Hacettepe University Graduate School of Social Sciences

Department of Economics

DETERMINANTS OF SECTORAL AND FIRM SIZE EXPORT PERFORMANCE: EMPIRICAL EVIDENCE FROM THE TURKISH MANUFACTURING INDUSTRY

Ahmet DİNÇER

Ph.D. Dissertation

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ACCEPTANCE AND APPROVAL

The jury finds that Ahmet DİNÇER has on the date of 9/4/2021 successfully passed the defense examination and approves his Ph.D Dissertation titled "DETERMINANTS OF SECTORAL AND FIRM SIZE EXPORT PERFORMANCE: EMPIRICAL EVIDENCE FROM THE TURKISH MANUFACTURING INDUSTRY".

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[*İmza*]
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ABSTRACT

DİNÇER, Ahmet. Determinants of Sectoral and Firm Size Export Performance: Empirical Evidence from the Turkish Manufacturing Industry, Ph.D., Ankara, 2021

Export is considered as one key element of economic development and growth. Export is the source of foreign exchange earnings, economies of scale and specialization, and new technology. Therefore, understanding the factors that determine export performance is vital to design and implement trade and industrial policies aimed at stimulating exports. The manufacturing industry export performance draws a growing interest in theoretical and empirical studies.

Turkey's manufacturing sector recorded a remarkable export performance over the last two decades. The share of Turkey in world exports has increased from 0,44% in 2000 to 0,92% in 2017[1]. The main purpose of the thesis is to address microeconomic (sector-specific) and macroeconomic variables that affect export performance both at the sectoral level and at the sectoral level classified according to small, medium, and large firm size. To the best of our knowledge, this study is the first one focusing on the microeconomic (R&D, bank credit, profitability, etc.) and macroeconomic (the real exchange rates and external demand) determinants of export performance of manufacturing industry sectors and manufacturing industry sectors according to firm size. In addition, the sectoral real exchange rate and trade partners' growth rates are calculated for 23 manufacturing sectors.

The determinants of manufacturing industry sectors and firm size export performance (small, medium, and large-sized firms) in the Turkish manufacturing industry are estimated using the IV-2SLS and the system GMM methods to overcome the endogeneity problem in the models. The estimation results of the sectors demonstrate that lagged export volume, R&D and bank credits are the factors that stimulate export performance, while reel exchange rates and growth rates of trade partners are the other factors that have a significant impact on export performance. The findings for firm size are somewhat mixed and vary according to firm size. Our estimation results suggest that specific export promoting policies should be implemented tailored to the needs of firm size.

Keywords: export performance, manufacturing industry, determinants of exports, exports based on firm size, sectoral external demand, and sectoral real exchange rates.

[1] International Financial Statistics (IFS), Trade of Goods selected indicators, web page: https://data.imf.org/regular.aspx?key=61545870

ÖZET

DİNÇER, Ahmet. İhracat Performasının Sektörel ve Firma Ölçeğinde Belirleyicileri: Türk İmalat Sanayiinden Ampirik Kanıtlar, Doktora, Ankara, 2021

İhracat, ekonomik kalkınma ve büyümenin anahtar bileşenlerinden biri olarak düşünülür. İhracat, döviz kazancı elde etme, ölçek ekonomisi ve uzmanlaşma ile yeni teknolojilerin kaynağıdır. Bu yüzden, ihracat performansını belirleyen faktörleri anlamak, ihracatı artırmayı hedefleyen ticaret ve sanayi politikalarını tasarlamak ve uygulamak için hayatidir. İmalat sanayi ihracat performansı, gerek teorik gerekse ampirik çalışmalarca artan bir ilgi görmektedir.

Türk imalat sanayi ihracatı, son 20 yıllık süreçte kayda değer bir performans sergilemiştir. Bu dönemde, dünya ihracatı içinde Türkiye'nin payı 2000 yılındaki yüzde 0,44'den 2017 yılında yüzde 0,92'ye yükselmiştir. Bu tezin temel amacı, hem sektörel düzeyde hem de küçük, orta ve büyük ölçeğe göre sınıflandırılan sektörel düzeyde ihracat performansını etkileyen makroekonomik ve mikroekonomik (sektör spesifik) faktörleri tespit etmektedir. Bildiğimiz kadarıyla, bu çalışma firma ölçeğine göre imalat sanayi ihracat performansı ve imalat sanayi sektörleri ihracat performansının hem mikroekonomik (Ar-Ge, banka kredileri, karlılık vb.) hem de makroekonomik (döviz kuru ve dış talep) belirleyicilerine odaklanan ilk çalışmadır. Ayrıca, sektörel reel döviz kuru ile ticaret ortakları büyüme oranları 23 sektör için hesaplanmıştır.

İmalat sanayiindeki sektör ve firma ölçeği düzeyinde ihracat performansının belirleyicileri, denklemdeki içsellik problemini çözebilen araç değişkeni 2 aşamalı en küçük kareler (IV-2SLS) ve sistem GMM yöntemleri kullanılarak modellenmiştir. Sektörlere ilişkin tahmin sonuçları, önceki yıl ihracat hacmi, Ar-Ge harcamaları ve banka kredilerinin ihracat performansını artıran mikroekonomik değişkenler olduğunu; reel döviz kurları ve ticaret ortaklarının büyüme oranları ise ihracat performansı üzerinde yeterli etkiye sahip olan makroekonomik değişkenler olduğunu ortaya koymuştur. Firma ölçeğinde ihracat performansını etkileyen sonuçlar biraz karışıktır ve firma ölçeğine göre farklılık göstermektedir. Tahmin sonuçlarımız, firma ölçeğinin ihtiyaçlarına uygun olarak spesifik ihracat teşvik politikalarının uygulanmasını işaret etmektedir.

Anahtar Kelimeler: ihracat performansı, imalat sanayi, ihracatların belirleyicileri, firma ölçeğinde ihracats, sektörel dış talep ve sektörel reel döviz kuru.

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LIST OF ABBREVIATIONS

2SLS	: Two Stage Least Squares
CBRT	: Central Bank of Republic of Turkey
EIS	: Entrepreneur Information System
PRA	: Presidency of Revenue Administration
GMM	: Generalized Method of Moments
HHI	: Hirschman Herfindahl index
IFS	: International Financial Statistics
IMF	: International Money Fund
ISIC	: International Standard Industrial Classification
IV	: Instrumental Variable
NACE	: Nomenclature des Activités Économiques dans la Communauté Européenne
OECD	: Organization for Economic Co-Operation and Development
TİVA	: Trade in Value Added
TURKSTAT	: Turkish Statistic Institution
UNCTAD	: United Nations Conference on Trade and Development
WB	: World Bank
WITS	: World Integrated Trade Solutions
WTO	: World Trade Organization

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INTRODUCTION

BACKGROUND OF THE RESEARCH

The basic approach of international economic theory is that free trade offers gains for all economies and supports the increase in the welfare of countries, albeit to varying degrees. International trade theories have evolved to explain new trends and developments in the world. For instance, traditional trade theories' assumptions are based on a country and industry-oriented approach, while the recent trade theories provide a microeconomic perspective at the firm level. There is also a difference between the assumptions of the market structure that these theories assume. The traditional trade theory tries to explain inter-sectoral trade under perfect competition conditions, while recent trade theories try to describe intra-industry trade under imperfect competition conditions.

Traditional trade theory assumes that if countries have a comparative advantage at producing certain products, they should specialize in these products and sectors, and export these products while importing other products, and thus gain benefits from trade. Consequently, the theory argues that all countries can achieve efficiently use resources through specialization and free trade. In addition, the theory is based on natural resources and a complete specialization between countries and suggests that international trade takes place among the industries with different endowments factors of production. Consequently, international trade takes place if both countries concentrate on producing of goods that they have a comparative advantage.

The theory assumes that technological differences or factor endowment differences between countries are the primary reasons for trade and imply comparative advantages of trade partners. Thereby, the trade volume of countries with have similar factor endowment and technology level can be low. However, almost half of world trade accounts for that of developed countries with similar factor endowment or technology level. This trend emerged following World War II in contrast with the assumption of traditional trade theory. Additionally, similar products in the same industry are exported and imported between countries (intra-industry trade). Eventually, the theory failed to explain the intra-industry trade fact because it does not presume that a country has

comparative advantage and disadvantage for the same product (Helpman and Krugman, 1985, p. 2-3).

Failure of traditional trade theory to explain the intra-industry between developed countries made it essential to develop new theories and approaches to interpreting the trends and developments observed in international trade. New trade theories were discussed at the beginning of the 1960s and developed at the end of the 1970s. These theories are complement the previous ones to clarify trade between similar economies, and thus the intra-industry trade fact in manufactured products (Krugman 1980, p. 959-960).

New trade theories focused on intra-industry trade fact and highlighted increasing returns to scale. Besides, they assume that imperfect competition conditions are valid. This view proved that international trade might take place under perfect competition conditions and countries can trade and gain benefits from trade under imperfect competition conditions. Consequently, trade may occur due to economies of scale and market structure if countries have similar technology and factor endowments. Also, new trade theories have succeeded in eliminating the deficiencies of traditional trade theories. These theories emphasize economies of scale, differentiated goods, segmented markets, technology shifts to explain trade patterns (Porter, 1990, p.20-21).

In the international competition environment with dynamic and expansionary feature, developing new methods and technologies and making innovation is inevitable. These necessities highlight that firms operate grow, and thrive by putting forward the diversities of products. However, new trade theories and models assume that firms operating in the market are similar and fail to clarify heterogeneous firm models that emerged in trade literature during the 1990s. Thus, the assumption that final goods and firms are homogeneous replaced the assumption that goods and firms are heterogeneous (Krugman and Obstfeld, 2003). Firstly, Melitz (2003) underlines the notion of “firm heterogeneity” and its content based on the increasing returns to scale and monopoly competition conditions. Firm heterogeneity fundamentally is based on productivity differences between firms. The new trade approach, defined as New-New Trade theories, prove

empirically that highly productive and profitable firms have more advantages in international trade.

New-New Trade theory claims that higher productivity firms can overcome additional costs such as marketing expenses, R&D expenditures, and uncertainty and competition conditions. Thus, it asserts that efficient and productive firms inherently enter the export market and survive there, which is an expected result (Self Selection hypothesis). In addition, it specifies that firms can increase their productivity and profits due to the experience and the adaptation of extreme competition environment due to exporting engagement (Learning by exporting hypothesis). Thus, the resources of a country are inherently directed into productive areas, and gain more from trade as the number and quality of exporter firms increases. As a result, gains from trade, primarily through exporting, are critical, and more importantly, export growth is the primary driver of a country's economic performance in production, and employment and technology, etc.

In sum, the current trade theories suggest that several microeconomic and macroeconomic factors determine high performance in both sectoral and firm-level exports. Explaining and identifying the determinants of exports would be helpful to design an industrial policy to stimulate export performance. In this context, this topic receives more attention from researchers and policymakers. Chen et al. (2009) point out that the researchers do not substantially put forward a consensus despite intense interest. He asserts that researchers studying the issue have three significant problems: (1) no enough studies with depth analysis, (2) absence of compromise on analytical techniques and methodological approaches applied in studies, (3) inconsistent conclusion on determinants of export performance.

Putting the financial liberalization and trade policies into practice in the 1980s, Turkey adapted the export-led growth strategy. The establishment of a Customs Union between Turkey and the European Union in 1995 was a further step of trade liberalization. Following the 2001 economic crisis, firms in the manufacturing industry sought new foreign markets and destinations to compensate for a sharp decrease in domestic demand. The average annual increase in Turkish exports was 29,2 percent for the period 2002-2018. The main driver of this remarkable export performance was a sharp rise in the

manufacturing industry that recorded a 28,6 percent average annual growth rate and represented 93 percent of total exports. Considering the international trade theory, the purpose of this thesis is to identify the main determinants of the manufacturing industry exports.

AIMS OF THE THESIS

The thesis aims to identify the macroeconomic and the microeconomic determinants of Turkish manufacturing industry export performance at the sectoral level. After exploring the determinants of exports at the sectoral level, the thesis also seeks to answer the research question of whether the sectoral export performance demonstrates any variability based on the firm size or not. With that aim, the study also will analyze determinants of sectoral exports by firm size (for small, medium, and large).

CONTRIBUTION OF THE THESIS

There is a large literature investigating the determinants of export performance. There are also many studies on the determinants of Turkey's exports. However, to the best of our knowledge, no study seek to identify both the macroeconomic and microeconomic (sector-specific) determinants of sectoral exports and sectoral exports by firm size (small, medium, and large) for Turkey.

The thesis aims to contribute to the international trade literature on Turkey by analyzing the determinants of the Turkish manufacturing industry export performance both at the sectoral level and at the sectoral level classified according to small, medium, and large firm size. The thesis makes three noteworthy contributions to international trade literature on Turkey. Firstly, we employ both macroeconomic and microeconomic variables to detect the determinants of export performance. Secondly, we identify both the macroeconomic and microeconomic (sector-specific) determinants of sectoral exports classified according to firm size. This analysis will allow us to recommend specific policy prescriptions according to firm size. Additionally, this thesis calculates the sectoral real exchange rates and sectoral trade partners' growth rates for selected sectors to identify their effects on sector exports. To our knowledge, this thesis is the first study that focuses empirically on microeconomic and macroeconomic determinants of export performance of manufacturing sectors as well as the sectoral export performance

by firm size for the first time in Turkey. Thus, the thesis aims to contribute to the international trade researches in Turkey by exploring the wide variety of variables on sectoral export performance and export performance based on the firm size.

Another novelty of the thesis is that we use the data by the Ministry of Industry and Technology Entrepreneurship Information System for the variables that we labeled as microeconomic (or sector-specific) determinants (R&D expenses (RD), sectoral capital intensity (CI), bank credits (BC), labor productivity (PW), sectoral profitability (P)). We constructed microeconomic variable data set from balance sheets and income tables in the Entrepreneur Information System database.

STRUCTURE OF THE THESIS

This thesis consists of five chapters. It starts with the introduction. In the first chapter, the international trade theories are discussed from a historical perspective to provide a theoretical background. In this framework, the thesis reviews the traditional trade, new trade, new-new trade theories, models, and specifically in terms of their assumptions, limitations, and results.

Chapter 2 discusses the empirical studies focusing on sectoral and firm-level export performance determinants for both Turkey and other countries. This chapter examines the methodology, data, country, and period used in these studies, focusing on the variables and methodology of the empirical studies.

Chapter 3 outlines the trends and developments in the Turkish manufacturing industry exports. The chapter includes two sections; the first section concentrates on the structural developments and trends in the 1980-2000 period, while the second part provides a detailed analysis of the manufacturing industry export performance for the 2001-2019 period.

Chapter 4 seeks to identify the determinants of manufacturing industry exports using panel data methods for the years 2006-2018. In addition to estimating the export performance equations for manufacturing sectors, the study also estimate export performance equations for large, medium, and small-size firms at the sectoral level. In

this chapter, firstly, the models used in the estimation of the export performance equations are introduced. Later, brief information and explanations on the data set, variables, and the estimation methods are given. Lastly, we present the results of the four models. Chapter 5 is the study's conclusion and provides a general assessment and policy recommendations based on the estimation results.

CHAPTER 1

INTERNATIONAL TRADE THEORIES: LITERATURE REVIEW

In this chapter, international trade theories will be discussed to establish a theoretical background for the study. Three main theories, namely traditional trade theories, new trade theories, and new-new trade theories will be summarized with a special emphasis on the drivers of international trade, as well as the limitations of the theories. The study briefly reviews the absolute and comparative advantage theories and Heckscher-Ohlin Theory (HO) in the analysis of traditional trade theories. The study also discusses the following theories as an extension of the traditional trade theories: Labor Skills theory, Technology Gap theory, Product Life Cycle theory, Similarity of Preferences theory. Later, the study clarifies new trade theory with a particular focus on export performance. Lastly, it outlines the new-new trade theories that mainly rely on firm heterogeneity.

1.1. CLASSICAL TRADE THEORIES

Traditional international trade theory assumes that world trade relies on factor endowment differences between countries, and trade takes place among industries with different factor intensity. The theory argues that world production increases when the division of labor and specialization provide countries to trade freely. Absolute Advantage Theory that Adam Smith developed argues that the efficient international division of labor would be achieved through specialization, and thus countries can only produce the goods with absolute advantage. However, the fundamental criticism for Absolute Advantage Theory is the failure to explain a large part of world trade. In other words, absolute advantage theory is unable to explain the majority of the world trade volume, especially trade between developed countries as the production of goods consist of several factors, such as capital, labor, land, and other factors. These factors are not decompound during the production of the goods according to absolute advantage (Samuels et al., 2003, p.121).

The comparative advantage theory, developed by David Ricardo, asserts that a country participates in international trade even in case of the absence of absolute advantage in any good production. According to Ricardo, countries can still gain from international trade

even if a country does not have or absolute advantage in both goods. Therefore, the countries that specialize in producing the good that is comparatively superior should leave the production of the other good to the other country (Hart and Prakash, 1997: 461-462).

Although Ricardo's comparative advantage theory has offered a wide insight and stand for international trade, it has some limitations in explaining the difference in transport costs, increased specialization in production, and labor cost as a homogenous factor. In addition, the theory asserts that trade takes place due to countries' productivity differences, but it does not present a good clarification for why this difference exists. According to Ricardo's theory, a country produces and exports the goods with a relative advantage position and avoids the production of competitive goods that the other country has productivity advantage. However, countries also can produce imported competitive goods.

Ricardian model proposes that gains from trade are high when countries' technologies are different from each other. Nevertheless, it is clear that trade between the industrialized countries with similar technology levels accounts for the majority of the international trade in the real world.

Collectively, Traditional international trade theory is a supply theory and accordingly, supply conditions determine factors such as price and cost. However, price and cost are determined by both supply and demand factors in the real world. On the other hand, the Ricardian model is a static model that does not change over time. Because of this, the model does not reflect reality as real-life constantly changes (Krugman and Obstfeld, 2003, p 28).

Heckscher-Ohlin theory, -Factor Endowment Theory (FET) - was introduced to eliminate Ricardo's comparative advantage theory deficiencies. FET highlights the importance of relative factor endowment of countries for international trade. Each country tends to develop a comparative advantage over its products by using the production factors that are comparatively ample in that country. As a result of this, the country imports products that use the country's scarce factors. Thus, the theory provides a model for analyzing the impacts of trade on an economy, especially its income distribution (Jones, 1956, p.1).

The basic assumptions of FET are summarized as;

- Constant returns to scale conditions are valid,

- Manufacture goods are traded in competitive markets, and there are no excess profits,

- Transport costs are ignored,

- The factor intensity of a manufactured good is similar in both countries,

-Production factors in both countries are in the condition of full employment,

- The production functions and quality of the goods are the same in both countries,

- Capital and labor in the production move freely within the country while immobile outside the country (Hart and Prakash, 1997: 462).

Stolper and Samuelson's (1941) Income Distribution Theory and Samuelson's (1945) Factor Price Equality Theory contributed to FET. In conjunction with international trade, the real income of scarce factors decreases while the real income of the abundant factors increases. For instance, the real labor income increase; on the contrary, the real income of the scarce capital factor decreases when a labor-abundant country starts international trade (Stolper and Samuelson, 1941, p. 66-68). Samuelson's second contribution is that factor prices would be mutually and partially equal because of free trade between countries. The findings of Leontief's empirical study (1953) on the US economy, more export labor-intensive goods while more import capital-intensive goods, contradict with the basic assumption of FET (Palazuelos-Martinez, 2007, p. 113-114).

Although Factor Endowment Theory significantly explains inter-industry trade between developed countries and underdeveloped countries, the theory fails to clarify the increase in trade between countries that have similar capital, technology and labor endowment (defined as intra-industry trade). On the other hand, the studies of Balassa (1966), Lancaster (1980), and Grubel-Lloyd (1975) investigate intra-industry trade fact and prove its existence in practice. Also, Balassa (1966) also points out that the manufacturing industry trade within the European Economic Community (EEC) consists of countries with similar factor endowments. In addition, Lancaster (1980) emphasizes

the prominence of intra-industry trade, and compares intra-industry trade volume as country groups, and concludes that large-scale intra-industry trade among industrialized countries is unquestionable. Moreover, Grubel-Lloyd (1975) underlie intra-industry trade that has a critical role in the European Economic Community and in the trade of all industrialized countries (Davis, 1995: p. 202-204).

Especially in industrialized countries with increasingly similar capital and factor structures and technology levels, international trade has gradually shifted into an intra-industry trade. The opinion that it can provide higher gains for both the producer and the consumer in the country than comparative advantages is widely accepted. ((Ruffin (1999), Krugman (2009), Bhagwati (1982)).

In response to the limitations of the traditional theories arising either from the model's assumptions or the limited capability for explaining the pattern of trade among countries, several models were developed as an extension of the traditional models. In the following section, these models are briefly discussed.

1.2. EXTENSION TO THE TRADITIONAL THEORIES

1.2.1. Labor Skill Theory

Labor Skill theory suggests that the trade of industrial goods accounts for an important part of the trade between industrialized countries, and the skilled labor force can explain this pattern. Countries with high-quality labor specialize in and export the goods with skilled labor-intensive. In contrast, countries with abundant unskilled labor specialize in and export the goods, including unqualified labor-intensive production. Keesing (1968) tried to find what extent to human capital affects international trade. According to Keesing, qualified labor is a different production factor, and this view relies on two reasons. First, skilled labor can influence trade and the establishment of the industry. Second, it plays a vital role in explaining economic expansion. Consequently, a qualified labor force promotes economic growth and trade as economic growth and international trade are intertwined with each other.

In Keesing's model, factors of production, capital, and skilled and unskilled labor are more mobile than natural resources, while Factor Endowment Theory assumes that

production factors are immobile between countries. Although natural resources are not mobile, capital moves freely at low costs while qualified and unqualified labor moves at a high cost among countries. Accordingly, human capital investments to improve the quality of the labor and to equip the labor with capital may enrich the qualified workforce. Thus, this strategy positively reflects on international trade and explains the Leontief Paradox (Keesing, 1968).

1.2.2. Technology Gap Theory

Factor Endowment Theory accepts technological change as constant. However, Posner (1961) put forward the Technology Gap Theory by addressing technological change as a dynamic determinant of trade. According to Posner, the new product innovations drive a great majority of trade among industrialized countries, the innovative process provides a temporary monopoly power for both firms and nations because of patent and copyrights. Whether technological innovation causes trade between two similar countries is bound at the net effect of the delay between the demand for an innovative product and its imitation. Suppose the time the domestic consumers adapt their tastes for newly developed products is longer than the time domestic firms learn to adopt new technology. In that case, the manufacturers can imitate new product to sell substitutes, and therefore international trade is not driven by technological innovation, vice versa. Generally, imitation lag is longer than demand lag. Foreign manufacturers decide to adopt new technology and to learn the new process, and then redesigning the factory and equipment and patent protection. Thus, trade emerges through technological innovation. However, new product and production processes lead firms to gain monopoly power till copyright and patent expiration (Fagerberg, 1987, p. 89-94).

