful for the country's economy and foreign trade. Because of the fact that richer countries demand higher quality goods so there are always markets for higher quality goods and there are higher added values for the countries which produce and export higher quality goods, it could be more rational decision to develop the production structure and increase the share of higher quality goods from the total volume of export. Thus, there would be no difference between focusing on production or richer markets previously because as a result of these two strategies, there are same results which are higher PRODY and EXPY values and growth rates.

In addition to all these, as it is mentioned before, it is stated in Harding (2010) that there is a link between the productivity of export destinations and export-sector productivity. Therefore, this claim could be implied as that the more productive your

export destination is the more productive your export sectors are. In Hausmann et al. (2007), it is said that faster growth in countries exporting more sophisticated, Loecker (2007) indicates that higher productivity is gained from exporting to more developed countries and Bastos et al. (2010) claims that more productive firms choose to produce higher quality goods and export them to relatively richer countries. Therefore, there are only a few in lots of thoughts about that there is a strong relationship between the export destination and productivity of a country and it is known that income/productivity levels of countries' production and export bundles are related to higher growth rates, so there is also a link between export destinations and growth rates. By this reason, it could be so essential to choose right export destinations in trade in order to be able to produce more sophisticatedly and achieve to have higher economic development indicators.

As it is told by governors, policy makers and economists in Turkey, where Turkey export to really matters because import bundles of every markets or countries are surely not the same. While a country demands relatively lower quality goods, another does only higher quality goods, so focusing on which country it would be exported is important to have higher productive production and export structure and higher shares of productive goods in the total volume of export. By choosing the right destination for exporting, Turkey could gain more from export and achieve to have higher growth rates which are the main parts of 2023 aims. Therefore, markets and countries Turkey export to could be really well analyzed in how productive and rich they are.

APPENDIX

REGRESSION OUTPUTS

A.1. Relationship between EXPY and Share of Country Groups

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	14758.9	1100.09	13.4160	<0.00001	***
EU	5623.04	1743.49	3.2252	0.00808	***

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	278923.7		S.E. of regression	159.2379
R-squared	0.962546		Adjusted R-squared	0.959141
F(1, 11)	10.40167		P-value(F)	0.008084
rho	0.138742		Durbin-Watson	1.510959

Model 1 Dependent variable: EXPY, Independent variable: Share of EU (Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.943102)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	18571.7	918.503	20.2195	<0.00001	***
MENA	-7618.51	2492.84	-3.0562	0.01093	**

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	286146.7		S.E. of regression	161.2865
R-squared	0.960542		Adjusted R-squared	0.956955
F(1, 11)	9.340060		P-value(F)	0.010927
rho	0.170364		Durbin-Watson	1.531554

Model 2 Dependent variable: EXPY, Independent variable: Share of MENA (Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.93292)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	18296.3	1200.37	15.2421	<0.00001	***
Asia	-14706.8	8214.69	-1.7903	0.10093	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	411207.4		S.E. of regression	193.3455
R-squared	0.943658		Adjusted R-squared	0.938536
F(1, 11)	3.205198		P-value(F)	0.100934
rho	0.312488		Durbin-Watson	1.184694

Model 3 Dependent variable: EXPY, Independent variable: Share of Asia (Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.934445)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	16601.5	760.926	21.8175	<0.00001	***
Europe	-9045	5224.87	-1.7311	0.11134	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	398020.9		S.E. of regression	190.2202
R-squared	0.945469		Adjusted R-squared	0.940512
F(1, 11)	2.996861		P-value(F)	0.111339
rho	0.365761		Durbin-Watson	1.189327

Model 4 Dependent variable: EXPY, Independent variable: Share of Europe (excluding EU)
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.911238)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	15023.6	538.703	27.8885	<0.00001	***
North_America	2851.49	5311.74	0.5368	0.60208	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	477222.1		*S.E. of regression*	208.2878
R-squared	0.933918		*Adjusted R-squared*	0.927911
F(1, 11)	0.288183		*P-value(F)*	0.602076
rho	0.426890		*Durbin-Watson*	1.074984