Although the Technology Gap Theory added technological change phenomena to international trade theory, it failed to identify the reasons and magnitude of the emergence of the technology gap. Consequently, R. Vernon tried to complete the shortcomings of the Technology Gap theory by developing the Product Life Cycle theory.

1.2.3. Product Life Cycle Theory

The theory, developed by R. Vernon (1966), assumes that new products have four stages during their life span (introduction, growth, maturity, and decline), and comparative advantage for every stage change. This theory suggests that industrialized countries

export innovative and high-tech products and import older and low-tech products. In addition, it points out that innovations are commonly made in the parent company's country. Garry Hufbauer (1966), in his study on synthetic material trade, found that while less developed countries export old products, the USA and other developed countries tend to export newly developed products. Also, Cantwell (1995) tested whether innovations firstly are made in the principal company's country and found contrast results for the US economy through Patent Office data analysis. Although Product Life Cycle theory tries to clarify the trade of industrial products through dynamic comparative advantages, the globalization of technology and production cause increasingly its validity lose (Taylor, 1986, p. 753).

1.2.4. Similarity of Preferences Theory

The Similarity of Preferences, theorized by Linder in 1961, lies in the view that countries with similar income levels and preferences can trade primarily industrial products. In this context, the theory emphasizes a demand-side for international trade and points to an essential departure from the supply-side oriented Factor Endowment Theory. According to Linder, to export a good, firstly, a domestic market demand should exist. Domestic producers that initially supply the local market seek foreign markets afterward when the domestic market reaches the saturation point. Therefore, similar demand structures in the countries stimulate exports and intra-industry trade. Linder suggests that domestic demand is the main determinant of both a country's potential export goods and potential import goods. As a result of this, producers develop products by considering target consumer preferences in countries with similar per capita income. In addition, the foreign market distance, transportation costs, and trade restrictions can determine trade volume in the process of transforming potential trade into actual trade.

The rapid increase in industrial goods trade among developed countries following the Second World War supports Linder's view. Moreover, and the increase in free trade agreements and globalization process confirmed the Linder hypothesis as trade between rich and similar countries tend to reach a higher scale (Choi, 2002, p. 604). However, the theory has limitations in explaining the facts and circumstances existing in world trade. One of the critics is that Linder's theory neglects increasing trade between developing

countries. In addition, Markusen (2013) and asserts that trade also occurs in countries that share identical preferences.

1.3. NEW TRADE THEORIES

The countries with similar factor endowments account for a significant part of world manufacture goods trade in the 1960s and 1970s. At the same time, trade in the goods with similar factor intensity took place in two directions. These developments demonstrated that the predictions of Traditional Trade Theory about the pattern of trade were valid. Consequently, traditional trade theories cannot clarify development in international trade and industrial trade. New international trade theories concentrate on intra-industry trade and highlight the countries with similar factor endowment and technology[2]. Also, the focus of new trade theories is on sectors and firmly assume that increasing returns to scale and imperfect competition conditions are valid in an industry operation. It investigates the intra-industry trade based on product differentiation under imperfect market competition (monopolistic) assumptions (Krugman, 1980).

Overall, the new trade theories explain the intra-industry trade fact and impetus of trade between countries with similar factor endowment and technology. These aspects bring a new perspective to the causes, drivers and evolution of international trade. The theory asserts that international trade may occur under perfect competition conditions and countries can gain from trade because of economies of scale and different market conditions even if countries have similar technology and factor endowment (Palazuelos-Martinez, 2007).

[2] Intra-industry trade divides into horizontal intra-industry trade and vertical intra-industry trade. Both two concepts depend on the product differentiation inside or outside industries. Horizontal differentiation is defined as the differentiation of a product in terms of model, color, pattern, etc. Automobiles, personal computers, television sets are examples of horizontal differentiation. Competition in these industries takes place through product innovation. Firms aim to increase the quality of existing products or newly develop products that can substitute for existing products, thus raising their market shares. Firms have to transfer more resources to R&D activities. The vertical differentiation being put forward by many researchers lies on the assumption that the quality of the products is different. Falvey (1981) claims that countries with labor abundant have a partially advantageous position in labor-based products while countries with capital abundant have an advantageous position in capital-based products. Therefore, countries with abundant labor export labor-based products, and countries with abundant capital export capital-based products.

The main motivation in monopolistic competition theory is the increasing returns to scale model, and this concept is regarded as a principal cause of the trade. Monopolistic competition theory relies on Bertrand's price competition; that is, every firm tries to maximize its profit by taking into rival firm's price account. Moreover, firms can separate the products from other products and highlight their differentiated features. The theory argues that inter-industry trade occur in case of significant factor endowments difference between countries while intra-industry trade occur in the case of similar factor endowment (Akkoyunlu, 1996, p.75-81)

New trade theories include several models and approaches that point out different perspectives and develop previous theories. In this context, specific theories under the new trade theories try to explain the causes, drivers, and consequences of trade as an alternative to FET. This part of the thesis explores the monopolistic and oligopolistic models under new trade theories.

1.3.1. Monopolistic Competition Trade Theory

New international trade theory accepts the following two conditions: increasing returns to scale and imperfect competition markets. The imperfect competition markets and intra-industry trade issues have received considerable attention, and increasing returns to scale became prominent. Monopolistic Competition Theory, developed by Edward H. Chamberlin (1933), has been applied to international trade by international economic researchers. Firstly, Dixit and Stiglitz (1977) introduced Chamberlin's monopolistic competition theory to international trade theory and provided a framework to model trade of industrial goods between developed countries (Helpman, 1990, p.3).

Monopolistic Competition theory relies on increasing returns to scale, imperfect competition markets, and product differentiation and consider technological changes. In addition, production factors are mobile between countries, and transportation costs are included in the analysis. Firms operating in monopolistic competition markets determine international prices. Countries cannot specialize in a good since they are both exporters and importers of a good due to intra-industry trade (Krugman and Obstfeld, 2003, p.132).

Monopolistic Competition theory explains intra-industry trade of manufactured goods through product differentiation and economies of scale. In price competition, each firm determines a price that maximizes profits by accepting the prices of other firms as given. However, firms differentiate products to be substituted entirely for the goods of existing competitors or the goods of the firms that will enter the market. Thus, each firm can act as a monopolistic firm on the differentiated product, and the concept of increasing returns to scale can support monopolistic competition markets (Brander and Spencer, 2015).

Product differentiation points out that a firm operating in a product group should have a feature that makes it different from other goods. The feature may exist, or it can be a feature that the consumer perceives to exist. The purpose of product differentiation is to create the impression that the product is different from other products in the consumer perception. The products that become close substitutes are differentiated by quality, model, scope, advertising and brand (Gilbert and Matutes, 1993, p. 224-225).

International trade models based on monopolistic competition assert that economies of scale may be the cause of trade and lead to a rise in welfare due to increasing diversity and quantity in industrial products. The models seek to answer the principal questions arising from trade theory; the main drivers of trade patterns, the impact of trade policy on the reallocation of resources, and implications of international factor mobility among countries (Lancaster, 1980).

In new trade theory, economies of scale and comparative advantage phenomenon are primary impetus in driving international trade. This phenomenon relies on the view that countries specialize in a specific industry and may benefit from economies of scale and network effects of specialization. Thus, firms that acquire an early specialization can become a leading actor in the market, and other firms that have no these features cannot compete with them. The domination position of early firms that entered the market may limit competition level in global markets and lead to a monopolistic competition structure. It means that capital-intensive countries in which the most lucrative industries developed frequently reign these industries. Therefore, the firm that early attains industrial maturity may have a substantial competitive advantage. The theory emphasizes the importance of innovation and start-up and research and development activity for

firms, sectors, and countries to compete in global markets and gain from trade (Krugman and Obstfeld, 2003, 135-151).

On the other hand, even though perfect and monopolistic competition theories do not engage in strategic interaction, a few large firms control the market in many industries. They also dominate export volumes foreign direct investment inflows. These issues increased the need for the oligopolistic models studying typical features of concentrated industries, the durability of profits, strategic behaviors by firms and governments, etc.

1.3.2. Oligopolistic Trade Theories

The other imperfect competition theory explaining international trade is oligopolistic trade theory. There are some distinctions between oligopolistic and the monopolistic competition theory. First, monopolistic competition theory focuses on economies of scale whereas oligopolistic trade theory concentrates on imperfect market structure. The other distinction is that every firm makes strategic decisions based on its information, and these decisions affect the other firms' profits in the industry. The firm's decisions can be monitored and likely reacted by its competitors, and this is commonly defined as a conjectural variation that influences a firm's decisions. Because of the absence of ideal oligopolistic model form, alternative models based different forms of conjectural variation exist. Despite substantial distinctions among oligopolistic models, many of them acknowledge the Cournot assumption that the strategic component in a firm decision is the output (Sodersten, 1994, p.162).

Several prominent models describe the oligopolistic competition theory in international trade. Shaked and Sutton (1984) assume that the products are vertically differentiated. Firms in the market should deal with R&D activities to produce a higher quality version of products before they penetrate the market. R&D expenses are regarded as a fixed cost. In addition, it asserts that all consumers have the same tastes but different incomes and higher quality goods purchased by higher-income consumers. As a result of the importance of product quality, a firm with low-quality products has to exit the market. It faces competition resulting from the other firms with a higher quality product in case of free trade.

The other model explaining oligopolistic competition is Brander (1981). According to Brander (1981), "strategic interaction" plays a critical role in competing in the oligopolistic market since firms follow each other for pricing, dumping, and the number of products produced. Brander (1981) assumes that increasing return to scale, transportation costs, and competitive behaviors between oligopoly firms determine international trade among countries while products in the market are homogenous. Brander asserts that the competition on homogenous goods causes dumping between firms and two different prices in two markets. Firms' behaviors based on the Cournot model lead to emerge an intra-industry trade and increase welfare. He also stresses that the trade costs function as natural trade barriers. Brander and Krugman (1983) developed this model by introducing a reciprocal dumping approach that each firm keeps its production constant under Cournot behavior. According to the latter model, each firm has a higher domestic market share than a foreign market, and therefore higher marginal income compensates for its transportation costs.

Under oligopolistic competition theory, another model is Eaton and Kierzkowski (1982). They focus on horizontal differentiation and assert that markets are large and that the customers' preferences are different. This differentation may influence firms' market penetration decisions. Under these conditions, firms may apply different pricing policies. In addition, similar preferences among the customers may not result in favor of them since intense price competition leads to discouraging the entry of firms (Eaton and Kierzkowski, 1982, p.106-107).

In addition to these models, Brander and Spencer (1985) developed a model emphasizing the role of export subsidy as a strategic trade tool. They conclude that in an oligopolistic formation, the rents are shifted toward home residents from foreigners through an export subsidy implementation. One of the recent models of oligopolistic competition is Grossman and Rossi- Hansberg (2010) and assume that firms compete on price rather than on quantity and highlight the role of external economies. Neary and Tharakan's (2006) model presume that firms allocate resources to capacity investments to have a competitive advantage on price since the cost advantage of capacity investments is sufficiently large.

Oligopolistic models seek to address the question of tariffs and subsidies, competition policies, the abuse of firms' dominant position the strength of intellectual property rights. New trade theory asserts that governments might play a vital role by supporting the expansion of key sectors and stimulating newly developing sectors. The theory recommends that developing economies implement trade and industry policies promoting the competitive advantage of exporter firms and sectors to compete in foreign markets (Head and Spencer, 2017).

New trade theory analyzes industries rather than countries and highlights the concepts such as differentiated products, technology level, similar factor endowment, market structure, economies of scale. Besides, it stresses the crucial role of trade on a country's growth and welfare. The theory also incorporates a monopolistic competition structure and differentiated products and assumes that consumers have a corresponding taste for different varieties. In this direction, trade policies should be strategically designed according to the needs and priorities of industries. However, governments promoted similar strategic industries to get a more share of global markets by giving subsidies, which failed to increase welfare and growth. As a reflection of these developments, presumptions of the new trade theory were not compatible with available trade data. Dynamic industrial models of firm heterogeneity, innovation, and growth received more attention (Ciuriak et al., 2011, p.4-6).

1.4. NEW NEW TRADE THEORIES

Bernard and Jensen's (1995) findings that US manufacturing firms engaging in export carry out productively their operations compared to non-exporter firms underpin New New Trade theory. Their study seeks to detect the determinants of productivity varieties between the exporter and non-exporter firms and inspires researchers to use firm-level microdata. The study also tries to detect the track of correlation between exporting and firm productivity. The main focus of theoretical models starting with Melitz (2003) is on heterogeneous firms that differ in productivity, and thus the micro-econometrics analysis have been prominent in international trade literature (Wagner 2011, p.4)

The New New Trade models cover many aspects of the previous trade theories and particularly concentrate on the reasons for the variations in firms' productivity levels both

within and across industries. Thus, the focus of trade studies switched from the industry to the firm level (Melitz and Redding, 2014). Many empirical studies using the firm-level microdata center the reasons and consequences of the productivity difference between firms. One of those studies is that of Bernard and Jensen (2004), finding that non-exporter firms are less productive and efficient compared to exporter counterparts in the US.

The Melitz model takes into account Krugman's monopolistic competition context and highlights firm heterogeneity. The original Melitz (2003) model underlines that the industry consists of firms with differentiated product variety and productivity. In addition, each firm has a monopolistic power due to its differentiated products. On the other hand, the level of firms' monopolistic power has a considerable impact on their decision about foreign market penetration since the decision requires costly investment, fixed production costs, and the sunk entry costs. These costs determine whether firms exit or stay in the market and earn positive profit in the future. If firms have lower productivity than the industry level, they have to leave the market (Zhai 2008, p.2).

Melitz's model (2003) clarify total productivity growth and reallocation of market shares and profits. With the start of the trade, foreign competitors enter domestic markets and make the market more competitive. High competition means a low-profit environment, and it forces firms with low efficiency to leave the market and encourage efficient firms to enter international markets. Therefore, efficient and large firms can get more market share than low-productive firms. This increases overall productivity. An increase in total productivity and profits are distributed in favor of highly productive firms. In other words, the Heterogeneous Firm Model reveals that high-efficiency firms export and less efficient firms are forced to leave the market, and thus exporter firms have a higher market share. Empirical studies identify that overall increases in productivity after trade are mainly due to the redistribution of the industry's resources, not the redistribution of cross-sectoral resources (Pavcnik, 2002; Bernard and Jensen, 1999; Redding, 2010).

In addition to Melitz's model assumptions for a new approach of trade theory, Bernard's analysis relies on the following assumptions: firstly, exporter firms have a large operation scale, comparatively higher capital ratio, and bear higher wage costs than non-exporter firms due to skilled labor employment. Secondly, exporter firms may have faster growth

rates than non-exporters. Third, entering and leaving the export market is free; firms have to bear fixed costs when entering the market, and thus firms with low-efficiency exit the market. Fourth, the international activities of firms vary over time as a consequence of the change in the profit margins. Fifth, exporting firms incline to embrace newly developed production technologies, and firms' technology usage options are directly linked to trade activities (Bernard et al., 2007, p.127-128).

Bernard and Jensen (1999) suggest two alternative hypotheses why exporting firms are profitable and successful compared to non-exporting firms. The first, Self-Selection hypothesis, asserts that the more efficient and profitable firms turn to international markets as the competition in international markets requires bearing extra expenses. Distribution, marketing, shipping, qualified workforce, modification of the current goods for overseas consumption (user manual for foreign customers, or examination of the related domestic regulations, etc.) can be specified as major cost items. These additional costs lead to less productive firms leave the market since they cannot overcome these costs. The theory also claims that firms with less productivity may improve their performance for the future through a forward-looking approach. The variables such as average labor productivity or average total factor productivity are used to detect productivity differences between exporting firms and non-exporting firms, (Wagner 2011, p.5).

The second hypothesis concentrates on learning-by-exporting through experience and knowledge gained through international buyers and competitors. The experience and knowledge contribute to enhance the companies' performance that started to export in the foreign market since they face more intense competition at the beginning of exporting. Furthermore, international markets entail a more competitive structure, and this environment forces firms to operate productively and spur invention. Thus, firms turn into more productive units as a result of exporting process (Serti and Tomasi, 2007, p 2-4). Contrarily, the self-selection mechanism is also valid for importing, it refers to the use of foreign intermediate goods to increases a firm's productivity. Meeting the needs of intermediate goods through importing ensures that a firm concentrates on its processes with a competitive advantage. This trend may help to improve firms' performance in the markets (Andersson et al., 2008). In learning by exporting process, the economic structure

of destination countries also has a significant impact on firm productivity. De Loecker (2007) asserts that exporters companies can yield more productivity gains when they export to developed countries, vice versa.

Empirical researches studying two hypothesizes present different conclusions. Wagner (2007) probed 54 empirical studies using firm-level data between 1995 and 2006. These studies investigate the correlation between export and productivity and cover 34 countries. He demonstrates that empirical studies conclude that higher productivity levels and their growth are triggered by exporting. On the other hand, Singh (2010) explored the empirical studies published between 2006 and 2008. He reached a significant conclusion that studies regarding the self-selection hypothesis offer a more robust proof than those of learning by exporting.

The use of knowledge acquired in firms also plays a critical role to be lucrative in being the export markets. Knowledge can be gained through both learnings from rival firms' and partners' experiences. Banks support exporter firms by extending credits with suitable conditions and rates and ensuring adequate knowledge on country, market, competitors, consumers, and contributing to be international players (Lundberg, 2019).

In conclusion, New New Trade theories concentrate on firm-level data and more detailed analysis to explore the international trade competition. Contrary to the new trade theory assumption that firms are homogeneous and have similar production structures, the theory assumes that each firm has a specific production structure, cost components, and product variety, and the concept of firm heterogeneity explains these features. In addition, it points out that highly productive and profitable firms have more advantages in international trade and overcome the additional costs of entering international markets (Self Selection). Moreover, firms can increase productivity and profitability through exporting and operating in international markets (Learning by Exporting). As the number and quality of export-oriented firms increase, the resources in the country may shift to productive areas, and more gains would be obtained from international trade. Eventually, the recent theory stresses firm heterogeneity, additional costs in global market penetration, and reallocation of resources towards the productive area and thus market share.

CHAPTER 2

DETERMINANTS OF EXPORT PERFORMANCE: REVIEW OF EMPIRICAL RESULTS

Exports are the main concerns for public policymakers (foreign currency reserves and employment), firm managers (expansion and long-term enterprise sustainability), and researchers owing to their prominent position in an economy. Accordingly, the export performance of the economies has recently received considerable attention. There has been a prolific increase in the number of researches investigating the determinants of both sector and firm-level exports. This chapter reviews the methods and results of the empirical studies on export performance with a particular focus on the variables that are used in the models. Also, the findings in the studies, empirical techniques, data, samples, and periods and are evaluated.

The empirical researches offer a wide range of variables at the firm, sector, and macroeconomic levels. The manufacturing industry is the main focus of these studies, and there are limited studies on the services sector. Despite many studies in the literature, a common view is not reached, and empirical results are mixed.

In international trade literature, determinants of export performance are explained through several models and a wide range of variable sets. Bonaccorsi (1992) classifies the determinants of exports into three categories: firm structural factors**,** management factors, incentives, and obstacles in the process of internationalization.

On the other hand, Spasova (2014) classified export performance variables used in empirical studies as internal and external factors. As seen in Table 1, a vast number of variables are used to explain what export performances are determined.

Table 1: Variables Used to Measure the Determinants of Firm Exports

Internal Factors	**Variables**
Management Characteristics and Perceptions	Export Commitment and support, international experience, export motivation, age, education
Organizational Capabilities	General export strategy, export planning, market expansion, risk-taking, control, process, product and promotion strategy
Knowledge-Based Factors	Market research, customer information, market and competitor information, supply chain channels information
Relational Factors	Distribution channel, customer and partners relationship; membership informal and formal business networks, government and other institutional relationship
Firm Characteristic	Firm size, degree of internationalization, firm age, sector product type, financial resource, ownership structure
External Factors	**Variables**
Export market characteristics	Legal, political and cultural similarity, market competitiveness, environmental hostility, economic similarity, customer exposure
Domestic market characteristics	Domestic market conditions, export assistances, environmental hostility

(*) Spasova (2014: p.64-70)

In order to present a comprehensive analysis, following the aim to investigate the determinants of sectors and firm scale exports in the manufacturing industry, the thesis review the existing empirical studies based on the features of variables. Besides, the thesis discuss the studies by classifying the determinants of exports as microeconomic and macroeconomic variables. Thus, both variables (firm size, R&D, profitability, FDI inflows, real exchange rate, external demand, etc.) are thoroughly analyzed.

2.1. MACROECONOMIC VARIABLES

In empirical studies based on traditional trade theories, export performance is merely modeled as a function of the real exchange rate and trade partners' income. Both of them are considered demand-side factors. Parallel to developments in the New Trade Theories, recent empirical studies consider the supply factors such as firm ability, market structure, inputs, product diversification, profitability, innovation, research and development. It is inevitable to clarify the role of foreign demand and the real exchange rate as a determinant of exports to have a coherent review of the determinants of exports.

2.1.1. Foreign Demand

Access to the international market represents the foreign market potential of a country's exports, and therefore it is a vital factor for exports. The bulk of the export basket and differentiated goods and prices positively affect international market entry. On the other hand, obstacles and transborder charges negatively affect international market entry. While examining the effect of external demand on export performance, it should not be overlooked that domestic demand is also effective. In cases of strong domestic demand, exports may not be relatively profitable, although external demand is available.

Rahmaddi and Ichihashi (2012) argue that the demand for Indonesian exports is considerably determined by foreign exchange rates and world income. The elasticity coefficients of relative prices and income variables are high. Besides, The study claim that Indonesia exports are considerably affected by relative exports price in the long term period. External demand for Indonesia export goods is vastly sensitive to the variation in income and price level.

The findings of Breinlich and Tucci (2008) suggest that a 1 percent growth in external demand leads to an increase in Italian export volume by 5,3% annually. Sertic et al. (2015) find out that external demand has an impact on total manufacturing exports based on NACE classification for 27 European Union member countries by utilizing the system GMM estimator for the period 2000-2011. In addition, Bayoumi et al. (2011) also indicate that total export volumes are influenced by external demand and the real exchange rates for the Euro Area by applying the fixed effects model between 1995 and 1997. Likewise, Allard (2009) applies an error correction model for Hungary, Czech Republic, Slovakia, and Poland data and finds world demand, FDI stock, and price competitiveness have an impact on export performance for four countries in 2002-2007. Esteves and Rua (2015) stress domestic demand as well as external demand and the real exchange rate. Export behavior is significantly influenced by the developments in domestic demand. The study also identifies a strong negative relationship between developments of previous local demand and export behavior in the short term.

For Turkey, the positive correlation between export performance and trade partners growth rates predominately found by empirical studies. The studies detect a wide range

of coefficients, changing from 0,3 to 3,4 (Kara and Sarıkaya (2014), Bozok et al. (2015), Binatlı and Sohrabji (2009),Şahinbeyoğlu and Ulaşan (1999), Aydın et al. (2007), Aydin et al. (2015), Togan and Berument (2007)). For instance, Bozok et al. (2015) suggest that in trade partners' sustainable growth plays a vital role in a continuous increase in Turkish exports. The study concludes that export has a significant correlation with the income of Turkey's 67 trade partners, and income elasticity of exports ranges from 1,44 to 3,35 (1,44 for Mediterranean North Africa, 3,35 for other European countries –excluded EU27-) by using panel time-series estimation methods.

Aydin et al. (2015), detect the impacts of the change in Turkey's 94 trade partners' growth rates on the export-import coverage ratio of Turkey for the period 1994-2012. Its results are compatible with the earlier studies and suggest that 1 percent growth of trade partners provides a 1,6 percent improvement in the export-import coverage ratio.

In conclusion, the growth of trade partners as a macroeconomic factor is regarded as the main determinant in stimulating export performance. External shocks originated from international markets, and factors may substantially affect the sector or firm's export performance.

2.1.2. Real Exchange Rates

The real effective exchange rate demand-side competitiveness indicator and reflects the relative movement of domestic and foreign prices. A depreciation in a country's REER means that local manufacturers gain a relative price competitiveness advantage. However, an appreciation in the real exchange rate may be utterly harmful to exporter firms. According to the UNCTAD Report (2005), a 1 percent depreciation in the real exchange rate may raise exports by 6 to 10 percent. Despite these figures, UNCTAD Report (2005) warns that devaluations in nominal exchange rates should not be employed as a policy tool for competitive price advantage. Also, the report stresses the prominence of the durability of productivity gains to sustain international competitiveness.

For Turkey, the findings of Şahinbeyoğlu and Ulaşan (1999) indicate that exports are statistically correlated with the real effective exchange rate, and foreign income

considerably affects export volumes. Besides, Saygılı et al. (1998) reach approximately the same findings for Turkey.

The current studies investigating the relationship notify that the real exchange rate cannot significantly cause the change in Turkish exports. For instance, Aydın et al. (2004) don't detect any evidence for the relationship. Alternatively, they find that the real exchange rate is significantly correlated with imports. Moreover, they conclude that unit labor costs, export prices, and home GDP are the main components of Turkish export performance. The results of Sarıkaya (2004) correspondingly demonstrates that the real unit wage influence considerably exporting following 1999, and thus labor productivity improvement leads to achieving sustainable export growth. Another study by Aydın et al. (2015) reveals that a 1 percent valuation in the exchange rate led to a 0,94 - 1.45 percent increase in the export/import ratios for the selected countries, demonstrates by using the exchange rate data of 94 trade partners between 1997 and 2012.

Additionally, the recent research of Akgündüz et al. (2019) has revealed that unconscionable movements in the real exchange rate may affect export prices, and depreciation leads to an increase the cost of the imported intermediate goods. The other claim of the study is that high import dependency of exports can contain a competitive advantage due to an increase in imported input costs.

For Turkey, one of the recent empirical researches exploring the relationship, Toraganlı and Yalçın (2016), reveals that firms with excessive import dependency cannot benefit from real depreciation; contrarily the other firms gain from depreciation in Turkish lira. In addition, the study estimate that large-sized exporter firms react limited response to change in the real exchange rates if they have reasonable or small foreign currency debt compared to their exports. Thus, the finding of firm-level indicates that depreciation in TL currency generally provides the price competitiveness. However big and mature firms with high import dependency are affected by depreciation of the Turkish lira in small proportion. According to Akgündüz and Fendoğlu (2019), how depreciation in exchange rates affects the export price and volume depends on exporters' import supplier reliance. If exporters have a higher reliance on a single supplier which have import intensity, they

face higher input or intermediate goods prices towing to pass through effect in case of devaluation of the Turkish lira.

The view that exchange rate volatility can negatively influence international trade volume lies in that firms cannot optimally adjust factor inputs according to these changes by considering exchange rate movements. However, increased volatility can create profit opportunities for the firm if firms can modify the production factor(s) concerning exchange rate movements. This case was tested by Gros (1987) and De Grauwe (1992). The net effect of exchange rate movements is evaluated by identifying the interaction of two opposite effects when production can be adjusted according to the movements. For instance, in case of excessive volatility, a firm expected profitability would be higher if it can produce more goods when its product prices are high.

Analyzed the empirical studies at the sectoral level[3], it is observed that the real exchange rate volatility affects significantly and positively real exports. In addition, Kılıç and Yıldırım (2015) find that real export volumes of 22 sectors in the manufacturing industry are positively affected by volatility in the exchange rate for 2005-2012.

Saatçioğlu and Karaca (2004) also reach the finding that volatility in the exchange rate negatively affects Turkey's exports in both the short and long term for 1983-2000. As a result of variation in the technique used and calculation method and independent variables selected, the results of studies may vary even if they focus on the same period. For instance, Kasman and Kasman (2005) find exchange rate volatility influence positively export performance for the same period Saatçioğlu and Karaca (2004) analyzed. One of the other studies proving a substantial effect for the long term is Doğru and Uysal (2013); however the study fails to demonstrate any correlation for the short term.

In conclusion, it can be said that the results of studies on the correlation between exchange rate and Turkish exports are not clear. The exchange rate effect depends on firm and sector' product quality, time period, dependency on imported goods, and pass-through effect.

[3] Kasman (2005), Öztürk and Kalyoncu (2009), Uysal (2013)

2.2. MICROECONOMIC VARIABLES

2.2.1. Size

The large firm size provides a reduction in unit costs through greater economies of scale. Operating in low production unit costs would yield a strong motivation through increasing sales in both the national and international markets (Krugman, 1987).

In the trade literature, a positive correlation between firm scale and exports traditionally is expected. The basis of this argument is that larger firms can meet export-related risks and make large investments required by exports. Empirically several studies support this view. Sterlacchini (2001) finds that the most influential factor affecting the firms' export behavior is firm scale and thus export performance. In addition, Lefebvre and Lefebvre (2001) empirically reach the same findings for Canadian manufacturing sectors. Furthermore, in the study on Canadian export firms, Calof (1993) points out that firm size cannot prevent a firm from performing international activities; however that large firms engage in export activities at a higher rate than small ones. The other study which finds a positive and strong relationship is Majocchi et al. (2005) for firms operating in the North-Western part of Italy.

Despite positive findings, negative or no correlation is detected by the studies investigating the cases of Australia, Germany, Denmark, Italy, Japan, Philippines and Spain. For instance, Gabbitas and Gretton (2003) studied Australian manufacturing firms and find that firm-specific factors such as the kind of operation, design, and quality of products, selling knowledge, and the inspiration of management, are significantly effective on export performance. Also, Wagner (1995) tests the relationship for German firms and reaches the findings that firm scale influence positively export performance; however the degree of influence decreases according to size. He also points out that the quality of human capital, capital accumulation, advanced technology, and newly developed products are positively related to export performance. Bonaccorsi (1992), with his study using 8810 Italian businesses, reaches negative correlation evidence on exports and firm size.

The results of Duenas Caparas (2006) for Philippines support the findings of previous studies. He asserts the existence of a non-linear relationship, and firm size has no significant influence after exceeding a certain threshold. Another study supporting this view is Bonaccorsi (1992), and it claims that the relationship differs from firm to firm ca firmly relate to the firm's export strategy.

Additionally, the positive reflection of firm size on exports also relies on the market in which the firm operates. Wagner (2001) and Wakelin (1998) argue that for large firms operating local-market oriented limits to use the advantage of size as a result of an increase in coordination costs resulting from operation scale.

As a result, although firm size is positively correlated with export performance, the conditions and market structure in which the manufacturer is located can also impact the relationship. Empirical results may also vary firm samples in different sectors, variables defined, and measurement method used for firm scale (Sousa et al., 2008). Calof (1994) also stresses incompatible results arising from the reasons mentioned in Sousa et al. (2008) and asserts that the results are not applicable for making a comparison.

2.2.2. Foreign Ownership

Foreign Direct Investment (FDI) inflows are considered to provide the additional funds that emerging economies need to enhance their economic performance. FDI may contribute to successful economic performance in these countries through an improvement in the production process, total factor productivity, and export performance. In this context, especially developing countries need multinational firms to increase economic performance. Many studies maintain that multinational firms bring knowledge-based advantage such as product knowledge, technology, and managerial know-how to a country as they have highly productive and technological foundations (Greenaway and Kneller 2007). Multinational firms with higher productivity are more experienced than local firms in accessing international markets. The host country embraces foreign firms' operations to create a concrete spillover effect on export performance. Additionally, multinational firms indirectly affect domestic firms through export spillovers, knowledge externalities, and competition. This would help domestic firms to reduce sunk costs when they enter international markets and want to increase

foreign sales. Multinational firms that invest in a country through FDI inflows have sound connections and enough knowledge of international markets.

The results of studies examining whether foreign capital inflows and capital ownership generate spillover effect on export performance and local firms are somewhat mixed. Aitken et al. (1997), Kokko et al. (2001) and Jongwanich and Kohpaiboon (2008) detect solid positive spillover effects, while Barrios et al. (2003) reach negative impacts finding for 16 OECD countries.

Jongwanich and Kohpaiboon (2008) point out that foreign firms create export spillovers for the Thailand manufacturing industry; contribute to improving overall export activity; local firms benefit from these advantages by using probit model with cross-sectional econometric analysis. Other studies that reached a positive effect are Tebaldi (2011), Anwar and Sun (2016), Kokko et al. (1996). According to Tebaldi (2011), FDI inflows positively affect advanced technology sector exports. (1 percent increase in FDI inflows causes 0.17 percent improvement in advanced technology sector exports). Furthermore, Tebaldi (2011) empirically demonstrates that trade openness influence positively and statistically advanced technology sector exports. Anwar and Sun (2016) empirically find that the firms' export decisions positively are influenced by FDI inflows to the Chinese manufacturing industry. Anwar and Sun (2016) also assert that the main factors of the export increases are productivity and the spread of export information for the selected sectors with the foreign entry (leather shoe, textile, garment manufacturing) in the Chinese manufacturing industry. Another study finding positive relation between export and foreign ownership, Vinh and Duong (2020) claim that foreign enterprises have higher export participation and higher export intensity than local firms because of their competitive advantages and becoming superior in exports.

Despite evidence between remarkable export volume and availability of foreign firms, Deshmukh and Pyne (2013) empirically identify that local companies operate more export-oriented than multinational companies. The study also states that multinational companies operating in Indian major exporting industries have no role in labor productivity in the period of 1991-2009.

For Turkey, Vural and Zortuk (2011) find some empirical evidence supporting the solid correlation between overseas ownership and export performance. The study reveals that FDI inflows promote Turkish export performance. For Turkey, the other study supporting the empirical evidence of the previous study is that of Ebghaei and Wigley (2018). By using firm-level data for the Turkish manufacturing industry, the study explores the horizontal and vertical spillover impact of FDI on exporting firms and finds a more noticeable impact for exporting firms. For Turkey, the other study finding similar empirical results is that of Dalgıç et al. (2015). The research reveals that internationalized firms record better performance compared to local-oriented firms using data on 38.223 firms over the period 2003-2010. The study also concludes that a self-selection effect is valid in Turkey for both importing and exporting firms, and firms dealing with both importing and exporting activities expose less market exit.

In sum, findings of empirical studies examining the topic generally conclude that multinational firms generate positive spillover effects on both the domestic firms and industry exports despite a few findings identifying negative or no effect.

2.2.3. Productivity

In the recent trade theories, the discussion about whether firm productivity stimulus or drive export performance draws noticeable attention. The recent studies explore the direction of causality, and specifically the reasons for productivity differentials. As discussed in Chapter 1, the question of why non-exporter companies are less productive than exporter companies relies on two alternatives hypothesizes. The first has the assumption that additional costs arising from competition in foreign countries such as shipping, delivery, marketing, and skilled workers to manage foreign networks can be handled by more productive firms. The second assumes that exporters firms are in the learning process by exporting in international markets to cope with fierce competition. This process makes firms more productive (Joachim Wagner 2007, p. 3).

Many empirical studies' conclusion supports the hypothesis that non-exporter firms are considerably less productive than counterparts that are exporters. These studies are; Alvarez and Lopez (2005) for Chilean firms (the period 1990-1996), Kraay (2002) for Chinese firms (the period 1988-1992), Sinani (2003) for Estonian firms (the period 1994-

1999), Isgut (2001) for Colombian firms (the period 1981-1991), Baldwin and Gu (2003) for Canadian firms (the period 1974-1996), Castellani (2002) for Italian firms (the period 1989-1994).

On the other hand, Brancati et al. (2017), takes into account the endogeneity problem, namely whether exports enhance productivity or increase in productivity promote exports. The study affirms that productive Italian companies penetrate international markets and verifies the self-selection hypothesis. They also claim that Italian exporter firms exhibit international performance through intensive and extensive margins and become a permanent player as a consequence of productivity improvement.

As a contribution to the relevant literature, Aw and Hwang (1995) investigate the effect of productivity differences in input usage of the two firm groups on the output through the use of firm-level microdata. The study models firm-level data for the electronics industry in Taiwan by estimating production functions of two groups of firms (exporting firms and domestic market-oriented firms). The results regarding the effect of productivity differences indicate that exporters operate efficiently compared to non-exporters. It also claims the redistribution of resources arising from productivity differences in the industry. The view that productive firms are profitable and invest in more resources that drive higher technology levels and profits is the main argument. Additionally, Clerides et al. (1998) conclude that more productive producers gain more resources compared to less efficient producers in Colombia, Chile, and Morocco manufacturing industries.

Other supportive evidence comes from the empirical results of Biesebroeck's (2005) study, and he finds that firms in sub-Saharan African manufacturing sectors raise their productivities following exporting process. Also, Redding (2010) asserts trade liberalization tempts redistribution of resources in industries, and more productive firms gain more share in the export market while less efficient firms have to exit. As a result, efficient firms have a more favorable position for export. Coping with the extra costs of starting a new exporting process is difficult for firms, and the firms efficiently working can handle extra costs and record considerable export performance.

Although many studies find that exporter firms have a large scale, high productivity level, high capital-labor ratio, and advanced technology, a few studies point out the direction of the causal relationship between exports and firm performance. Bernard and Jensen (1999) are one of these studies and reveal that a good company tends to be an exporter; that is the need for exporting is to be a productive and competitive company. However, the benefits of export for a firm are not clear. Delgado et al. (2002) reach the same findings as those of Bernard and Jensen.

In conclusion, even though the direction of causality is less apparent, the majority of studies agree that exporter companies carry out their operations efficiently and productively. Competitive forces of exporters support them to encounter extra costs and compete with multinational firms. Also, the exporting process would be informative, and firms gain acknowledgment and experiences from foreign customers and rivals.

2.2.4. Research and Development (R&D) Activities

As discussed earlier, the technological structure of export would not play a considerable role if comparative advantage and factor endowment theory were valid. But, the firm technology level is a crucial component to survive in the market and compete efficiently in a real economic system. Research and development activities are frequently defined as a proxy for advanced technology use. Industrial research and development in the private sector consist of upgrading available products, invention new products, and developing and upgrading the operational process of production (Andersson et al., 2006).

Within this frame, Jagerstedt (2016) identifies whether R&D investments have an impact on the price-cost addition and export behavior in Swedish manufacturing firms by using the GMM method for the period 1996-2006. The study reveals that R&D investments enable firms to obtain higher margins on average, and thus firms can increase their market power through innovation. Moreover, he finds that a 1 percent rise in the mark-up provides a rise by 0.013 percent in export per employee on average. Furthermore, Bleaney and Wakelin (1999) empirically prove that R&D activities constructively affect the export performance of UK manufacturing sectors. The study claims that firms dealing with technological R&D activities or allocating resources have higher export shares.

Another study supporting this argument, Lefebvre and Lefebvre (2001), find that R&D spending sufficiently affects export performance for the Canadian manufacturing sectors.

Similarly, Duenas Caparas (2006) finds the same positive relationship for Philippine firms in clothing, food processing and electronic sectors between 2000 and 2002. The study of Montobbio and Rampa (2005) also test this relationship for large samples (China, India, Argentine, Brazil, Singapore, Colombia, Malaysia, Mexico, and Thailand) by using the least square dummy variable method. It argues that technological activity including R&D and the number of patents can enhance export performance and recommend that educational and technical training institutions related to technological capabilities play a critical role in enhancing export performance. The studies of Bleaney and Wakelin (1999), Wagner (2001) and Lefebvre and Lefebvre (2001) that examine the relationship for German firms find that R&D activity stimulates export volumes.

In contrast to the above-mentioned studies, Lall (1986) concludes that the engineering and chemical firms' research and development expenses affect in a negative way their export activities in India. On the other hand, Lefebvre et al. (1998) assert that academic studies usually express research and development activity as a share in total sales, and thus fail to identify the driving force of research and development.

R&D activities not only provide important gains to countries but also firms as a result of the added value it generates. In this context, it is important to share and disseminate R&D information. Countries support the R&D process by providing adequate infrastructure in this regard. R&D operations are mostly not located in firms' production plants and innovation operations cluster in specific geographic clustering. Therefore, the sector locates its R&D away from its production area but close to other sectors' R&D activities (Kelly and Hageman, 1999). However, the level of concentration may vary across the sector in the manufacturing industry. For instance, computers and pharmaceuticals display a higher degree concentration compared to low-tech sectors (Breschi and Palma 1999). This structure of R&D agglomeration emerges the question of who manages it and how will be cooperation and coordination among universities and industry for R&D.

In sum, R&D activities can provide competitive advantages for firms and sectors to stimulate export and growth. The main component of R&D is the quality of human

capital, and the duration of R&D activity tends to be medium and long term. Lastly, it entails investment costs and current expenditure. However, it ensures comparative advantages for exporting firms competing with foreign rivals. Overall, almost all empirical studies argue that R&D is the driving force to promote firms' or sectors' export performance.

2.2.5. Access to Finance

One of the strategies that firms prefer to grow is internalization. Exporting is considered an appropriate overseas market penetration mode. The firms' decision to internationalize might be shaped by many factors and the sources such as funding and information are regarded as key factors. Lack of resources can reduce the size and speed of firms' opening up to foreign markets.

Funding and acknowledge are key resources affecting the decision on international expansion and pace. Because of this, accessing finance and bank credits play a vital role in competing with foreign rivals (Lunderg, 2018). Moreover, banks not only provide financing for exporter SMEs and other firms but also carry out information exchange and other transactions. In this context, banks, in particular, contribute to becoming more international firms (Bradley et al., 2006). Many studies devoted substantial attention to how firms improve export performance by indicating the possible contributions from coming bank relationships[4].

Financial markets play a significant role in adapting firms' internationalization process, and exporting is predominantly sensitive to credit availability since exporter firms cope with additional costs for international market penetration. Furthermore, exporters need long-term investments to compete with international competitors and gain comparative advantage, and financial institutions may allocate resources for exporters' investments. However, the opposite situation for firms would be as Clementi and Hopenhayn's (2006) result asserting that firms' investment is dampened by credit restraints, and thus their growth progress is interrupted.

[4] See Loane and Bell (2006), Binks et al. (2006), Guo et al. (2013), Boot and Thakor (2000), Boter and Lundström (2005)

Manova et al. (2015) assert that firms need lending to fund exporting expenditures. More productive firms gain high revenues, yield great returns for investors, and generally cannot face any repayment problem. In addition, larger cash flows of exporter firms from domestic sales create room to export (Thomas and Chaney (2016).

Minetti and Zhu (2011) investigate whether credit rationing affects firms' exporting decisions for 4680 Italian firms. They reach that export volume of the industries with high external finance dependence decrease in case of rationing. Moreover, high-tech sectors are more affected ones and their exports impede in case of credit rationing as they compete with the rivals from developed countries. Manova's (2013) findings, studying 107 countries and 27 sectors between 1985 and 1995, confirm Minneti and Zhu's (2011) results. She points that poor financial organizations lead to trade distortion through fewer target markets and low product diversity, decrease in total trade volume. She also finds that export activities disproportionately more are affected by credit constraints. The findings of Bellone et al. (2008) confirm that of Manova (2013), and they claim that exporting possibility of financially restrained firms is very low since these firms cannot cope with the additional costs resulting from international market penetration.

Muuls (2008) finds that productive Belgian firms tend to export more under suitable financial conditions and rates. Also, credit restraints determine the extensive margins of trade however, this is not valid for the intensive margin. Under normal conditions, Chaney (2013) concludes more productive firms may likely face fewer credit constraints because they usually do not face credit repayment problems due to their higher profits. Contrary, those firms may need less external funding as they can gain more profits from domestic sales. His claims are consistent with those of Eickelpasch and Vogel (2009), asserting that productive exporter firms may have limited liability and can handle easily additional sunk costs when entering foreign markets.

Berman and Hericout's (2010) findings demonstrate that better interaction between financial companies and export firms stimulates penetration of the export market however, this does not foster the increase in export volumes. Additionally, Manova et al. (2009) reveal that unsuitable financial conditions and credit frictions may negatively affect export volumes for the Chinese firms with heavy debt. They also claim that foreign

companies, especially joint ventures and foreign-affiliated firms overwhelm credit constraints or credit crunch as a result of liquidity supports from parent companies.

The process of export funding by the bank relies on mutual gains. Outward-oriented firms with high credibility are also profitable and low-risk customers for banks. According to Donckels (2000), growth-oriented firms are generally dependent on funds provided by banks and other financial companies. Export is a usual strategy to advance the operations, and exporting firms are possible to obtain more resources from banks as a result of their credit ranges and reputation (Caneghem and Campenhout 2012). In addition to funding facilities, exporting firms can reach considerable different information through banks to reduce uncertainty in international markets (Meyer and Skak 2002).

For Turkey, there are a few empirical types of research investigating the relationship between export performance and bank credits. Demirhan and Ercan (2015) work on credit constraints and export performance by using a company account dataset from CBRT for 1990-2014. The result of the study reveals that firms' export market entry decision is negatively affected by credit constraints and exporting firms need financial resources to survive in international markets. They also point out that the self-selection mechanism of exporters does not work under a credit crunch. However firms that reach satisfactorily financial resources participate in export markets as they overcome the additional trade costs. During economic turmoil, the existence of credit crunch, severe external demand, and non-price competition (accessing financial resources and subsidies) plays an important role in exportation decisions.

2.2.6. Capital Intensity

Capital intensity provides a competitive advantage through a technologically supreme production process or improved product quality. Capital intensity is considered as a determiner factor in enhancing firm and sector export performance. The literature on capital intensive mainly agrees on the opinion that productive companies with high capital to labor ratio can acquire more shares in international markets while small firms with low capital intensive have less export share.

The findings of Bernard et al. (2007) that exporter firms have more capital intensive (approximately 12 percent) than non-exporter firms support this opinion. Likewise, Kimura and Kiyota (2006) reach the same result from a different perspective and suggesting that the productive firms can engage in international markets while less productive firms merely concentrate on the local market. In addition, Porter (1985) underlines the view that a firm needs more capital intensity to compete internationally and to improve its product quality or diminish unfavorable differences from other products.