Model 5 Dependent variable: EXPY, Independent variable: Share of North America
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.883185)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	14785.5	591.507	24.9964	<0.00001	***
Africa	319.279	14852.3	0.0215	0.98323	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	486637.0		S.E. of regression	210.3324
R-squared	0.932601		Adjusted R-squared	0.926474
F(1, 11)	0.000462		P-value(F)	0.983234
rho	0.442593		Durbin-Watson	1.054158

Model 6 Dependent variable: EXPY, Independent variable: Share of Africa (Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.859337)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	14196.9	515.367	27.5472	<0.00001	***
Latin_America	24726.9	23142.1	1.0685	0.30819	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	445086.2		S.E. of regression	201.1526
R-squared	0.938354		Adjusted R-squared	0.932750
F(1, 11)	1.141647		P-value(F)	0.308192
rho	0.496870		Durbin-Watson	0.984977

Model 7 Dependent variable: EXPY, Independent variable: Share of Latin America
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.840981)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	14790.8	529.929	27.9108	<0.00001	***
Oceania	15337.3	91139.9	0.1683	0.86941	

Statistics based on the rho-differenced data:

Mean dependent var	13347.87		S.D. dependent var	775.5627
Sum squared resid	485207.1		S.E. of regression	210.0232
R-squared	0.932795		Adjusted R-squared	0.926686
F(1, 11)	0.028319		P-value(F)	0.869415
rho	0.448979		Durbin-Watson	1.043006

Model 8 Dependent variable: EXPY, Independent variable: Share of Oceania (Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.863327)

A.2. Relationship between Technological Intensity and Share of Country Groups

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	-0.0625142	0.0258601	-2.4174	0.03416	**
EU	0.203456	0.0449596	4.5253	0.00086	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000478		S.E. of regression	0.006590
R-squared	0.811393		Adjusted R-squared	0.794247
F(1, 11)	20.47842		P-value(F)	0.000864
rho	0.248994		Durbin-Watson	1.396047

Model 9 Dependent variable: Share of High Technology, Independent variable: Share of EU
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.385537)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.105101	0.00864275	12.1606	<0.00001	***
MENA	-0.300803	0.0495152	-6.0750	0.00008	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000414		S.E. of regression	0.006138
R-squared	0.836320		Adjusted R-squared	0.821440
F(1, 11)	36.90503		P-value(F)	0.000080
rho	0.290087		Durbin-Watson	1.331280

Model 10 Dependent variable: Share of High Technology, Independent variable: Share of MENA
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.215084)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.102323	0.0141515	7.2305	0.00002	***
Asia	-0.664025	0.182777	-3.6330	0.00394	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000496		S.E. of regression	0.006716
R-squared	0.805368		Adjusted R-squared	0.787674
F(1, 11)	13.19848		P-value(F)	0.003936
rho	0.143748		Durbin-Watson	1.493525

Model 11 Dependent variable: Share of High Technology, Independent variable: Share of Asia
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.529828)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.103585	0.00559119	18.5264	<0.00001	***
Europe	-0.65586	0.0719143	-9.1200	<0.00001	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000239		S.E. of regression	0.004665
R-squared	0.905516		Adjusted R-squared	0.896926
F(1, 11)	83.17463		P-value(F)	1.84e-06
rho	0.039097		Durbin-Watson	1.673438

Model 12 Dependent variable: Share of High Technology, Independent variable: Share of Europe (excluding EU)
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.136113)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.0205241	0.0034467	5.9547	0.00010	***
North_America	0.465511	0.0437556	10.6389	<0.00001	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000160		S.E. of regression	0.003816
R-squared	0.936751		Adjusted R-squared	0.931001
F(1, 11)	113.1862		P-value(F)	3.97e-07
rho	0.233244		Durbin-Watson	1.447160

Model 13 Dependent variable: Share of High Technology, Independent variable: Share of North America
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.21404)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.0939785	0.00434586	21.6248	<0.00001	***
Africa	-2.0357	0.216174	-9.4170	<0.00001	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000412		S.E. of regression	0.006121
R-squared	0.837411		Adjusted R-squared	0.822631
F(1, 11)	88.67955		P-value(F)	1.34e-06
rho	-0.216422		Durbin-Watson	2.406250

Model 14 Dependent variable: Share of High Technology, Independent variable: Share of Africa
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = -0.273133)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.0736206	0.0175249	4.2009	0.00148	***
Latin_America	-1.61284	0.85877	-1.8781	0.08712	*

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000610		S.E. of regression	0.007447
R-squared	0.762016		Adjusted R-squared	0.740382
F(1, 11)	3.527177		P-value(F)	0.087119
rho	0.306141		Durbin-Watson	1.063693

Model 15 Dependent variable: Share of High Technology, Independent variable: Share of Latin America
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.812635)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	-0.0264491	0.0485193	-0.5451	0.59655	
Oceania	8.74494	2.2745	3.8448	0.00272	***

Statistics based on the rho-differenced data:

Mean dependent var	0.054698		S.D. dependent var	0.014525
Sum squared resid	0.000338		S.E. of regression	0.005541
R-squared	0.866676		Adjusted R-squared	0.854556
F(1, 11)	14.78234		P-value(F)	0.002724
rho	-0.006360		Durbin-Watson	1.535578

Model 16 Dependent variable: Share of High-Technology, Independent variable: Share of Oceania
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.967753)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.3277	0.049293	6.6480	0.00004	***
EU	0.286124	0.0795526	3.5967	0.00419	***

Statistics based on the rho-differenced data:

Mean dependent var	0.277175		S.D. dependent var	0.044936
Sum squared resid	0.000582		S.E. of regression	0.007271
R-squared	0.977252		Adjusted R-squared	0.975184
F(1, 11)	12.93598		P-value(F)	0.004194
rho	-0.236946		Durbin-Watson	2.384981

Model 17 Dependent variable: Share of Mid-High Technology, Independent variable: Share of EU
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.939785)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.428662	0.0432487	9.9116	<0.00001	***
MENA	-0.188845	0.147284	-1.2822	0.22614	

Statistics based on the rho-differenced data:

Mean dependent var	0.277175		S.D. dependent var	0.044936
Sum squared resid	0.001012		S.E. of regression	0.009593
R-squared	0.958318		Adjusted R-squared	0.954529
F(1, 11)	1.643982		P-value(F)	0.226143
rho	-0.292601		Durbin-Watson	2.559390

Model 18 Dependent variable: Share of Mid-High Technology, Independent variable: Share of MENA
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.903937)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.647193	0.0993058	6.5172	0.00004	***
EU	-0.641946	0.175534	-3.6571	0.00377	***

Statistics based on the rho-differenced data:

Mean dependent var	0.269812		S.D. dependent var	0.052856
Sum squared resid	0.003691		S.E. of regression	0.018318
R-squared	0.897379		Adjusted R-squared	0.888050
F(1, 11)	13.37441		P-value(F)	0.003774
rho	0.084072		Durbin-Watson	1.809576

Model 19 Dependent variable: Share of Mid-Low Technology, Independent variable: Share of EU
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.720344)

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.13721	0.0502792	2.7290	0.01961	**
MENA	0.821244	0.268029	3.0640	0.01077	**

Statistics based on the rho-differenced data:

Mean dependent var	0.269812		S.D. dependent var	0.052856
Sum squared resid	0.005082		S.E. of regression	0.021495
R-squared	0.849332		Adjusted R-squared	0.835635
F(1, 11)	9.388171		P-value(F)	0.010774
rho	0.023546		Durbin-Watson	1.871614

Model 20 Dependent variable: Share of Mid-High Technology, Independent variable: Share of MENA
(Cochrane-Orcutt, using observations 1999-2011 (T = 13), rho = 0.628881)