Toshihiro (2011) explains that in Japanese manufacturing firms eliminate high transportation costs through scale economies, and higher capital intensive has more advantages than low capital-intensive small firms for exporting. Another study highlighting the comparative advantage of higher capital-intensive firms is Crozet and Trionfetti (2013). They seek to identify firm-level differences in capital-labor ratio. According to the model, the countries' comparative advantage contributes to individually that of firms, and thus similar firms in different industries or countries have distinct relative export and sales volume.

Bernard and Wagner (1996) find that capital intensity positively affects German firms' export performance, and non-exporting firms have less capital intensity. Besides, Guner et al. (2010) also find that is significantly associated with the US and Germany firms export performance are significantly correlated with capital intensity while this correlation for Japanese firms cannot be detected. Additionally, Fu et al. (2009) reached a significant correlation between capital intensive and Chinese firms export performance by using 36.941 firms.

The widely known approach asserts that capital intensity endows to the efficient level of a firm's operations, the common use of technology, labor productivity, cutting cost, and foreign market penetration. That is, any increase in capital intensity leads to an upgraded production process and higher value-added progress. At the same time, the capital intensity at the firm level can highly influence labor productivity due to the inventions and available capital stock (Liu et al., 2001). They find that considerable improvement

in the Chinese electronics industry's labor productivity results from the factors such as firm scale, human capacity, capital intensity, foreign direct investment inflows.

As far as the industries are concerned, Balassa (1964) argues that a progressive change in relative advantage starts with a change in the tangible and intangible capital accumulation and human capital stock, and capital intensive products replace labor-intensive products. Firms with higher capital intensity can enhance competitive powers via an increase in product quality, scale economies, improvement in labor productivity, and total factor productivity coming from intensive capital usage in the production process. Capital intensity can be supported by a qualified workforce, while low labor wages and the necessity of importing capital goods can be a threat to capital intensity.

In sum, almost all firm-level studies reached the same conclusions: higher capital-intensive firms or sectors generally record more remarkable export performance.

2.2.7. Import Content of Export

The literature on international trade considers the different cost factors among countries as an implication of vertical fragmentation of production. Lowering costs and increasing productivity on international markets are the main motivations of heterogeneous firms, and considerable advancement in information and telecommunication technologies contributed to achieving their goals. The fact that world trade has grown faster than GDP and manufacturing industry value-added over the recent decade demonstrates that international fragmentation of production gained more ground in the world economy (OECD, 2014, p.10).

With the increase of globalization, the world production structure has become fragmented. As a result of the vertically fragmented production structure, firms produce the parts with high efficiency and cost-effectiveness instead of producing each stage of the product themselves. The remaining part of the product can be produced in different countries and can be gained a significant advantage in production costs. Effective cost and production structure enable firms to compete in both price and quality in export markets. For the fragmented global production process, Halpern et al. (2015) highlight price, quality advantages, and productivity gains. Supportive evidence of Halpern et al.

(2015) reveal that firm productivity heavily relies on the process due to the use of foreign firms and its lower costs in Hungary. Feng et al. (2016) empirically unveil that imported intermediate inputs generate larger firm export improvements, and imported intermediates are especially necessary for the expansion of the firms' exports in high R&D intensity industries.

Although firms can obtain both cost and productivity benefits from using imported intermediate goods during the production process, several types of research stress the damage of imported inputs used in production, highlight devastation in the domestic innovation field, and the decrease in employment through the labor market distortions. Boehm et al. (2017) identify that multinational firms in the US have more intent to import intermediates from the parent firm. This causes job losses in the US manufacturing industry, and a decline in jobs may reach 13 percent for US firms. Also, for China and the period of 1998-2007, the finding of Liu and Qiu (2016) is that importing foreign technologies may stimulate innovation culture, and innovation activities expenditure may decrease in China. However this course may give rise to a decrease in Chinese domestic firms' invention production.

Vertical fragmentation of production, which takes place through two main methods - foreign direct investment or acquisition of intermediate products abroad, is an organizational solution aimed at reducing costs and increasing productivity on international markets (Helpman, 2006). The advances in the field of information and communication play a crucial role in spreading the new global production model, making it possible to reduce coordination costs when production is divided into separate stages (Jones and Kierzkowski, 2001). This trend reflects faster growth in world trade volume and world trade has grown 5,2 percent in annual average between 1992 and 2002 while the real GDP of G7 countries grew 2,7 percent. This divergence between trade and GDP can be attributed to considerable intra-industry trade performance in especially intermediate and final goods over recent decades.

Import content of exports grew in all the European countries (Germany, Italy, Netherlands and Belgium), the production of transport equipment emerges as one of the highest internationalization levels. One of the features of Spain's production structure is its high

import content which exceeds those of the main euro areas economies even if the potential influence of the energy sector is excluded. Particularly in manufacturing sectors with medium and high technological content, the Spanish sector's greater propensity to import led the Spanish economy to be smaller (ECB, 2019).

In order to reach the comparative advantage and stimulate product diversity and upgrading in exports, countries tend to integrate into the global value chains process. The efficient procuring of intermediate inputs is the main advantage of global value chain participation. Enhancing export competitiveness mainly depends on supplying diversified, competitively priced and high-quality imported intermediates goods in a fierce global competition environment (Halpern et al., 2015).

The other empirical study reaching positive evidence of expansion in imported intermediate goods use is Li and Miao (2018), and it investigates the relationship between the increase in import input penetration and firms' market power for US firms over the period 1972-2014 by using input-output tables. The study finds that intermediate input penetration especially provides a higher mark-up pricing advantages for firms, and thus it contributes to an increase in export performance.

Lopez Gonzalez (2016) asserts that the growing usage of imported intermediate goods in export goods performs a crucial function in promoting export performance, the domestic value-added, and employment by using sectoral data on developed and emerging economies. Contrarily, Feng et al. (2016) affirm that Chinese manufacturing companies take advantage of the rising usage of intermediate inputs imported, and thus enter into more export markets and boost their performance. In his other study, Lopez Gonzalez (2017) tries to identify whether SMEs with intense import intermediates usage tend to export more and reach higher use of imported intermediate, input higher propensity to export. Moreover, the studies for different countries basically reach similar results with those of Lopez; (Bas and Strauss-Kahn (2014) for France firms; Damijan et al. (2013) for Slovenian firms, and Damijan and Kostevc (2015) for Spanish firms reach the finding that usage of imported intermediate inputs in production process stimulate export participation and performance.

In contrast, by analyzing the use of imported intermediate input in the Chilean manufacturing industry, Zaclicever (2019) finds that imported intermediate input usage impacts a limited number of products, destination countries, and diversification in SME export activity content, and thus they use less imported input than large firms.

In Turkey, there are limited empirical studies focusing on the relationship between an increase in imported intermediate inputs and exports. Saygılı et al. (2014) present a comprehensive study and detect what reasons may lead to increased use of imported intermediate goods by using survey and interview techniques based on the data. According to the study based on 145 large-scale manufacturing firms, the main reasons for imported intermediate and input use in production are following; the first is access to higher quality intermediate and investment goods, the second is sourcing imported goods at competitive prices, and the third is the multinational firms' production processes in Turkey.

Another empirical study for Turkey, Erduman et al. (2020), investigate the developments in production and exports' import content. The study finds that in general, exports have higher use of import than total production, relatively low import dependency in the services sector is the main factor for 2002-2017. It also asserts that the coke and refined petroleum products, basic metals, and motor vehicles sectors that have high capital and technology intensity need more import intermediate goods.

2.2.8. Profitability

High profitability provides more internal sources of financing for investments and expenditures. Buffer generated by profitability offers an opportunity to bear the additional cost and unexpected loss, and also more negotiating power for additional external financing. This positive environment ensures a competitive advantage for firms.

A high profitability ratio is regarded as a sign of sound firm performance. If the firm is more profitable or has a higher performance, anyone can expect that it has higher export performance. Melitz's (2003) model relies on the idea that high profits particularly incur productivity gains in firms and cover necessary additional costs for exporting. Bernard et al. (2007) support Melitz's view by underlying the assertion that "exporters are more

productive, not as a result of exporting, but because only the most productive firms overcome the costs of entering export markets. This sort of microeconomic heterogeneity can influence macroeconomic outcomes" (Bernard et al., 2007, p.106).

The relationship between profitability and exports presents a complex structure. High exports of firms are associated with profitability, but companies can export as a result of high profitability. Bernard and Jensen (1995) analyze the exporters' function in the US manufacturing industry. It carries out two different analyses by using firm-level data. First, it tests whether exporters were successful by analyzing the characteristics of exporters and non-exporters. Secondly, it examines how variables behave over time, considering the variables that affect exports and whether exporter firms exhibit improved performance compared to non-exporter firms. The findings demonstrate exporter firms over-perform in the short and long term compared to non-exporter counterparts in the manufacturing sector.

For Turkey, Metin-Özcan et al. (2002) investigate determining factors of the price-cost margins for the period 1980-1996 in the manufacturing industry sub-sectors after 1980 by using the panel data analysis method. They observe that the impact of openness on profit margins is quite low contrary to expectations, and profit margins in the Turkish manufacturing industry remained at their current levels in 16 years. These findings indicate that strong export performance cannot drive higher profitability and vice versa for Turkey.

The other study for Turkey, Mıhçı and Akkoyunlu Wigley (2002) examines the question of whether trade openness induces an increase in profit margins in the manufacturing industry and thus profitability. The study test whether the Customs Union impacts the Turkish manufacturing industry profitability or not. For this purpose, it estimates the price-cost margins by using the panel data method and 12 manufacturing sub-sectors data for 1994-2000. The estimation results indicate a statistically negative correlation between the exports and mark-up rate at the industry level.

Günay et al. (2005) also reach the same findings that trade openness and export performance have only a small impact on profit margins between 1980 and 1996, following trade liberalization. They probe real wages, cost, inflation, and thus gross profit

margin for 29 manufacturing sub-sector by using the panel data method. In the study, they conclude that trade openness has an impact on profit margins at a small proportion.

In conclusion, profitability is a sufficient indicator to identify whether firms have sufficient resources to penetrate international markets, and thus their export volume can increase. Higher profitability provides a considerable buffet to endure the additional costs of foreign market entries and unexpected risks. Many studies identify higher profitability means higher export performance ceteris paribus, while some find higher profitability may come following the export performance. On the other hand, openness to foreign markets could not bring higher profitability. Although the current studies document that exporter firms seem to be big, productive, high capital-labor ratio, and profitable than purely domestic firms, however, the direction of this causality is still not clear.

2.3. ORGANIZATIONAL VARIABLES

In the scope of the thesis, to give brief information on determinants of export behavior would be useful to understand the export performance in a holistic manner. In this context, the thesis presents an analysis of determinants of firms' export behavior.

Firm export behavior generally divides into two parts: internal and external factors. Firms can control the first while the latter is out of firm control and concerning the outside environment (Tesfom and Lutz, 2006). The export selling policy and tactics, the firm's characteristics, and managerial functions are regarded as internal components, while foreign and domestic market characteristics are regarded as external factors. The existing literature highlights the effects of internal factors (Sousa et al., 2008). Four main theories explain the internal and external factors: The Resource-Based View (RBV), Institutional-Based View (IBV), Contingency Theory (CT), The Organizational Learning Theory (OLT). Resource-Based Theory stresses the internal determinants (firm experience, size and capabilities, etc.). The Institutional Base Theory concentrates on the external determinants (environmental factors, laws and regulations, customs, norms, and habits). On the other hand, Contingency Theory points out that better export performance is contingent on the co-alignment and interaction between two factors. The Organizational Learning Theory offers that internationalization is a continuing process; hence, previous export experience influences current export performance.

The Management characteristics subject is one of the most studied fields on firm-level export performance variables (Chen et al., 2009). Management, behavioral and skill-based characteristics are classified as the controllable determinants to define firm-level export performance. Management characteristics include management dedication and insight to competitive capability and export opportunities and barriers. Exporting knowledge, employees' foreign language skills, and education levels are within the scope of skill-based characteristics. Exporting sales organization and demonstration, adaptive selling and sales support takes place in the scope of Behavioral characteristic, and this scope differentiates the effectiveness of export sales as low and superior (Nazar et al., 2011, 106-107).

In promoting firm-level export performance, another influential factor is the export strategy. Business strategy is a critical internal element for superior exporting because it directly affects export performance (Aaby and Slater, 1989). Besides, export performance has a solid link with a business strategy that is more general and covers the export marketing strategies (Leonidou et al., 2002). The studies of Ward and Durray (2000) and Williams et al. (1995) also reach evidence that firms' performance is substantially affected by manufacturing strategy. Also, Miltenburg (2008) stress manufacturing strategy and conclude that implementing manufacturing strategy implies higher sales and profits. Manufacturer managers can make strategic decisions, and firm performance is positively affected by them.

A firm competence based on more information enhances the quality of skills, resources, and strategies. Manufacturing strategy has significant effects on export performance and affects a firm's manufacturing capabilities and competitive advantage. The firm management concentrates on a manufacturing strategy implementation to derive the potential gains of the international markets. It is a firm's controllable resources and external market and environmental forces that determine its competitive advantage. These factors depend on the sector and country in which the firm carries out manufacturing operations. Political stability, bureaucracy, law order, export assistance, customs, consumer preferences, etc. are classified as environmental factors and have an effect on a firm's exports. Therefore, firms take into account alignment internal

capabilities and environmental forces to implement a superior export and marketing strategy (Hultman et al., 2011).

In conclusion, the export success of firms relies on internal (export marketing strategy, management competence, international experience, etc.) and external (local demand, export supports, infrastructure quality, local market characteristics, etc.) factors. When an exporter firm makes a strategic decision about exports, it should take into consideration the co-alignment of organizational and external influences.

CHAPTER 3

EXPORT PERFORMANCE OF THE TURKISH MANUFACTURING INDUSTRY: 1980-2019

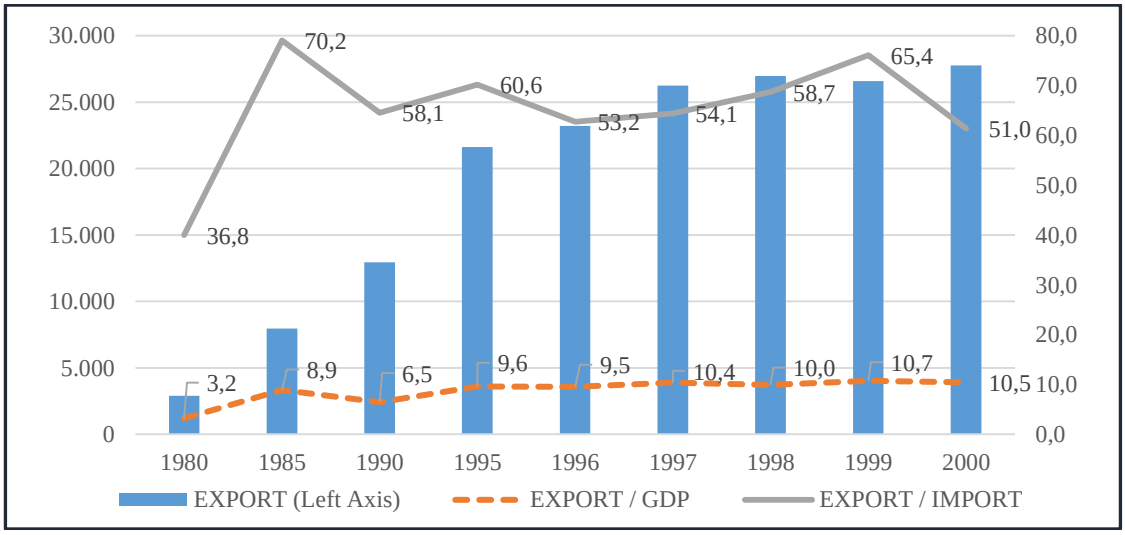
In this part of the study, Turkish manufacturing industry exports will be analyzed for the period 1980-2019 with a special emphasis on the developments in the last two decades. With that purpose, a brief assessment will be made on the main features of the Turkish manufacturing industry, namely, changes in the export performance and composition of export goods in connection with the export promotion policies. Before proceeding to the detailed analysis of manufacturing industry exports in the 2000s, it would be useful to provide an evaluation of the last two decades prior to this period. This will provide a broader and holistic perspective for the analysis of the Turkish manufacturing industry.

3.1. GENERAL CHARACTERISTICS OF MANUFACTURING INDUSTRY EXPORTS, 1980-2000

Turkey's economic development policy shifted from inward import-substituting industrialization policies to export-oriented policies at the beginning of the 1980s. At that time, wide-ranging economic reforms opened up the economy to international trade, direct controls on the import and quantitative restrictions were lifted, export promotion incentives were initiated, all of which built a profound foundation for export-led growth strategy. According to Nas (2008), new growth strategy led the value of exports to increase (about 2,9 billion dollars in 1980 and 21,6 billion dollars in 1995), upsurge in exports corresponds to an annual average increase of 15 percent., the sources of high export performance are following; diversification in external markets especially the Middle East), the increase the in number of trade delegations in foreign countries, plentiful export incentives, and the availability of production capacity built in the previous economy policy duration,

Figure 1 shows the ratio of export/import, export/GDP for the period 1980-2000

Figure 1: Export Volumes and Ratio of Export/Import (Billion $ and %)



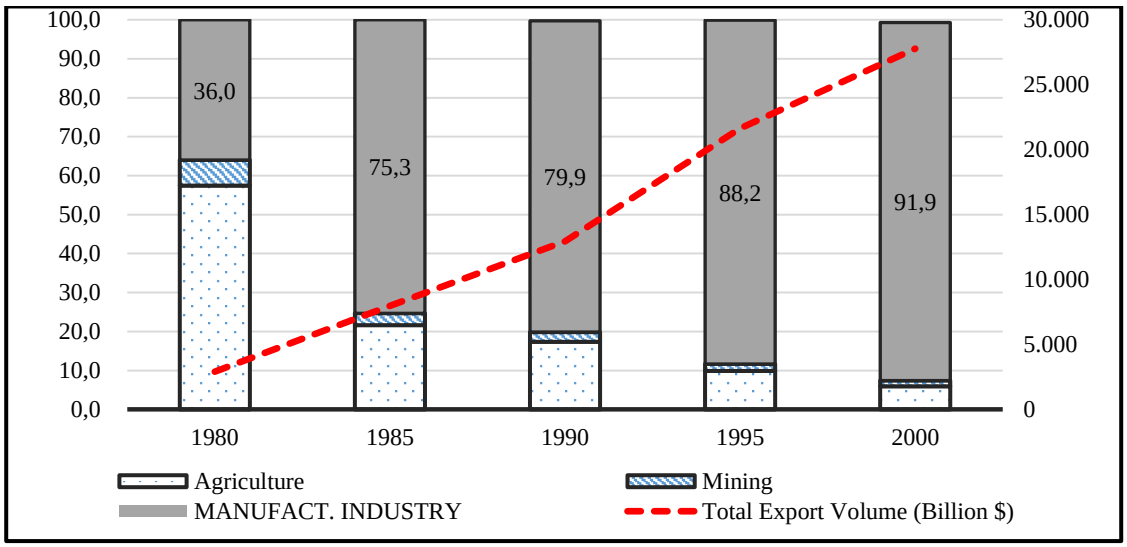
Source: Turkstat

With this outstanding performance, exports increased their relative importance in the economy. The export volume/GDP ratio upsurge from 3,2 percent in 1980 to 10,7 percent in 2000. Additionally, the export/import ratio raised from 36,8 percent to 51 percent at the same time. As a reflection of these developments, Turkey's share in world exports of goods increased approximately twofold compared to the value in the 1970s, and it accounted for 0,36 percent of the world export volume. However, Turkey's share in world exports stayed relatively steady, recorded only a minor growth between 1991 and 2000. Through the initial effects of trade liberalization in the 1980s, sharp growth rates were realized both in export and import, the moderation trend both in export and import growth rates altered during the mid-1990s. However, lower export growths than those of the import led to widening the trade deficit. Improvements in the trade deficit in the 1980s owing to structural adjustment programs and trade liberalization at the beginning of the 1980s ceased, and the current account deficit problem appeared in the second half of the 1980s. Financing the current account deficit entailed financial liberalization policies. Thus, financial and capital liberalization policies were initiated in 1989 (Boratav and Yeldan, 2001, p.4).

From 1980 to 2000, net FDI inflows to Turkey increased to 7.737 million dollars, and the majority of inflows took place in the 1990s. 6.092 million dollars inflowed Turkey as FDI in the 1990s as a consequence of capital movement regulations that abolished the

constraints and restrictions on capital movements, and thus TL became convertible against international currencies. According to UNCTAD, in the 1990s, Turkey's FDI inflows share corresponded to 0,53 percent of total FDI to developing countries, which was recorded as 1.147 billion dollars. Figure 2 shows the sectoral composition of exports for 1980-2000

Figure 2: Turkish Exports by Sectors (1980-2000)



Source: Turkstat

The intentionally depreciated Turkish lira, generous subsidies, and certain privileges for exporter firms were mainly the determinants of remarkable export success in the 1980s. According to Aydın et al. (2007), artificial price competitiveness policies and export subsidy and promotion-oriented policy implementations were effective in the export performance success during the 1980s. For the1980s and 1990s, the empirical study Şahinbeyoğlu and Ulaşan (1999) refer to a statistically substantial correlation between exports and real effective exchange rate.

Table 2 shows the top five products and their export/import ratio and shares in the manufacturing industry.

Table 2: Top 5 Export Goods in 1980-2000 (Million Dollars and %)

1980				1990			
Products	**Export Volume**	**Exp./İmp.**	**Share in Man. Ind.**	**Products**	**Export Volume**	**Exp./İmp.**	**Share in Man. Ind.**
Textile Products	348,9	4,2	32,8	**Wearing Apparel**	2.889,0	188,03	27,5
Food and Beverages	206,0	0,78	19,3	**Textile Products**	1.769,8	4,01	16,8
Wearing Apparel	131,0	13139,1	12,3	**Basic Metals**	1.738,5	0,98	16,6
Other Non Metallic	75,6	1,08	7,1	**Food and Beverages**	1.045,7	1,12	9,9
Chemical Products	71,3	0,06	6,7	**Chemical Products**	950,3	0,29	9,0
1995				**2000**			
Products	**Export Volume**	**Exp./İmp.**	**Share in Man. Ind.**	**Products**	**Export Volume**	**Exp./İmp.**	**Share in Man. Ind.**
Wearing Apparel	5.070,3	76,78	26,3	**Wearing Apparel**	5.417, 1	20,3	21,2
Textile Products	3.406,0	2,13	17,7	**Textile Products**	4.614,1	2,5	18,1
Food and Beverages	2.318,4	1,31	12,0	**Basic Metals**	2.247,1	0,6	8,8
Basic Metals	2.264,3	0,79	11,8	**Food and Beverages**	1.835,5	1,6	7,2
Chemical Products	1.154,7	0,19	6,0	**Motor Vehic. trail.**	1.745,0	0,3	6,8

Source: Turkstat

Turkey's exports dominantly consisted of agriculture products, raw materials, labor-intensive products during the1980s. As seen in Table 5, the top five export products in the manufacturing industry were textile products, food and beverage products, wearing apparel, other non-metallic and chemical products in 1980. In the period of 1980-2000, it can be said that the sectoral composition of exports shifted from agricultural goods to industrial goods. The change in the sectoral composition of exports also reveals that Turkish exports transformed from the raw materials and agriculture-intensive sectors into medium and high tech manufacturing goods, and therefore refers to the technological advancement of exports. As of 2000, the top five products were the following; wearing apparel, textile products, basic metals, food and beverage and motor vehicle and trails products.

The share of the top 10 countries increased 80-85 percent in the 1990s while it was around 70-75 percent in the 1980s. This development indicates the increasing concentration of exports by the country group. In the same period, five out top 10 export markets consisted of the Middle East region and USSR, and their share was 25,7 percent. As of 2000, EU countries dominated top export markets in Turkish exports, and their share reached almost 47 percent.

Table 3: Top 10 Markets of Manufacturing Industry Exports (%)

1980		1990		2000	
Country	**Share in Man.**	**Country**	**Share in Man.**	**Country**	**Share in Man.**
Germany	25,4	Germany	24,9	Germany	18,9
Italy	9,9	Italy	8,7	USA	11,6
Iraq	7,4	USA	6,4	UK	7,7
Iran	6,6	UK	6,3	Italy	6,3
France	6,4	France	6,1	France	6,2
Syria	5,4	Iran	4,6	Holland	3,0
Switzerland	4,0	USSR*	4,5	Israel	2,5
USSR	3,2	Holland	3,5	Spain	2,4
Belgium-Luxembourg	3,2	Belgium-Luxembourg	2,6	Belgium-Luxembourg	2,3
Lebanon	3,1	Switzerland	2,2	Russia	2,1

Source: Turkstat
(*): USSR: Union of Soviet Socialist Republics

The fact that seven out of the top ten countries in Turkey's export destinations are from the European Union region is not surprising because of the establishment of the Customs Union in 1995. While the customs agreement, which is based on industrial products, resulted in Turkey's free access to the second-largest market, Turkish firms faced increased competition. Remarkable export performance in the manufacturing industry in the 2000s partly resulted from the Customs Union Agreement with the EU (İzmen and Yılmaz, 2009; Neyapti et al., 2007; Utkulu and Seymen, 2006)

3.2. GENERAL CHARACTERISTICS OF MANUFACTURING INDUSTRY EXPORTS, 2001-2019

In this section, developments in the manufacturing industry in the 2000s will be analyzed. The sectors will be examined more closely in terms of the structure of exports, foreign

direct investment inflows, R&D investments, access to finance, the import content of export, export-oriented sectors, and market diversity.

After establishing Customs Union with the European Union (EU), the Turkish manufacturing industry faced increased international competition; however increasing competitive pressure led to a fall in mark-ups and market power. Thus, it can be interpreted that the agreement created positive externalities on the Turkish economy through especially competition and export spillovers. Wigley and Mihci (2002) argue that the pricing attitude and Turkish manufacturing industry's market structure need to adjust to the new competitive climate. Within the scope of the export-oriented environment, sectors in the manufacturing industry expanded into foreign markets and entered new markets as well as increased productivity in production. This development brought about the rapid growth of exports in the manufacturing industry (Yılmaz, 2011). Yılmaz (2011) also claims that the Turkish manufacturing industry kept up its performance despite the economic crisis in 2001 and China's entry into world export markets as a consequence of increased productivity and competitiveness.

As a reflection of these developments, 19 sectors out of 23 manufacturing sectors recorded the growth above the annual average (25 percent) for the period 2002-2018. During the same period, manufacturing industry exports increased by 28.6 percent at an annual average, marked as a remarkable performance. Compared to other countries, ten years average growth rates of manufacturing export in OECD member countries, Czech Republic, Brazil, Mexico and India were 19,3%, 17,8%, 12,8, 19,4%, and 25,9 for the period 2005-2015, respectively. Comparative figures display a higher annual average growth rate for Turkish manufacturing exports.

Table 4: Export Volumes of Manufacturing Sectors (Million Dollars)

Sectors	2002	2010	2018	Average Annual Growth Rate (2002-2018)
Printing and reproduction of recorded media	2	20	40	**125,0**
Manufacture of furniture	229	1.230	2.345	**64,0**
Manufacture of beverages	35	181	303	**54,1**
Manufacture of machinery and equipment n.e.c.	1.082	5.340	9.410	**54,4**
Manufacture of fabricated metal products, except machinery and equipment	998	5.297	8.250	**51,7**
Other manufacturing	691	2.089	5.480	**49,6**
Manufacture of motor vehicles, trailers and semi-trailers	3.690	15.239	28.532	**48,3**
Manufacture of paper and paper products	317	1.218	2.433	**48,0**
Manufacture of pharmaceuticals, medicinal chemical and botanical products	163	606	1.177	**45,1**
Manuf. of wood and of prod. of wood and cork, except furni.; Manuf. of articles of straw and plaiting mater.	119	587	842	**44,2**
Manufacture of rubber and plastics products	1.095	4.908	7.534	**43,0**
Manufacture of leather and related products	212	682	1.324	**39,0**
Manufacture of coke and refined petroleum products	670	4.149	4.039	**37,7**
Manufacture of tobacco products	108	298	628	**36,3**
Manufacture of chemicals and chemical products	1.421	5.124	8.161	**35,9**
Manufacture of electrical equipment	1.843	7.944	10.457	**35,5**
Manufacture of food products	2.248	7.465	11.971	**33,3**
Manufacture of basic metals	3.885	14.424	19.233	**30,9**
Manufacture of other transport equipment	634	1.719	2.706	**26,7**
Manufacture of textiles	4.050	8.774	11.622	**17,9**
Manufacture of other non-metallic mineral products	1.469	3.993	4.102	**17,5**
Manufacture of wearing apparel	8.090	12.737	15.600	**12,1**
Manufacture of computer, electronic and optical products	1.680	2.323	2.545	**9,5**
Total Manufacturing	**34.734**	**106.347**	**158.735**	**28,6**

Source: Turkstat

For the period 2002-2018, 3 out of Turkey's top five exporting sectors that have competitive advantages; are wearing apparel, textile, and food products, and these sectors are recognized as the traditional labor-intensive sector. Motor vehicle and fabricated metal products (except machine and equipment) sectors placed in the top five sectors in 16 year period and technology-intensive of these sectors are medium and medium-high. According to Saygılı et al. (2010), strengthening vertical specialization with developed countries' firms became the main driving force in the emergence of leading sectors. The

other striking issue is that the wearing apparel sector has a high export/import ratio (895.2 percent), and; this suggests that Turkey has a significant competitive advantage in the labor-intensive sector despite the countries that have cheap labor endowments such as China, Bangladesh, India, and Pakistan.

Table 5: Top 5 Export Sectors with Trade Surplus (Million Dollar and %)

2002				2018			
Sectors	Net Export	Exp/Imp	Contribution to Trade Balance (%)	Sectors	Net Export	Exp/Imp	Contribution to Trade Balance (%)
Wearing Apparel	7.824	3040,4	105,5	Wearing Apparel	13.857	895,2	75,0
Textiles	1.589	164,6	21,4	Motor Vehic. and Trail.	10.312	156,6	55,8
Other Non-Met. Min. Prod.	1.054	353,7	14,2	Food products	6.992	240,4	37,9
Food Products	813	156,6	11,0	Textile	6.965	249,6	37,7
Motor Vehic. and Trail.	694	123,2	9,4	Fabricated Metal Prod., except mach. and equip.	3.523	174,5	19,1

Source: Turkstat

Table 6: Top 5 Export Sectors with Trade Deficit (Million Dollar and %)

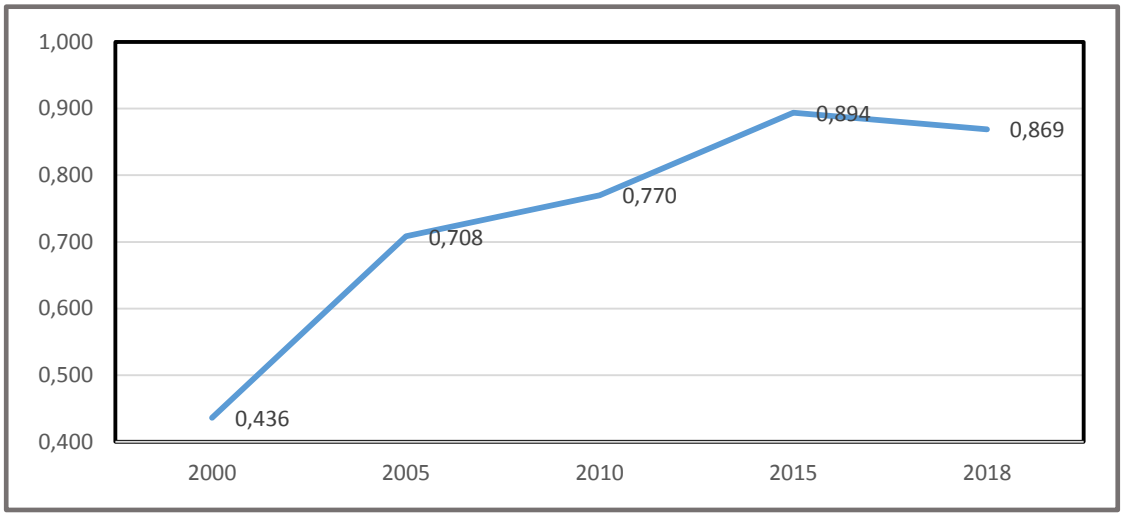
2002				2018			
Sectors	Net Export	Exp/Imp	Contribution to Trade Balance (%)	Sectors	Net Export	Exp/Imp	Contribution to Trade Balance (%)
Chemicals and chem. Products	-5.486	20,6	-74,0	Chemicals and chem. Products	-20.561	28,4	-111,3
Mach. and Equip. n.e.c.	-4.913	18,1	-66,2	Basic Metals	-12.543	60,5	-67,9
Computer, Elect. and Optical prod.	-2.371	41,5	-32,0	Coke and Refined Petroleum Prod.	-11.511	25,9	-62,3
Pharmaceuticals, Medic. Chem. and Botanical Prod.	-1.550	9,5	-20,9	Pharmaceuticals, Medic. Chem. and Botanical Prod.	-10.360	19,7	-56,1
Coke and Refined Petroleum Prod.	-1.517	30,6	-20,5	Mach. and Equip. n.e.c.	-8.516	52,5	-46,1

Source: Turkstat

As seen in Table 6, 4 out of the top five sectors with trade deficit has not changed their position for the period 2002-2018: Chemicals and Chemical, Coke and Refined Petroleum, Machinery and Equipment, Pharmaceuticals, medical chemical and botanical products. However, the export/import ratio of chemicals and chemical products and machinery and equipment increased from 20,6 to 28,4 and from 18,1 to 52,5, respectively.

Figure 3 indicates that the rapid growth in manufacturing industry exports reflected a higher share in world exports as it rose from 0,436 percent in 2000 to 0.869 percent in 2018.

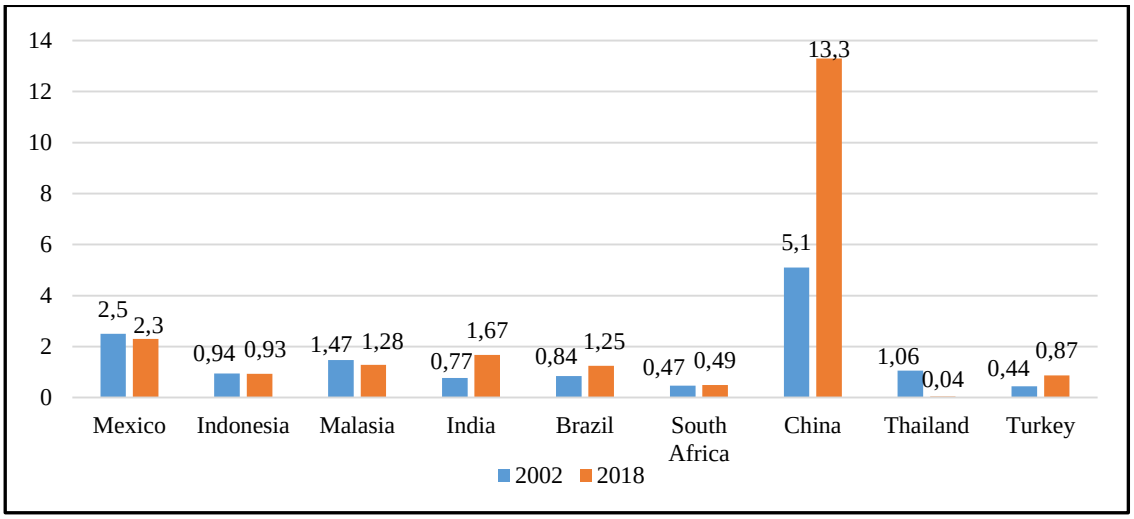
Figure 3: Share of Turkey in World Export Volume (2000-2018)



Source: IMF, International Financial Statistics

Figure 4 shows that Turkey has increased export volumes compared to several developing countries. As seen from Figure 4, the export share of Mexico, Malaysia, and Thailand in the world export volume decreased in the same period. Additionally, those of South Africa and Brazil did not record a satisfactory performance. In the same period, South Korea's share rose from 2,7 percent to 3,1 percent, that of China from 5.1 percent to 13.3 percent, that of India from 0,77 percent to 1,67. As a result, compared to the above-mentioned countries, it is clear that Turkey made remarkable achievements in increasing its share in world exports. However, it is clear that the value of Turkey's export should be raised by implementing R&D activities and increasing export destinations, and enriching product range to receive more share from world trade.

Figure 4: Export Shares of Selected Countries in World Export Volume



Source: World Bank, World Economic Indicators

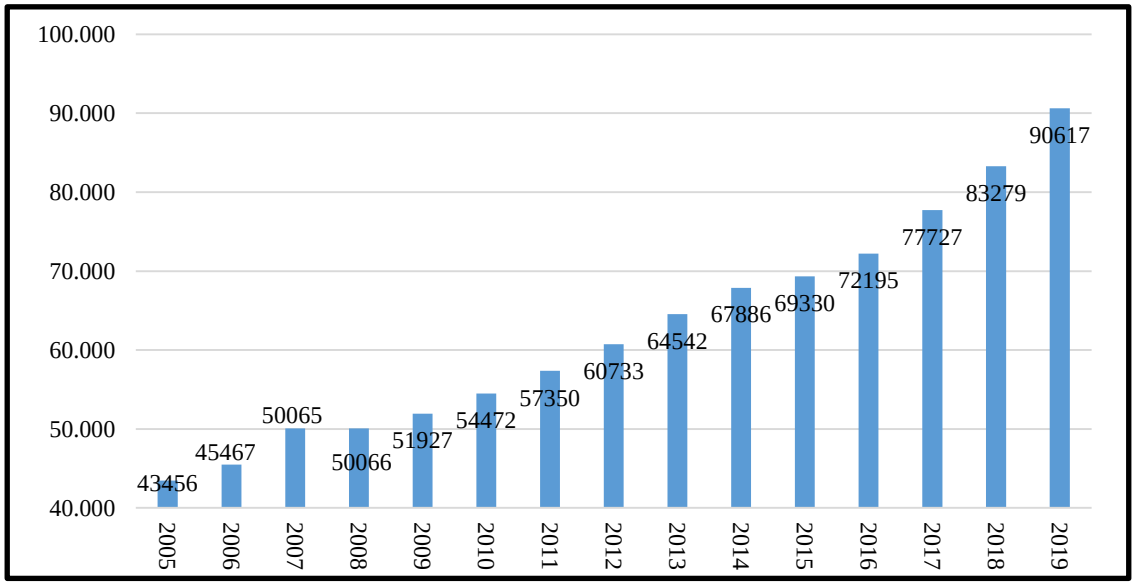
In the last decades, the high export performance in Turkey in terms of volume, value, and diversification relies on the price advantage arising from the real exchange rate, a sharp contraction in domestic demand due to the 2001 crisis. Owing to the necessity of opening up foreign markets to compensate for domestic demand shrink and benefit from price advantage, firms turned towards export markets. Additionally, the global value chain process driven by intra-industry trade fact has forced firms to open up international markets. This trend led to a continuous increase in the number of exporters since 2001. The number of exporters, which was 43,456 in 2005, increased to 82,279 in 2018. This increase was escorted by an improvement in per exporter value-added, which increased from 1,690,823 dollars in 2005 to 2,127,412 dollars in 2018.

Parallel to the increase in the number of exporters, the number of export destination countries also grew up. According to World Bank World Integrated Trade Solution (WITS), it increased from 193 in 2001 to 220 in 2018. In addition, the country concentration in export has decreased significantly, and it means that risks arising from the concentration of exports destinations may reduce. WITS Hirschman Herfindahl index[5], shows that Turkey has made significant progress in diversifying its market

[5] On the World Bank World Integrated Trade Solution web page, HH is defined as the following: "Hirschman Herfindahl index is a measure of the dispersion of trade value across an exporter's partners. A country with trade (export or import) that is concentrated in a few markets will have an index value close to 1. Similarly, a country with a perfectly diversified trade portfolio will have an index close to zero." Web page:

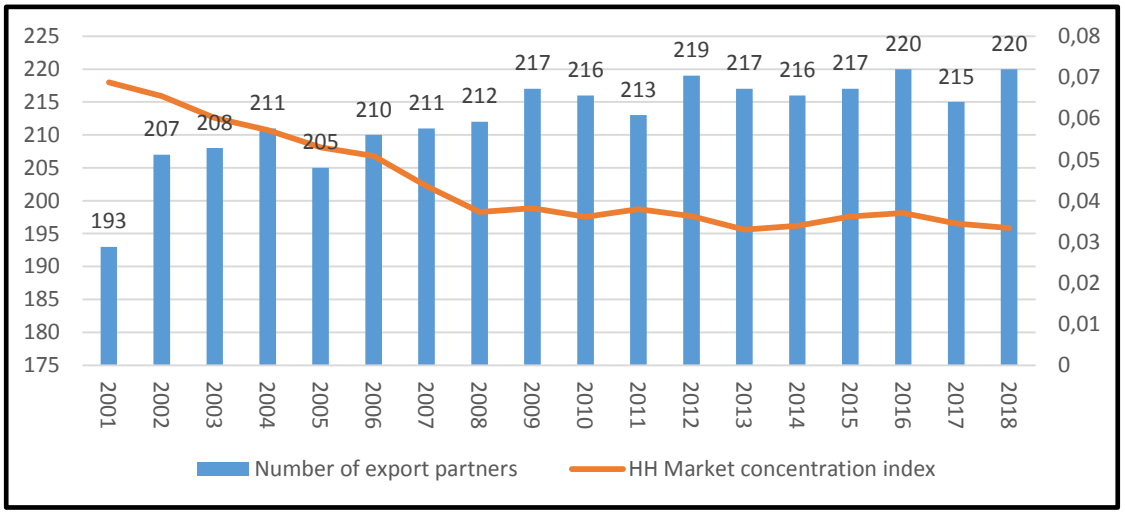
portfolio. As it can be seen from Figure 6, the HH market concentration index, which was 0.07 point in 2001, decreased to 0.03 point in 2018.

Figure 5: Number of Exporters in Turkey



Source: Ministry of Trade

Figure 6: Number of Export Partners and HH Market Concentration Index



Source: World Bank, World Integrated Trade Statistics,

(*) HH Market Concentration Index and Export Partners figures are taken from World Bank WITS web site database.

https://tcdata360.worldbank.org/indicators/hh.mkt?country=BRA&indicator=2370&viz=line_chart&years=1988,2015

A substantial decline in HH Index was accompanied by a decrease in the top 10 countries of manufacturing exports. The share of these countries fell to 49,3 percent from 60,3 percent between 2002 and 2018. Another striking issue on top foreign markets is that the share of EU countries which are among the top 10 countries, decreased from 45,3 percent to 26,5 percent in the same time. This demonstrates that market diversity in manufacturing exports increased along with high growth export performance.

Table 7: Top 10 Countries in Manufacturing Industry Exports

2002		2010		2018	
Country	Share in Man. Ind. Exp.	Country	Share in Man. Ind. Exp.	Country	Share in Man. Ind. Exp.
Germany	16,3	**Germany**	10,3	**Germany**	9,9
USA	9,4	**UK**	6,7	**UK**	6,9
UK	8,7	**Italy**	5,7	**Italy**	5,7
Italy	6,5	**France**	5,5	**USA**	5,0
France	6,1	**Iraq**	5,3	**Iraq**	4,8
Spain	3,0	**Russia**	3,5	**Spain**	4,7
Russia	3,0	**USA**	3,4	**France**	4,5
Netherland	2,8	**Spain**	3,2	**Netherland**	2,8
Israel	2,5	**UAE**	3,1	**Israel**	2,4
Belgium	1,9	**Iran**	2,8	**Romania**	2,3
Total of 10	**60,3**		**49,7**		**49,3**

Source: Turkstat

Turkey seems quite successful between 2000 and 2011[6]. In addition to higher export volume growth, Turkey's performance in increasing the extensive margin is progressive compared to countries like China and India. Aldan and Çulha (2013) claim that a substantial capacity exists to increase extensive margin in both products and location. They suggest that entering into new markets is a key factor in Turkey's extensive margins success, and the effect of exporting new products is low.

In their study, Aldan and Çulha (2013) affirm that the number of products exported by Turkey was 673 in 1993 and 702 in 2011 while product-country pairs were 14.161 in 1993 and 52.632 in 2011 by using SITC Rev 3 four-digit level data. This trend indicates relatively Turkey's extensive margin achievement when compared to Mexico (number of products: 709 in 1993 and 705 in 2011; product-country pairs: 11.578 in 1993 and 25.842

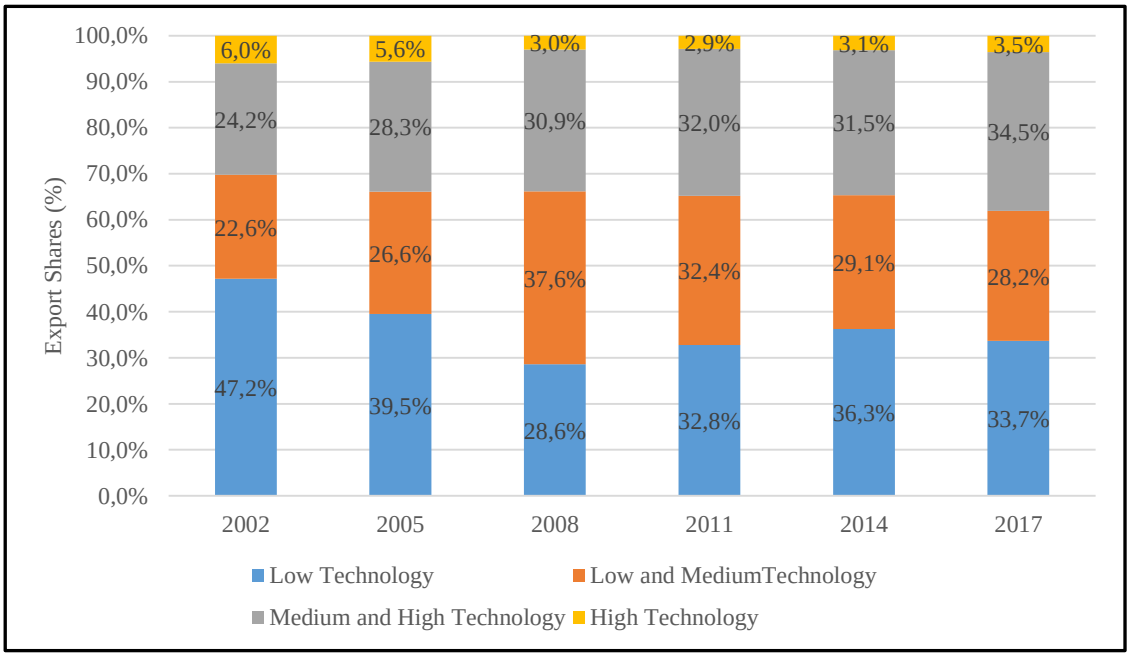
[6] Extensive and intensive margins are measured by several methods. See Hummels and Klenow (2005) for detailed information.

in 2011) and the Czech Republic (number of products: 702 in 1993 and 706 in 2011; product-country pairs: 18.158 in 1993 and 40.017 in 2011).

3.2.1. Technological Intensity of Manufacturing Industry Exports

An impressive structural change in trade is an increase in the share of technology-intensive goods and a decline in that of traditional goods with low technology. In this context, transforming from traditional sectors with low value-added to high technology sectors is greatly important to reach high and sustainable growth rates in Turkey. Despite the fact that remarkable export performance between 2002 and 2018, the high-tech exports' share in the manufacturing exports has constantly declined. As seen from Figure 7, high-tech exports' share declined 2,5 percent points (from 6 percent to 3,5 percent) between 2002 and 2017. The relatively high increase of exports in the medium-high technology sectors, especially motor vehicles (from 10.6 percent in 2002 to 18 percent in 2017), was the primary cause of the decline in high-tech sectors' share. There is only one high-tech sector among the top exporter sectors as of 2017 (manufacture of electrical equipment). Policy applications such as rising R&D activities, increasing scientific studies, developing human resources in these sectors (material and design engineering, etc.) can improve high-tech sectors export performance.

Figure 7: Technological Intensity in Manufacturing Industry Exports



Source: Turkstat
(*)Shares of technological intensity are calculated by the author by using ISIC Rev 4 classifications in accordance with Eurostat statements.

As seen in Figure 7, high and medium-high technology's share in export volume is 38,0 percent in 2017, while the share of these sectors in world trade is about 60 percent in 2018. These figures demonstrate that Turkey should enlarge export destinations and product diversifications by raising the share of export goods with high technology.

3.2.2. Import Content of Exports

Export is considered a major driver of an economy as a consequence of the positive effect on employment, value-added, and economic transformation. However, a country can reach these potential gains through exports through the increased domestic value-added content of exported products. Owing to the global value chain and fragmentation in the production of various goods across different countries that dominate the world economic system, the crucial question that emerged in the last decade is to what extent export generates or contributes to domestic value-added and employment.

Table 8 shows that the intermediate import dependency of Turkish manufacturing sectors and the domestic value-added generated by exports. Table 8 also shows the domestic value-added calculations from OECD TiVA statistics[7]; and reveals that some exporter sectors have high import dependencies, such as motor vehicle manufacturing, textile, clothing and leather products, and the basic metal industry and fabrication products. In addition to their high import dependency, the intermediate imports' share embodied in motor vehicle exports increased to 44,2 percent in 2016 from 40,2 percent in 2005 while that of the basic metal industry reached 33,7 percent from 26,1 percent. The increasing share of intermediate import goods in Turkish manufacturing sectors reveals that domestic value-added remained in Turkey decrease.

The high rate of imports in the motor vehicles sector is owing to the globally fragmented production structure and the distribution of vehicle components among countries. The fact that the import of major parts such as engines and invisible computer systems are imported from multinational firms' production centers explains the import dependency

in question. In the textile and wearing apparel sectors, use of dyes, fabrics, and other materials imported from abroad is also effective on high import dependency. Both the increase in technological infrastructure, capital intensity, and the increase in qualified personnel can be said as the main factors that can reduce the import dependency of exports in the upcoming period.

Table 8: Share of the Intermediate Imports Embodied in Exports by Sectors

		2005	2008	2011	2014	2015	2016
1	Food products, beverages and tobacco	22,7	21,3	22,0	23,3	23,2	21,2
2	Textile, apparel, leather and related products	39,4	34,4	34,1	36,3	35,9	35,3
3	Wood, product of wood and cork	11,5	13,6	13,4	16,3	16,5	15,7
4	Paper products and printing	21,8	23,6	23,6	26,5	26,5	25,6
5	Coke and refined petroleum products	21,1	24,7	23,6	25,1	25,1	23,5
6	Chemical and pharmaceutical products	25,8	29,1	29,1	30,6	29,9	29,1
7	Rubber and Plastic products	23,8	27,9	26,4	28,8	28,4	28,2
8	Other non-metallic mineral	9,9	12,6	10,8	11,5	11,6	11,4
9	Basic metal and fabricated metal products	26,1	34,4	30,8	33,3	33,4	33,7
10	Computer, electronic and electronic equipment	31,9	29,9	28,3	29,5	28,8	27,3
11	Machinery and equipment, NEC	24,0	30,1	27,4	29,6	29,5	29,3
12	Motor vehicles, trails, semi trials	40,2	45,9	38,4	42,3	43,3	44,2
13	Other manufacturing	21,3	26,5	24,4	26,4	26,2	26,1

Source: OECD TIVA

(*) The ratio indicates "the share of intermediate imports from all partners' industry i that are used domestically by country c (both indirectly and directly) in producing goods and services for export, as a percentage of total intermediate imports (from industry i)" (OECD, December 2019)

Several reasons underlie high intermediate imports in some sectors exports. The main reason is the global value chain process that reorganizes production internationally and causes the transition to a structure where countries make increasingly smaller contributions in the production of final products. With the global value chain process, countries specialize in certain stages of production rather than producing all stages of a product. Production of a product is divided into stages, and stages are carried out in different countries. According to Wigley et al. (2018), a phenomenon is also valid for Turkey. Therefore, import has also been an inevitable component of the export and production in Turkey as well as many countries. They also assert that liberal trade policies that started in the 1980s and the Customs Union Agreement, which was signed in 1995, are the main milestones that contribute to this process. Another study on high intermediate import dependency of exports is Aydın et al. (2010), and they claim that

Turkey has a higher comparative advantage in final goods compared to intermediate goods, and this leads to the need for more intermediate import goods in the production process.

One of the studies investigating why domestic producers in Turkey import intermediate goods from abroad is Saygılı et al. (2010). The study yields the following conclusions on why manufacturers import:

- Receiving cheap from abroad (the cheaper exchange rate and cross-currency developments, availability of cheap supply from countries such as China and India, advantages of the Customs Union, advantages of Inward Processing Regime in practice)
- Quality and uninterrupted supply from abroad (standards and policies of buyer companies)
- Insufficient domestic production amount
- Relations with another company
- Credit facility from abroad (import credit facility and/or deferred payments options by sellers**)**

3.2.3. Low Value-added of Exports

The fact of specialization in certain sectors and certain stages of the final product in the global value chain context relies on the fact that productivity and growth increase through competition and information sharing (OECD 2013). However, if countries have a production structure that can leave the more added value in the country, they can benefit from this process more. Countries focus on designing policies to keep a larger part of value-added in the country. For Turkey, there are studies investigating domestic value added and global value chain (Taymaz et al. (2011), Gündoğdu and Saraçoğlu (2016), Koymen et al (2016), Ziemann and Guerard (2016), Yukseler and Türkan (2008))

Taymaz et al. (2011) argue that even though Turkey's competitive power in medium-tech products such as motor vehicles and machinery increases, it could not generate higher value-added in these sectors because of specialization based on standard technology process. Koymen et al. (2016) also find similar conclusions that Turkey joined the global

value chain process, however it specialized in assembly and low value-added stages of goods.

Table 9: Domestic Value-Added Content of Gross Exports[8] by Manufacturing Sectors

	2005	2010	2015	Change for 10 year
Manufacturing	0,79	0,77	0,78	-0,010
Food products, beverages and tobacco	0,93	0,90	0,88	-0,044
Textiles, wearing apparel, leather and related products	0,84	0,82	0,84	0,004
Wood and paper products; printing	0,83	0,81	0,81	-0,018
Chemicals and non-metallic mineral products	0,76	0,75	0,76	0,002
- Coke and refined petroleum products	0,57	0,61	0,67	0,100
- Chemicals and pharmaceutical products	0,82	0,80	0,76	-0,058
- Rubber and plastic products	0,73	0,71	0,73	-0,003
- Other non-metallic mineral products	0,85	0,84	0,87	0,015
Basic metals and fabricated metal products	0,72	0,72	0,74	0,021
- Basic metals	0,71	0,72	0,73	0,021
- Fabricated metal products	0,74	0,72	0,76	0,023
Computers, electronic and electrical equipment	0,75	0,70	0,68	-0,068
- Computer, electronic and optical products	0,83	0,78	0,76	-0,071
- Electrical equipment	0,70	0,68	0,66	-0,036
Machinery and equipment, nec	0,74	0,73	0,76	0,024
Transport equipment	0,74	0,74	0,74	0,002
- Motor vehicles, trailers and semi-trailers	0,72	0,73	0,73	0,005
- Other transport equipment	0,91	0,84	0,87	-0,039
Other manufacturing; repair and installation of machinery and equipment	0,82	0,81	0,82	0,006

Source: OECD TiVA Statistics

Yukseler and Türkan (2008) suggest that an upswing in the share of the sectors such as machinery-equipment, motor vehicles, electrical machinery, radio, TV, communication equipment, and devices brought along high intra-industry trade rate in the manufacturing industry. They also unveil that the intra-industry trade rate, which was 46.8 percent on average for the period 1996-2000, increased to 61.4 percent for the period 2002-2007 as a result of the deepening of vertical specialization in these sectors, product differentiation, the involvement of multinational companies in these sectors and cheap imported input

[8] "Domestic Value Added content of exports, by industry *i* in Turkey to partner country/region, represents the exported value-added that had been generated anywhere in the Turkish economy (i.e. not just by the exporting industry). The domestic value-added content of gross exports could be split further into three components, direct domestic industry value-added, indirect domestic value-added and re-imported domestic value-added". Web site address: https://www.oecd.org/sti/ind/measuring-trade-in-value-added.htm#access

supply. As a result of this development, they assert that there has been a decline in the value-added creation rate of production.

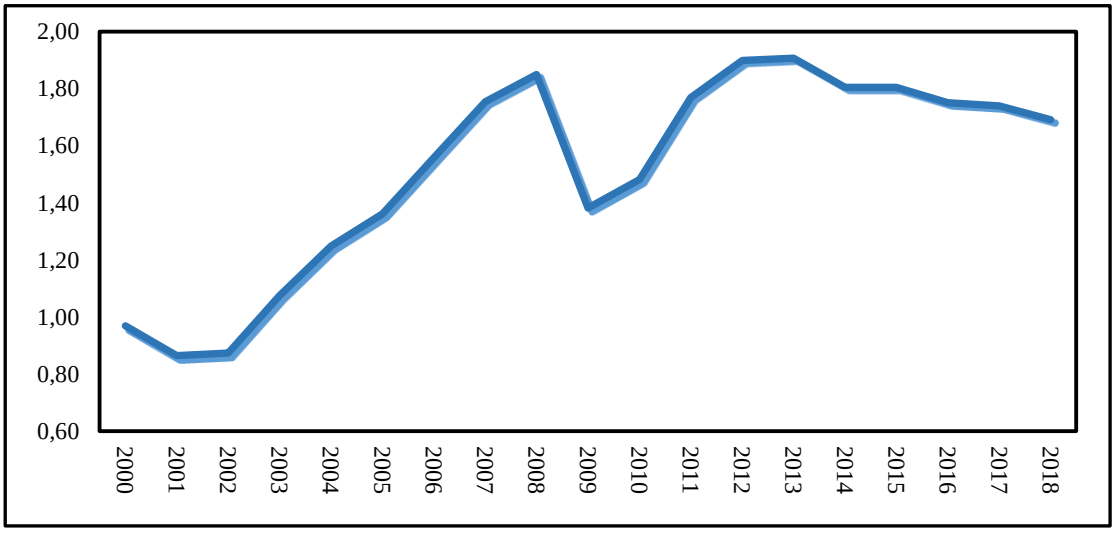
As seen in Table 9, the domestic value-added content of manufacturing exports remained approximately at the same level. For the manufacturing industry, it became 0,79 percent in 2015 while it was 0,78 in 2005. This figure in Mexico, China, Brazil, Indonesia and OECD member Countries category was 0,53, 0,81, 0,84, 0,82 and 0,89 respectively. On the other hand, the sector which has a higher global value chain process, such as the chemicals and pharmaceutical products sector and the computer, electronic and optical products sectors, experienced a substantial decline in domestic value-added content of gross export (from 0,82 to 76; from 0,75 to 0,68). It means that these sectors cannot strengthen their backward and forward trade linkages with global value chain progress or need more infrastructure investment such as skilled labor, environment, R&D, and innovation knowledge base capital. Domestic value-added content in traditional export sectors, namely textile and wearing apparel, did not change in 10 years. In addition, those of the sector with high export volumes such as basic metals, fabricated metal products, and motor vehicles recorded a small positive change. However, an increase in domestic value-added ratios of sectors is crucial for the adjustment process towards a more export-oriented manufacturing industry.

The magnitude of domestic value-added, as well as share of domestic value-added content of gross exports, is notable. A country that produces high value-added products may obtain more gains from trade even if its domestic value-added content of gross export is low. Turkey's exports per kilo value are lower than those of many developing countries since more than half of export goods in Turkey consist of products with low and medium technology l. As seen in Figure 8, exports per kilo increased from 0.87 dollars in 2002 to 1.69 dollars as of the end of 2018 (1,91 dollars in 2013). This figure was 2,84 dollars in the Czech Republic and 2,31 dollars in Poland for 2018. Export per kg value varies depending on sector and product group. For instance, in the automotive sector, which is categorized as medium technology and top export industry, the export value per kilogram is 7 dollars. However, the sector's exports leave low domestic value-added, and thus country gains less from trade. Trade policies taking into account these constraints play a critical role in gaining more from trade. These figures reveal that

Turkey should raise high value-added products in manufacturing export volumes. In this direction, upgrading product quality, more funds for R&D activities, correctly modeled subsidy packages, etc., may raise the unit price for exports and thus export revenues. Thus, the high value-added export products would contribute to diminishing deterioration in terms of trade resulting from imported high technological products.

Figure 8 shows the Export Volume per Kilogram.

Figure 8: Export Volume per Kilogram (US $)

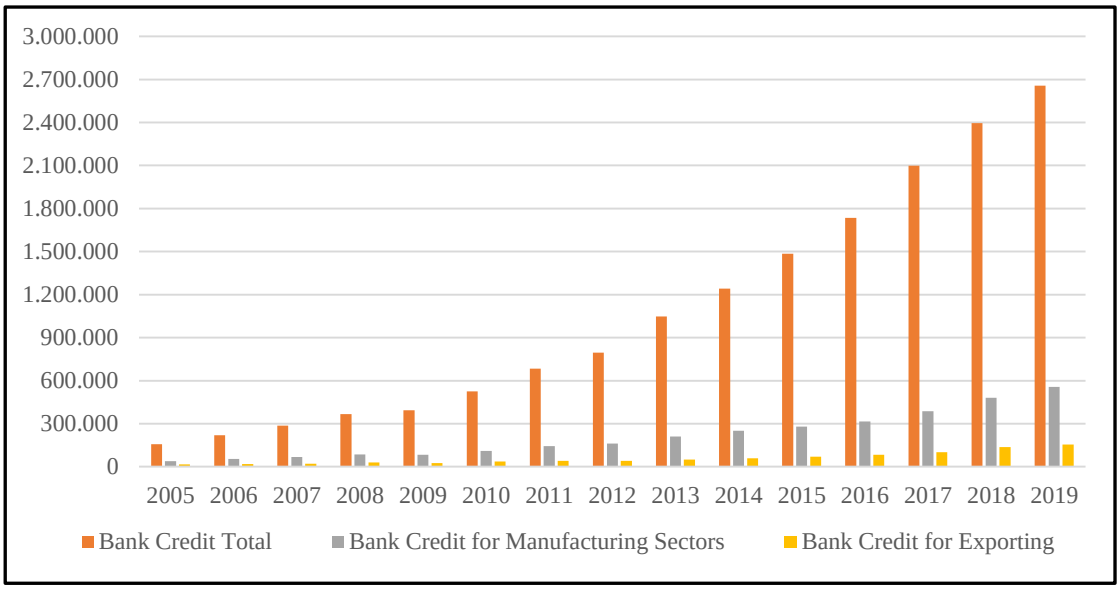


Source: Turkstat. Export volume per kilogram figure are found by dividing annual total export volume into the weights of goods exported.

3.2.4. Access to Finance in Manufacturing Exports

Although the bank credits have a vital function in achieving the efficient and effective performance of the manufacturing sector and providing funds for business expansion and growth, it can be said that the Turkish manufacturing industry has not been supported adequately by banks through both credits and other financial tools. As seen in Figure 9, despite the 2.574 percent increase in bank credits in the last 15 years (2004-2019), credits to manufacturing sector exports rose 1.815 percent. This demonstrates that banks could not allocate sufficient resources to manufacturing sectors. On the other hand, total consumer credits extended to individuals recorded a remarkable increase of 3.843 percent at the same time. The figures verify that the banking sector preferred consumer credits over than manufacturing industry during credit expansion periods.

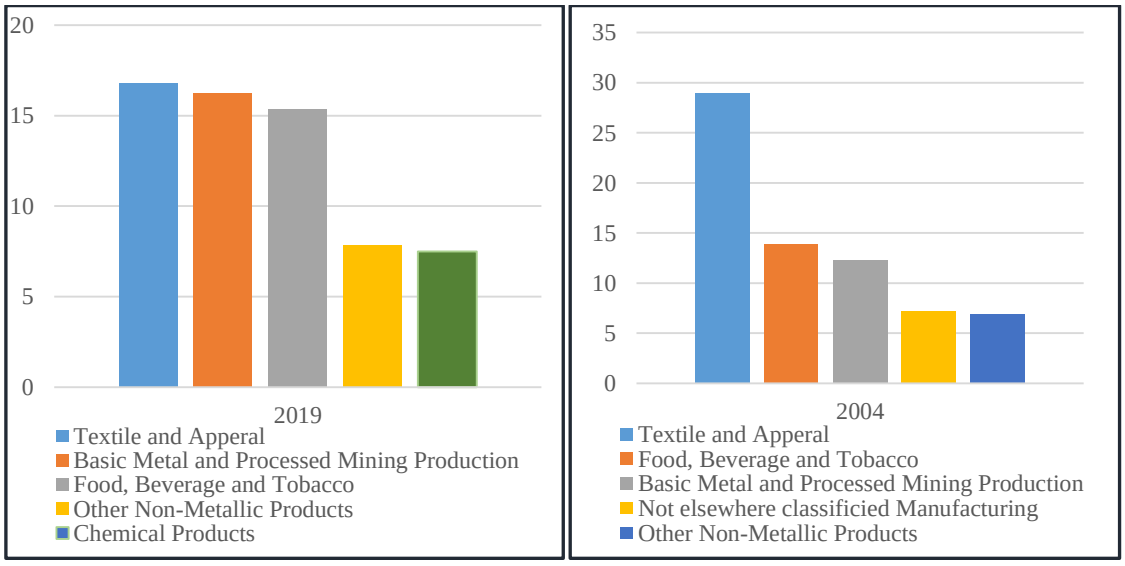
Figure 9: Development of Bank Credits (Million TL)



Source: Banking Regulation and Supervision Authority (BRSA)

Examining bank credits extended to manufacturing sectors, it is clear that top sectors credit extended by banks have not changed despite the transformation experienced in the manufacturing industry. Food, Beverage and Tobacco sector, Textile and apparel sector, Basic metal sector and not elsewhere classified sector has placed in top five during both 2004 and 2019 period. These sectors are traditional sectors with low and medium technology, however they have high shares in total manufacturing export volumes.

Figure 10: Top 5 Manufacturing Sectors in Banking Credits



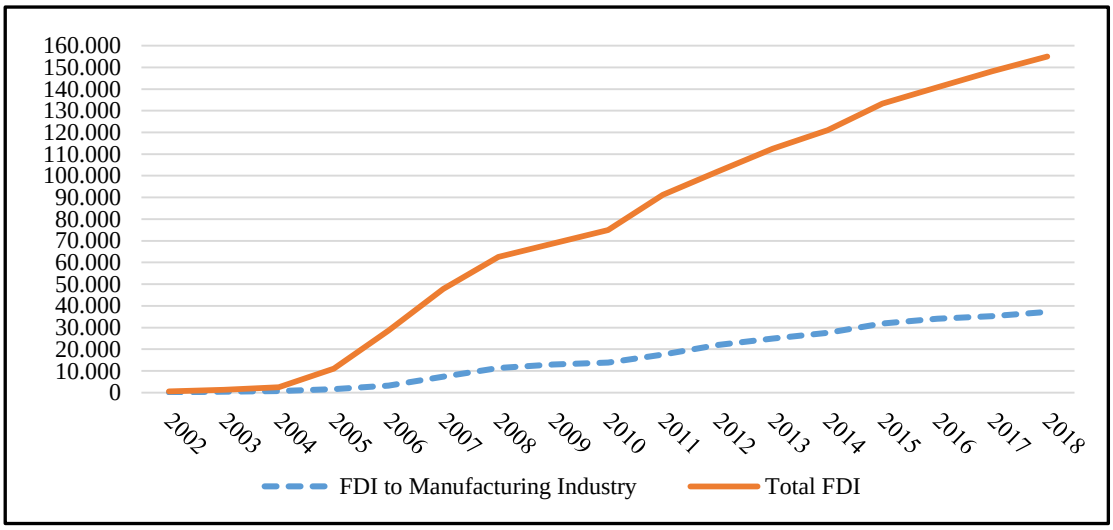
Source: Banking Regulation and Supervision Authority (BRSA)

3.2.5. Foreign Direct Investment Inflows

As discussed in Chapter 2, FDI inflows come with several competitive benefits such as technology and export market information. Also, FDI can lead to a considerable upswing in the host country's exports. Owing to the benefits of FDI inflows, FDI inflows perform a critical function in promoting export performance for especially in developing economies. As a developing country, Turkey also needs more FDI inflows to upgrading productivity and competition level of manufacturing sectors. In this context, FDI inflows are scrutinized because of their importance in technology spillover and productivity.

Turkey experienced 158 billion dollars foreign direct investment inflows (FDI) in total from 2002 to 2018. A 24 percent of the total FDI inflows, corresponding to 37,2 billion dollars, were directed towards the manufacturing industry, while 65,9 percent of the total was directed towards the services sector, corresponding to 95,9 billion dollars. In the manufacturing industry, the food, beverage and tobacco sector (9 billion dollars) attracted the highest FDI inflows, and pharmaceuticals, medicinal chemical, and botanical products (5,7 billion dollars) is the second one in FDI inflows. According to FDI literature, FDI inflows are beneficial to local firms as they gain knowledge of new technologies, and know-how. The fact that the pharmaceutical sector and food, beverage and tobacco sectors recorded 45,1 and 33,7 percent increase at annual average export growth is consistent with theories regarding FDI. On the other hand, Kleinert (2003) asserts that FDI inflows cause a rise in imported intermediate goods to use. From this perspective, Turkey could face higher use of intermediate imported in case of an increase in FDI inflows to the manufacturing industry.

Figure 11: FDI Inflows to Turkey (Million Dollars)

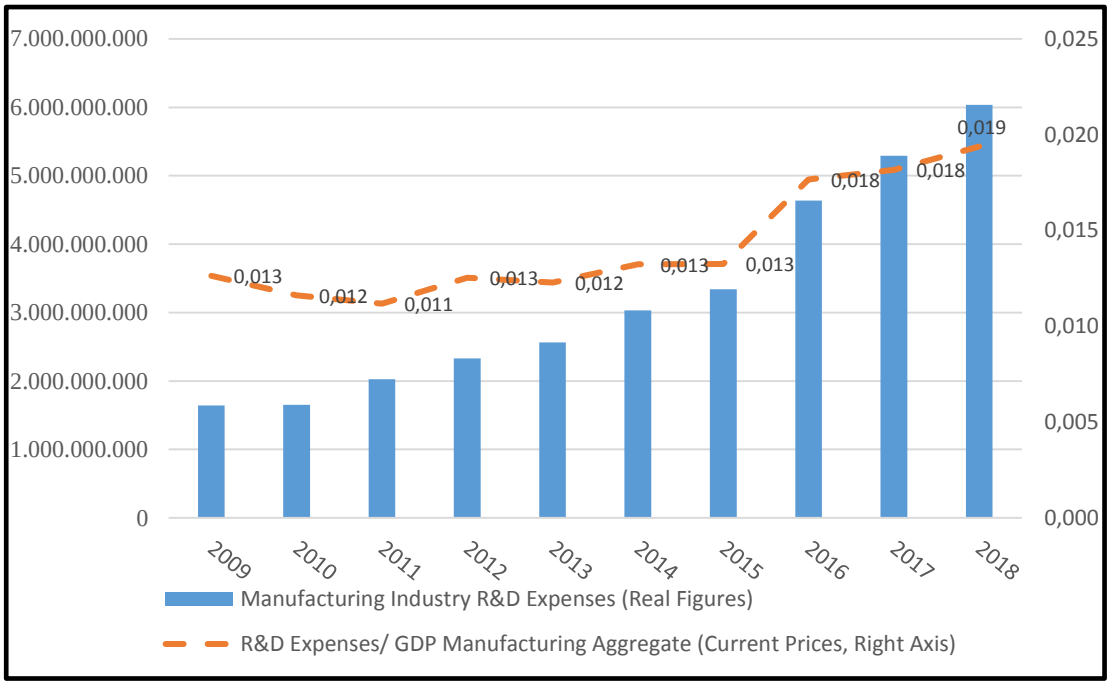


Source: Central Bank of the Republic of Turkey (CBRT)

3.2.6. Research and Development Activities in the Manufacturing Industry

The basic goal of research and development activities is to improve the manufacturing industry export performance, especially for high and medium high technology goods, through innovation, technological infrastructure development, and product quality. Within this perspective, R&D expenditures of the Turkish manufacturing industry increased both in current and real terms, reaching 19 per thousand in 2018 from 13 per thousand of the manufacturing industry's gross national product in 2009. Despite these figures, it can be said that resources allocated for R&D activities are not sufficient when compared to other countries. The ratio of enterprises' R&D expenses to Gross Domestic Production for EU 27 member countries was 1.36 percent in 2017 and 3.68 percent in South Korea[9].

Figure 12: R&D Expenditures of Manufacturing Industry (TL and %)



Source: Turkstat

CHAPTER 4

EMPIRICAL ANALYSIS OF THE DETERMINANTS OF TURKISH MANUFACTURING INDUSTRY EXPORTS

The manufacturing industry has primary importance in emerging countries like Turkey since it is considered the engine of growth due to the dynamic externalities generated by rapid productivity growth and technological changes. Accordingly, identifying the determinants of the manufacturing sectors' export performance helps to enhance the potential competitive power of the Turkish manufacturing industry. In this context, the analysis of Turkish manufacturing industry export behavior at the sectoral level and firm size level also have critical importance for the policymakers.

The main purpose of Chapter 4 is to detect the determinants of Turkish manufacturing industry export performance by using both sectoral data and sectoral data classified according to firm size for 2006-2018. In the first section, the models used in estimating the determinants of Turkish manufacturing industry sector exports are introduced. The data set and variables are explained and provides brief information on the estimation methods in Section 5.2 and 5.3, respectively. Section 5.4 displays the results of the econometric estimates.

4.1. SPECIFICATION OF THE MODELS

For quantitative analysis of the determinants of export performance on a sectoral basis, the following equation will be estimated:

$$\boldsymbol{EX_{i,t} = \alpha_0 + \alpha_1 EX_{i,t-1} + \alpha_2 RD_{i,t-1} + \alpha_3 CI_{i,t} + \alpha_4 BC_{i,t} + \alpha_5 WP_{i,t} + \alpha_6 P_{i,t-1} + \alpha_7 REER_{i,t} + \alpha_8 TPG_{i,t} + \varepsilon_{i,t}} \quad \textbf{(1)}$$

In Equation (1), the dependent variable $EX_{i,t}$ is the export value for sector *i* in year *t*. R&D Expenses (RD), sectoral capital intensity (CI), bank credits (BC), the real exchange rate (RER), labor productivity (WP), sectoral profitability (P), and foreign demand (TPG) are the main explanatory variables of the model. RD is the sectoral research and development expenses; CI is the sectoral capital intensity; BC is the sectoral credit

extended; REER is the annual average change in the sectoral real exchange rate; PW is the per worker net sales (labor productivity); P is the sectoral profitability; TPG is the growth rate for the sectoral trade partners which measures the external demand; and ε is the usual error term.

In addition to empirical analysis at the sectoral level, the thesis address whether the determinants of exports demonstrate any differences in the firm size at the sectoral level. Accordingly, in addition to the estimating the equation (1) for the manufacturing industry sectors (Model 1), determinants of exports based on the firm's scale at the sectoral level will also be considered. With that aim, the equation (1) is estimated for small (Model 2), medium (Model 3), and large-sized firms (Model 4) at the sectoral level.

Before moving on to the detailed explanation of the variables, it is helpful to provide a brief explanation of data sources for the variables. The database provided by the Ministry of Industry and Technology Entrepreneurship Information System[10] are the variables that are labeled as microeconomic (or sector-specific) determinants (R&D expenses (RD), sectoral capital intensity (CI), bank credits (BC), labor productivity (PW), sectoral profitability (P)). For macroeconomic determinants (the real exchange rate (REER) and foreign demand (TPG), the data from various resources such as TURKSTAT, CBRT, IMF, World Bank, and the OECD are used. 23 sectors in the manufacturing industry are categorized according to the ISIC Rev.4 classification. Based on the study "International Standard Industrial Classification of All Economic Activities Revision 4" published by United Nations, manufacturing sectors are selected. In the Report, 24 divisions are

[10] Entrepreneurship Information System (EIS) is a project of collecting data on economic activities of enterprises obtained from the administrative registers of different public institutions and organizations within the framework of common standards. Economic activities of enterprises and workplaces are classified according to the Statistical Classification of Economic Activities in the European Community NACE Rev 2 and enterprise Number, the Number of Workplaces, the Number of Employees, SME Classification (micro, small, and medium), information on non-SME enterprises. The classification of the economic activities of enterprises is taken from the records of TURKSTAT and GİB (Presidency of Revenue Administration) database. The EIS database provides the following series; Balance Sheet (annual) and Income Statements, the number of employees, gender and age group information, foreign trade data, patent, utility model, industrial design and trademark application and registration information, subsidies and loans, R&D supports. Dataset range from 2006 to 2018 and cover more than 90 percent of the actual data of TURKSTAT. Another database is offered by the Central Bank of the Republic of Turkey (CBRT). The database includes the data covering 15 sectors (NCA Rev.1) from 1999 to 2007, and another database comprises the data with 24 sectors from 2008 to 2017[10]. These different categorizations and periods would be a drawback in setting a panel data model and measure export performance as we work on the determinants of sector export performance. Therefore, we preferred to employ the data from EIS database rather than the CBRT dataset.

classified under Manufacturing Section. We consider 23 of 24 divisions and exclude the Repair and Installation of Machinery and Equipment division from the model scope due to its low export capability and domestic-oriented production structure. The sectors listed under Section C in the Report are following:[11]

Section C: Manufacturing Sectors
10 Manufacture of food products
11 Manufacture of beverages
12 Manufacture of tobacco products
13 Manufacture of textiles
14 Manufacture of wearing apparel
15 Manufacture of leather and related products
16 Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17 Manufacture of paper and paper products
18 Printing and reproduction of recorded media
19 Manufacture of coke and refined petroleum products
20 Manufacture of chemicals and chemical products
21 Manufacture of pharmaceuticals, medicinal chemical and botanical products
22 Manufacture of rubber and plastics products
23 Manufacture of other non-metallic mineral products
24 Manufacture of basic metals
25 Manufacture of fabricated metal products, except machinery and equipment
26 Manufacture of computer, electronic and optical products
27 Manufacture of electrical equipment
28 Manufacture of machinery and equipment n.e.c.
29 Manufacture of motor vehicles, trailers and semi-trailers
30 Manufacture of other transport equipment
31 Manufacture of furniture
32 Other manufacturing

4.1.1. Dependent Variable

Sectoral Exports (**EX)** are generated annually from the Sectoral Income Statement of the EIS database. For every sector, TL denominated figures are deflated by the sectoral production price index. Sectoral Exports Sales as sector export performance are defined;

[11] The sector of installation and repair of machinery and equipment of Manufacturing Industry ISIC Rev.4 classification was not addressed in the sectoral analysis since it does not have export potential.

the log of real sectoral exports is the dependent variable. An increase in the export volume signs positive performance and vice versa.

4.1.2. Independent Variables

4.1.2.1. Microeconomic Determinants of Exports

Sectoral Exports of Previous Period (LagEX) are the lagged value of sectoral exports volume. It is generated annually from the Sectoral Income Statement of EIS database. The exporting process is informative and firms can gain knowledge and competence in markets, competition, destinations, product quality, and consumer preferences by exporting. This learning contributes to enhancing exporting capacity and performance. Consequently, the relationship between exports volume and previous period exports volume is expected positive.

Sectoral Research and Development Expenses (R&D) is calculated by dividing R&D expenses by the number of labor in the relevant sector and obtained annually from the Sectoral Income Statement of the EIS database. R&D expenses are deflated by the sectoral producer index for every sector. As it is studied before, R&D expenses per person are used as a proxy for technology level. High technology levels and innovations are the main necessities for upgrading the production process quality. Consequently, the variable sign is expected to be positive.

Sectoral Capital Intensity (CI) is the tangible assets to the number of workers ratio and calculated based on the Sectoral Balance Sheet under the EIS database. Tangible assets are deflated by the sectoral producer index for every sector. Land and real estate items that do not directly relate to productivity are not included in calculating the relevant variable. Capital intensity per worker is considered another important input for quality products. Higher capital intensity means higher productivity and profitability, thus providing substantial power to handle the sunk cost. Consequently, the capital intensity variable is expected to positively correlate with export volume as more capital intensity means higher productivity and lower cost of production.

Sectoral Bank Credit (BC) is the sum of short and long-term bank credits allocated to sectors and obtained from Sectoral Balance Sheets of the EIS dataset. Total bank credits (short and long term) are deflated by sectoral producer indices in every sector. Access to finance and receiving credit in favorable terms is crucial factors for exporters since exports require additional costs and investment. This variable is considered as a proxy for access to external resources. In Turkey, the financial sectors, especially banks provide credit facilities for manufacturing firms that face financial needs. The effect of access to suitable credit from the financial sector on export performance is expected to be positive.

Sectoral Profitability (P) is the profit/loss to total assets ratio (ROA) calculated from the Income Statements and Sectoral Balance Sheets figures in EIS dataset. Profit/loss and total assets items are deflated by the sectoral producer index for every sector. A higher profitability ratio (Return on Asset) contributes to overcoming the additional cost of entering into the new markets for firms. It is expected that higher profitability drives the increase in the export performance, and accordingly, its expected sign can be positive.

Sectoral Worker Productivity (WP) is the total sales to the number of workers ratio calculated from Income Statements and personnel information of the EIS dataset. In order to calculate the ratio in real terms, total sales items are deflated by the sectoral producer index for every sector**.** The relation between worker productivity and export performance is expected to be positive since WP contributes to general productivity and a low-cost production process.

4.1.2.2. Macroeconomic Determinants of Exports

As the real exchange rate explanatory variable, two different real exchange rate variables are employed in the empirical models. Firstly, the study computes the sectoral real exchange rates **(REER)** for the selected manufacturing industry sectors and 13 years (2006-2018). The method of Goldberg (2004) is used in calculating the sectoral real exchange rate for every year. In selecting a country for the sectoral exchange rate, the top 20 countries with the highest share in foreign sectoral trade (sum of export and import volume) are determined as a first step. The share of the top 20 trade partners for every sector varies depending on sectors and years. For instance, the share of the top 20

countries in motor vehicles, trailers and semi-trailers sector for 2007 is 86,9 percent, while the share in the food products sector for 2018 is 62,7. Nominal exchange rates and consumer price indices of the selected top countries are used to obtain the real exchange rate figures.

IMF's International Financial Statistics database provides the consumer price indices and nominal exchange rates of the selected countries and Turkey data. Turkey's import and export volumes based on the countries were taken from the TURKSTAT. Exchange rates of some countries that are not convertible to Turkish Lira are converted through cross exchange rate in the US dollar term.

The real exchange rate takes into account the prices between countries and corrects the nominal values accordingly. The real exchange rate can be expressed as the adjusted nominal exchange rate using the ratio of foreign country price levels to domestic price levels. In other words, it is based on the purchasing power parity. While collective exchange rate indices are readily available and useful in macroeconomic analysis, they do not contain industry-specific differences regarding trading partners and the level of competition (Goldberg, 2004, 1). A trading partner that is quite a strong competitor in a sector may not be a strong competitor in the total economy. As a result, a weighted real exchange rate based on shares of trade partners is calculated for the specific sector.

The real exchange rate is expressed as follows:

$$REER = NEER\ (Pf/Pd) \qquad (2)$$

In this equation, NEER is the nominal effective exchange rate in the domestic country; Pf, foreign country price level, and Pd indicate the domestic price level.

$$REER_{tC} = NEER_t^C\ (P_t^C\ /\ Pt^{TR}) \qquad (3)$$

Here $NEER_t^C$, Turkey's foreign trade partners of relevant bilateral nominal effective exchange rate; P_t^C the price level of the relevant foreign trade partner; Pt^{TR} indicates the price level in Turkey. The trade weights (TW) are calculated for each sector the top 20

trade partners based on the sum of export and import volumes, and formulations can be illustrated as follows:

$$TW_{jC} = (X+M) / \Sigma_C (X+M) \quad (4)$$

TW denote trade weights based on the sum of export and import for j sector. $(X + M)$ indicates the sector export and import volumes for each year. Based on this, the sectoral real exchange rate used in the study is obtained as follows:

$$REER_{jt} = \Sigma_C (TW_{jC} * RER_t^C) \quad (5)$$

The sectoral exchange rate in equation (5) is calculated for the sectors yearly for the period of 2006-2018.

A positive relation between sector export performance and sectoral reel exchange rate is expected. In case of an increase in sectoral REER, the price of products exported becomes relatively cheaper, and its demand will increase ceteris paribus.

The sector-specific real exchange rate indexes are effective in capturing changes in sector price competition driven by movements in the specific bilateral exchange rate. Different real exchange rate measures are applied to compute sector-specific bilateral exchange rates. These are; using export partner weights only, using import partner weights, and using an average of import and export weights by sector (Goldberg, 2004). In the study, the one using the sum of import and export of trade partners for a specific sector is used. Alternatively, the Central Bank of Turkey (CBRT) real effective exchange rate is employed to compare our sector-specific real exchange rates and employ them in the models as an alternative variable. The information and equations on the real effective exchange rate of Central Bank are indicated as follows.

REER (CBRT), is calculated based on consumer price indices of Turkey and its 45 trade partners by CBRT. It is published monthly and converted into annual data by taking 12 months of the year.

In Real Effective Exchange Rate Methodology[12], "REER is computed as the weighted geometric average of the prices in Turkey relative to the prices of its principal trade partners in international markets. The real effective exchange rate can be formulated as follows":

$$REER = \prod_{i=1}^{N} \left[\frac{P_{TUR}}{P_{i*} e_{i,TUR}} \right]^{w_i} \qquad (6)$$

"where w_i is country i's weight in Turkey's REER index, PTUR is the price index in Turkey, P_i is the price index in country i, $e_{i,TUR}$ is the nominal exchange rate of country i in terms of Turkish Lira (TL), and N is the number of countries included in the analysis. An increase in the REER represents an appreciation of the TL in real terms, denoting a rise in the value of Turkish commodities in terms of foreign commodities"[13].

REER CBT is computed by including 45 countries and three year-period manufacturing trade figures. For each period, country weights are computed and the computed figures are combined with the constructed chain index. The index formula is the below:

$$REER_t = REER_{t-1} \prod_{i=1}^{N} \left[\frac{\frac{P_{t,TUR}}{P_{t,i*} e_{t,i,TUR}}}{\frac{P_{t-1,TUR}}{P_{t-1,i*} e_{t-1,i,TUR}}} \right]^{w_{t,i}} \qquad (7)$$

In equation 7, t and t-1 denote the current month and the previous month while wt, and $REER_{t-1}$ denote the current month weight of country i and the real effective exchange rate index of the previous month. The monthly index is converted into an annual index through the use of the simple average method.

Sector Specific Weighted Growth Rate of Trade Partners (TPG) represents external demand for exports. The variable is calculated annually for each of the manufacturing sectors for the period 2006-2018. 92 countries, which have a substantial share in the export volume of Turkey's manufacturing sectors, are selected for the calculation. The sector-specific weighted growth rate of trade partners is computed based on its share in sector export volume for each sector and every year. The calculated figures represent a

[12] Real Effective Exchange Rate Metadata: Access website link: https://www.tcmb.gov.tr
[13] Real Effective Exchange Rate Metadata: Access website link: https://www.tcmb.gov.tr/

considerable part of the total trade partner's growths for every sector. For some sectors, exports to the selected countries cover 95 percent of the total export volume.

Annual growth rates of the selected countries and Turkey are taken from the World Bank WDI database. Foreign trade figures (import and export volumes of countries) are taken from Turkstat.

As in the sectoral REER calculation, the countries' GDP growth rates are weighted based on their export. Total manufacturing industry exports to these countries constitute 80 and 95 percent of the sector export volume. The trade partner growth figures are calculated for each year and each sector separately.

$$TW_{jit} = (X)_{it} / \Sigma_t(X)_{jt} \quad (8)$$

$$TPG_{jit} = \Sigma_t \ (TW_{jC} * TPG_{it}{}^{C}) \quad (9)$$

TW_{jc} is weights of trade partner i in sector j export, X_{jc} sector j exports to trade partner i in t year. TPG_{jit} denotes a weighted growth rate of trade partner i, TPG_{it} is the growth rate of trade partner i in year t. The relationship between sector export performance and Sector-Specific Weighted Trade Partner Growth Rate is expected positive as growth in GDP of trade partners reflects positively export demand.

4.2. DATA DESCRIPTION

Table 10 represents the descriptive statistics of the variables for the manufacturing industry sectors for the years 2006-2018 (Model 1).

Table 10: Descriptive Statistics of Model 1 (The Sectors)

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
EX	295	5.154.247.048	5.564.047.419	104.911.173	39.722.517.444
R&D	293	766	1.446	0	8.074
CI	295	53.048	47.339	9.370	295.834
WP	295	240.465	253.340	51.101	1.699.911
P	291	0,03	0,02	-0,09	0,12
BC	299	4.199.217.977	3.812.167.580	51.580.420	20.423.639.018
REER (SECTORAL)	299	124,19	19,99	58,88	194,68
REER (CBRT)	299	106,14	11,86	77,22	121,97
TPG	299	3,03	2,20	-3,98	17,11
No of Firms in Sectors	299	6.274	5.567	14	27.055
No of Employees in Sectors	299	130.338	125.803	3.485	507.355

The thesis also seeks to address whether these determinants demonstrate any difference based on the firm size at the sectoral level, and determinants of exports at the sectoral level. Accordingly, in addition to the estimation of Model 1, determinants of exports based on the firm's scale at the sectoral level will also be considered. With that aim, equation (1) is estimated for small, medium, and large-sized firms at the sectoral level.

In order to estimate the equation (1) at the different firm sizes, data for small, medium, and large-sized firms were collected. Thus, equation (1) for small-sized firms (Model 2), medium-sized firms (Model 3) and large-sized firms (Model 4) are estimated to investigate the impact of variables at the different firm sizes[14]. Descriptive statistics of scale-based models are presented in Table 11, Table 12, and Table 13.

[14] Classification of SMEs is based on the definitions and classifications specified in the Regulation related to SMMEs in the Official Gazette (24.06.2018). According to this definition and classification; **Small scale** is described as the number of employees between 10-49 and Net Sales or Financial Balance Sheet Size equal or smaller to 25,000,000 TL while **Medium Scale** is described as the number of employees between 50-249 and Net Sales or Financial Balance Sheet Size equal or less than 125.000.000 TL. Enterprises that are not classified under the classification mentioned above are defined as **Large Scale** or above SMEs.

Table 11: Descriptive Statistics of Model 2 (Small-Sized Firms)

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
EX	293	470.599.913	525.685.748	3.571.008	2.616.454.887
R&D	250	307,4	746,0	0,0	5.494,8
CI	280	31.349	34.371	7.673	255.427
WP	291	129.066	65.929	46.070	410.311
P	242	0,03	0,01	0,00	0,08
BC	284	510.681.632	428.748.874	12.108.953	2.015.383.325
REER (SECTORAL)	299	124,19	19,99	58,88	194,68
REER (CBRT)	299	106,14	11,86	77,22	121,97
TPG	299	3,03	2,20	-3,98	17,11
No of Firms	299	1.438	1351	1	5.354
No of Employees	299	31.803	30.307	161	137.620

Table 12: Descriptive Statistics of Model 3 (Medium-Sized Firms)

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
EX	286	964.526.909	975.720.897	12.499.373	5.511.137.468
R&D	219	511	919	0	5.343
CI	280	40.433	34.409	3.098	260.462
WP	290	164.568	93.094	46.362	594.628
P	227	0,03	0,02	0,00	0,08
BC	282	968.222.462	860.472.572	30.068.488	4.174.723.713
REER (SECTORAL)	299	124,19	19,99	58,88	194,68
REER (CBRT)	299	106,14	11,84	77,22	121,97
TPG	299	3,03	2,20	-3,98	17,11
No of Firms	299	335	348	2	1.714
No of Employees	291	36.093	44.366	238	472.702

Table 13: Descriptive Statistics Model 4 (Large-Sized Firms)

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
EX	264	3.783.288.411	5.080.242.019	62.534.321	37.758.777.794
R&D	189	781	1.383	0	7.052
CI	273	30.676	35.182	1.361	268.124
WP	285	284.818	205.329	65.534	1.106.943
P	210	0,05	0,02	0,01	0,13
BC	254	2.930.839.013	3.014.060.267	42.744.636	14.434.431.437
REER (SECTORAL)	299	124,19	19,99	58,88	194,68
REER (CBRT)	299	106,14	11,84	77,22	121,97
TPG	299	3,03	2,20	-3,98	17,11
No of Firms	299	6274	5567	14	27.055
No of Employees	299	130.338	125.803	3.485	507.355

4.3. EMPIRICAL METHOD

In recent decades, panel data analysis is used commonly in economics since many analyses focus on individual data. Panel data methods have several advantages in applying models that time series integrate cross-sections. It indicates heterogeneity across individuals, firms, countries, and identifies dynamic effects that are not apparent in cross-sections for model constructors. Dealing with both cross-sectional and time-series settings has accompanied complex stochastic specifications and innovative techniques in econometrics. Thus, researchers have used panel data to examine issues studying both time-series and cross-sectional settings together contexts provides a prominent advantage for researchers (Hisao, 2006).

The analysis of panel data consists of the individual (group) and/or time effects. Time effects are used through fixed and random effect models. The group/time in a random effect model affects error variance structures, while a fixed effect model tries to seek the answer to the question of in what way the group and/or time heterogeneity impacts individual intercepts. The main difference between the two models is that any variable in a random effect model has no relation with the individual. The presumption that slopes are unchanged is valid for both random effect and fixed effect models (Park, 2011, p.51).

The Hausman test is employed to determine whether fixed or random effect specification is more efficient. The test detects whether other regressors in the model are uncorrelated with the individual effects. A fixed effect model is preferred if individual effects correlated with any other regressor. Individual effects in fixed effect model that consist of parts of the intercept and Gauss-Markov presumption does not interrupt due to the correlation between the intercept and regressors; and thus Best Linear Unbiased Estimate (BLUE) is still valid for a fixed effect model (Park, 2011, p.42). Hausman test results suggest that the fixed effect model is preferred to estimate the four different models. The Hausman test results are presented in Appendix 4.

In the study, panel data set includes firm size (classifications of the small, medium, and large firms), 13 years (2006-2018), and several explanatory variables (R&D Expenses, Profitability, Bank Credits, Capital Intensity, Sectoral Real Exchange rate, etc.), and one dependent variable. Among explanatory variables, R&D expenses and Profitability variables are regarded as endogenous since a two-way causality between these variables exists. Additionally, lagged export volume is used in the estimations as an explanatory variable. This violates the assumption that all regressors are firmly exogenous since the error term is correlated with the lagged dependent variable. On the other hand, this kind of endogeneity between the dependent variable and explanatory variables is encountered in empirical studies in international trade literature (Dosi and Malerba (1996); Love and Mansury, 2009; Aw et al. (2011)). In addition, capital intensity variable is excluded (CI) from the models due to its high correlation with the worker productivity variable (WP) and its insignificant results when it is employed in the models as an explanatory variable.

We applied four estimation methods to identify determinants of the export performance of sectoral exports and sectoral exports based on the firm size for manufacturing industry sectors, including the Ordinary Least Square (OLS), Fixed Effects (FE), Instrumental Variable Two-Stage Least Square (IV-2SLS), and One-Step System Generalized Methods of Moments (system GMM) estimators. The FE and OLS regressions have no sufficient and significant explanatory power to detect the relationship between export performance and explanatory variables since they call for all explanatory variables to be firmly exogenous. Hence, under sequential exogeneity and multicollinearity problem, OLS and Fixed Effects estimators are all inconsistent. Consequently, the results of OLS

and Fixed Effects estimations are not discussed in this chapter; however they are presented in Appendix 3.

IV-2SLS method allows to use of the new variables instead of endogenous variables to overcome the endogeneity problem, and thus the equation can produce consistent estimators.

An additional variable, Z, is termed as an instrument for R&D expenses and Profitability variables. Also, Z is uncorrelated with U but correlated with R&D expenses and Profitability. Instrumental variable Z may impact dependent variable as well as endogenous variables. In this case, Z estimator becomes biased and asymptotic, and Z may underperform in the small sample.

Z must meet two conditions to be a valid instrument:

1 Relevance: corr (Z_t ,$R\&D_t$) = 0 and corr(Z_t ,P_t) = 0

2 Exogeneity: corr (Z_t ,u_t) = 0

We expect that IV variable should be able to capture the change in R&D expenses caused by export volume, but it should also remain uncorrelated to the error term (Greene 2012, p.227-8).

A sample model for instrumental variables is following:

$$Yi = \beta_0 + \beta_1 Y0_{1i} + \cdots + \beta_r Y0_{ri} + \beta_r{+}1X_{1i} + \cdots + \beta_r + kX_{ki} + U_i$$

Yi dependent variable, $Y0_{1i}$,. . . .$Y0_{ri}$ endogenous explanatory variables X_{1i},. . . X_{ki} denotes exogenous explanatory variables. Exogenous variables are uncorrelated with U_i. Endogenous variables are related to U_i and cause simultaneity bias. Also Z_{1i},. . . s number of instrument variables. Z_i's and Y0i's are descriptive but are also uncorrelated to the error term. The equation is under-identified when instrument variables are numerically less than endogenous variables. It is fully identified when both sides numerically are equal. Lastly, it is an overidentified when instrument variables are numerically more than endogenous variables. The features of identifications are briefly summarized following:

- **Under Identification:** The value of some coefficients cannot be calculated.
- **Exact Identification:** A single value can be calculated for each coefficient.
- **Over Identification:** There are multiple values for one or more of the coefficients.

IV-2SLS technique estimates the determinants of sectoral exports and sectoral exports based on the firm size. IV-2SLS is a single equation method. In addition to estimating the instrumental variables model, it can also be applied to all equations in an equation system separately. The only necessary condition to use the IV-2SLS method is that the equation to be estimated should not be under-identified. By carrying out the Sargan test, it is checked whether over-identification exists in the equations or not. The Sargan Test tries to detect over-identifying restrictions for the validity of instruments employed in the IV-2SLS analysis. It has a null hypothesis that there is no correlation between instrumental variables and the residual. The null hypothesis of serial correlation test that there is no second-order serial correlation in the error terms. Besides, Basmann (1960) test detects overidentifying restrictions for a regression via instrumental variables. The test identifies whether the number of instruments exceeds the number of regressors, thus uncovers whether the regression is an overidentified equation or not. It's the null hypothesis that the excluded instruments are valid instruments and uncorrelated with the error term. A rejection of the hypothesis shows the validity of the instruments in question.

In IV-2SLS modeling process, the following two steps are carried out:

First step: to eliminate the relationship between the endogenous explanatory variable and the error term, and Z instrument variables and the exogenous variables in the equation regressed.

Second Step: The only difference of the new equation with IV variable from the initial equation is that it uses an instrumental variable instead of the explanatory variable. While the explanatory variable is correlated with the error term in the initial model, the explanatory is uncorrelated with the error term. This second stage connection can be found with the least square estimation method. The suitable lags of the endogenous variables (R&D expenses and Profitability) are used as instruments in the IV-2SLS regressions.

In conclusion, IV model can use both 2SLSs regression and Maximum Likelihood (ML). 2SLS method offers the researchers to use for small samples ($N \leq 100$). Consequently, the 2SLS technique is preferred to estimate the model.

Alternatively, the system GMM technique is employed to test the robustness of IV-2SLS estimation results. The system GMM technique offers consistent and efficient estimates and solves the endogeneity problem. The system GMM approach is more convenient for a panel data study if the number of individuals is more significant than time points. Besides, it is suitable to deal with unobserved sector-specific effects of explanatory variables. To control for dynamic relation and possible endogeneity problems, GMM model, which was presented by Arellano and Bover (1995), is employed.

GMM methods can be used as "Difference GMM" and "System GMM" estimators. The first difference GMM approach, introduced by Arellano and Bond (1991), employs a lagged level of explanatory variables to eliminate specific effects of cross-sections (country or individuals) and considers the estimation of the first difference of each equation. The system GMM approach relies on difference equations and level equations (Arellano and Bover, 1995). Besides, Blundell et al. (2000) argue that the system GMM has higher estimation power. Accordingly, system GMM technique is suitable for panel data analysis of the thesis since there are 23 sectors and 13 time points in data. Under these conditions, the thesis prefers the system GMM technique for estimation of the models. The consistency of the system GMM relies on the presumption that error term should not include a serial correlation, and also it should not be correlated with instruments (Blundell and Bond, 1998). Consequently, the use of the system GMM method is preferred to estimate four models.

GMM estimation methods can be used to tackle simultaneity or measurement errors, also in a static model. It considers the problems stem from the endogeneity in independent variables. In GMM estimation methods, the lagged values of the dependent variable can be added to the model as an independent variable.

During the estimation process, the Arrelano – Bond test for serial correlations is used to test the existence of the first and second-order autocorrelated disturbances in the first

differences equation. Its null hypothesis: there is no autocorrelation. The tests for AR(1) reject the null hypothesis. Also, the test for AR(2) aims to detect autocorrelation in levels.

$\Delta\varepsilon_{i,t} = \varepsilon_{i,t} - \varepsilon_{i,t-1}$ and $\Delta\varepsilon_{i,t-1} = \varepsilon_{i,t-1} - \varepsilon_{i,t-2}$ both have $\varepsilon_{i,t-1}$

Second, Hansen (1982) test is used to detect over-identifying restrictions in the estimation process. The test also aims to check the overall validity of the instruments used. Its null hypothesis assumes that there is no relationship between instrumental variables and the residual. The null hypothesis of the serial correlation test is that there the error terms do not include second-order serial correlation.

In conclusion, the tests are met, and thus they provide unbiased and consistent estimators for IV-2SLS and system GMM estimations at 5% level. The result of IV-2SLS method is a primary source of the empirical discussions. In addition, one-step system GMM estimations also are interpreted as alternative results and robustness. All specifications tests at the end of the tables are illustrated. In all estimations, control variables are exogenous in the sense of being correlated with the dependent variable (export performance) in both the current and previous periods. Furthermore, our endogenous variables, namely R&D Expenses and Profitability, are instrumented with their suitable lags. On the other hand, OLS and FE estimations might introduce bias because they do not provide the possibility of reverse causality and consider the endogeneity problem. Despite these constraints, the results of OLS and FE estimations are presented in Appendix 3.

4.4. ESTIMATION RESULTS

The panel data method is employed due to its advantages mentioned in the previous section to identify the determinants of the exports of the sectors for the years 2006-2018. Specifically, the IV-2SLS method is used to overcome the potential endogeneity problem in equation (1)[15]. In addition, the one-step system GMM estimator is employed to test the robustness of the IV-2SLS results. The natural logarithm of the variables, except P and

[15] OLS and fixed effects estimation results of the four models are presented in Appendix 3.

TPG, are used in the regressions, and all models are estimated by using a Stata 13 software package.

First of all, the estimation results for the sectors are presented. Secondly, the estimation results for small-sized firms, medium-sized firms, and large-sized firms are presented.

4.4.1. Estimation Results of Model 1

Table 14 shows the estimation results of Equation (1) for the sectors using the instrumental variable 2 stage least square (IV-2SLS) and the system GMM method.

Table 14: Estimation Results of Model 1 (Sectors)

VARIABLES	IV-2SLS	One-Step System GMM
L.logR&D	0.015*	0.010
	(0.009)	(0.042)
L.P	-1.735	0.792*
	(1.076)	(0.449)
L.logEX	0.973***	0.664***
	(0.014)	(0.138)
logBC	0.038**	0.127*
	(0.016)	(0.069)
logWP	0.010	0.181
	(0.016)	(0.227)
logREER (CBRT)	-0.281***	-0.367**
	(0.084)	(0.161)
TPG	0.014***	0.014**
	(0.004)	(0.006)
Constant	0.950*	4.008
	(0.508)	(3.741)
Observations	221	268
R-squared	0.989	
F Test	2773	
Prob > F	0.000	
Sargan test	0.992	
Sargan test p-value	0.319	
Basmann test	0.956	
Number of Group		23
Number of Instruments		21
AR1 p-value		0.004
AR2 p-value		0.320
Hansen p-value		0.120

VARIABLES	IV-2SLS	One-Step System GMM

Notes: The table presents the IV-2SLS and system GMM results for the sectors whilst the first stage regressions are not provided to save space. "L" refers to the lagged of variable. Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

As far as the validity of instruments is concerned, Sargan Test p-value is 0.319 while Basmann test value is 0.956, suggesting that instruments are valid for the IV-2SLS regressions. Likewise, Hansen Test p-value, which is 0.12 in Table 14, indicates that the instrument set for the system GMM is valid[16]. Moreover, both the AR(1) and AR(2) tests satisfy the conditions that the error term should not include a serial correlation, and it should not be correlated with instruments. Finally, the instruments are 21 while the groups are 23.

As can be seen from Table 10, lagged export volume, research and development expenses, bank credits, real exchange rates, and sectoral trade partner growth rates are the statistically significant variables determining sectors export performance according to IV-2SLS estimation results. Estimation results by the system GMM method offer a similar result; however the coefficient of the R&D expenses variable is insignificant whereas that of the Profitability variable is significant.

As mentioned in the review of the empirical studies (Chapter 2), lagged export volume can significantly explain sectors' export performance. The coefficient of the lagged export volume is 0.973 and its sign is positive as expected. Accordingly, a 10% rise in last year's exports increases the current year's exports by 9,7%. Furthermore, the coefficient of the variables such as R&D expenses and bank credits are significant at 10 percent and 5 percent level, respectively. A 10% increase in the previous year's research and development expenses cause a 0,15% increase in export volume, while a 10% increase in total bank credits volume extended to sectors causes a 0,38 % rise in export volume. The findings are compatible with the earlier empirical studies. On the other hand, both IV-2SLS and system GMM estimations show that labor productivity and export volume is not correlated. This result contradicts the theoretical expectation that

[16] Despite the high values of the R-squared coefficients in the IV-2SLS model results, the results of IV-2SLS for four models are supported by the robust results of system GMM model with valid parameters coefficients.

productivity indicator, calculated by dividing real net sales by the number of workers, and might not be a good proxy for the total factor productivity.

According to IV-2SLS and system GMM estimation results, macroeconomic variables, namely the real exchange rates (of CBRT) and trade partners' growth rate, are statistically significant variables, and in line with the theoretical expectation, they have negative and positive signs, respectively. For the real exchange rate variable, two alternative data set are used. The one variable is the sectoral real exchange rates, calculated by the author for the selected sectors, while another is the real effective exchange rate of CBRT, calculated by CBRT monthly based on consumer price indices. The real exchange rate of CBRT is significant and has a negative sign as expected[17]. A 10% decrease in the real exchange rate causes a 2,81% increase in export volume because of increased price competitiveness. The results of the real exchange rate are compatible with the conclusions of empirical studies for both Turkey and other countries. Another macroeconomic variable, sectoral trade partner growth rates reflecting external demand for export goods, also significantly correlated with export performance. 1 unit increase in the growth rate of sectoral trade partners raises export volume by 1,4%. Also, this finding is coherent with the literature and reveals the prominence of market and destination diversification for sustainable export performance.

4.4.2. Estimation Results of Model 2, Model 3 and Model 4

For quantitative analysis of the determinants of exports by firm size, equation (1) is estimated at the sectoral level for three different firm size separately; small, medium, and large.

Table 15 summarizes the IV-2SLS and system GMM estimation outcomes of equation (1) for small-sized firms.

[17] The sectoral real exchange rate is also used in the estimations, but the coefficient of the sectoral real exchange rate coefficient is not statistically significant.

Table 15: Estimation Results of Model 2 (Small-Sized Firms)

VARIABLES	IV-2SLS	One-Step System GMM
L.logR&D	-0.048	0.038
	(0.042)	(0.107)
L.P	14.056**	7.823
	(6.383)	(5.354)
L.logEX	0.905***	0.917***
	(0.042)	(0.215)
logBC	0.143**	0.030
	(0.064)	(0.116)
logWP	0.050	-0.608
	(0.106)	(0.801)
logREER (CBRT)	0.151	-0.302
	(0.135)	(0.393)
TPG	0.037**	0.027*
	(0.016)	(0.016)
Constant	-2.519	9.108
	(2.158)	(12.551)
Observations	112	
R-squared	0.929	
P Value		
F Test	392.8	
Prob > F	0.000	
Sargan test	4.327	
Sargan test p-value	0.115	
Basmann test	4.099	
Number of Group		20
Number of Instruments		18
AR1 p-value		0.022
AR2 p-value		0.131
Hansen p-value		0.772

Notes: The table presents the IV-2SLS results for the sectors of small-sized firms whilst the first stage regressions are not provided to save space. “L” refers to the lagged of variable. Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

Sargan test p-value, which is 0.115, suggests that our instruments are valid for the IV-2SLS regressions. Likewise, p-value Hansen Test, which is 0.772 in Table 15, indicates that the instrument set for the system GMM is valid. Moreover, both the AR(1) and AR(2) tests satisfy the conditions that the error term should not include a serial correlation, and

it should not be correlated with instruments. Finally, the instruments are 21 while the groups are 23.

The results on determinants of export performance for small-sized firms in manufacturing sectors are slightly different from the estimation results for the sectors. IV-2SLS method findings presented in Table 15 show that lagged export volume, profitability, bank credit extended to small firms, and trade partners' growth rate are important variables in explaining the small firms' export performance.

According to estimation results for small-sized firms, lagged export volume is highly significant in identifying small firms' export performance. The coefficient of the lagged export volume was found 0.905 and statistically significant at 1 percent. Accordingly, a 10 percent rise in last year's exports increases the current year's exports by 9,05%. Besides, the coefficients of firm-specific variables such as profitability and bank credits are significant at 5 percent confidence level. 1 unit increase in small enterprises' previous year profitability raises a 1400% increase in export volumes, while 10 % increase in bank credits to small enterprises causes 1,43% rise in export volume. Positive and significant coefficients of these two variables imply that small firms use both bank loans and their profitability to finance the additional exporting costs.

On the other hand, the results indicate that labor productivity and research and development expenses are not correlated with the export performance for small firms. These firms have a low capital intensity and this constraint harms labor productivity. Moreover, small firms would allocate lower resources for research and development activities than medium and large firms. In addition, the content of R&D expenditure data of small-sized companies may not reflect the R&D expenditures due to the classification of rent and administrative promotion given by public institutions as direct R&D supports. All of these reasons cited above might explain why these variables are not correlated with export performance.

The coefficient of the sectoral real exchange rates is statistically insignificant, while trade partners' growth rates are correlated with the export performance at 5 percent significance level. 1 unit increase in trade partner growth rate induces a 3,7% increase in export volume. This result is coherent with the literature and findings of empirical studies for

both Turkey and other countries. This result reveals that the increase in partner countries' demand is a more prominent factor in the small firms' exports than the price competitiveness.

The finding of the real exchange rates is contrary to the theoretical expectations and the results of the empirical studies. However, the real exchange rates may affect sectors or firms at different levels depending on several conditions such as import dependence, pass-through effect, customer loyalty, bargaining power, etc.

Table 16 summarizes the IV-2SLS and system GMM estimation outcomes of equation (1) for medium-sized firms.

Table 16: Estimation Results of Model 3 (Medium-Sized Firms)

VARIABLES	IV-2SLS	One-Step System GMM
L.logR&D	-0.097*	-0.248**
	(0.049)	(0.090)
L.P	9.006**	4.836*
	(3.193)	(2.429)
L.logEX	0.904***	0.664***
	(0.039)	(0.215)
logBC	0.096*	0.241
	(0.053)	(0.167)
LogWP	0.058	0.976***
	(0.107)	(0.328)
logREER(CBRT)	0.336*	0.431*
	(0.183)	(0.226)
TPG	0.019*	-0.015
	(0.011)	(0.014)
Constant	-2.089	-10.445*
	(1.860)	(5.825)
Observations	83	
R-squared	0.939	
F Test	531.2	
Prob > F	0.000	
Sargan test	0.675	
Sargan test p-value	0.714	
Basmann test	0.598	
Number of Group		20

VARIABLES	IV-2SLS	One-Step System GMM
Number of Instruments		18
AR1 p-value		0.012
AR2 p-value		0.281
Hansen p-value		0.137

Notes: The table presents the IV-2SLS results for the medium-sized firms at sectoral level whilst the first stage regressions are not provided to save space. "L" refers to the lagged of variable. Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

In Table 16, Sargan test p-value is 0.714 while Basmann test value is 0.598, suggest that our instruments are valid for the IV-2SLS regressions. Likewise, p-value Hansen Test, which is 0.137 in Table 12 indicates that the instrument set for the system GMM is valid. Moreover, both the AR(1) and AR(2) tests satisfy the conditions that the error term should not include a serial correlation, and it also should not be correlated with instruments. Finally, the instruments are 21 while the groups are 23

The findings in Table 16 demonstrate that previous year's export volume, R&D expenses, profitability, bank credits, the sectoral real exchange rates, and trade partner growth rate are determinants of medium sized firms' export performance.

According to estimation results for medium-sized firms, lagged export volume is highly significant in explaining medium enterprises' export performance. The coefficient of the lagged export volume is 0.904 and statistically significant at 1 percent. Accordingly, a 10 percent rise in last year's exports increases current year's exports by 9,04% as in small-sized firms. Additionally, the coefficient of sector-specific variables such as R&D expenses, firm profits and bank credits are positive and statistically significant. 1 unit increase in medium enterprises' last year profits leads upswing 90,06% in export volumes while a 10 percent in bank credit extended raise 0,96% increase in their export volumes. The findings are compatible with the literature discussions as well as the empirical evidence. On the other hand, the negative coefficient of year's R&D expenses is surprising and contradicts the theory. 10 % increase in last year's R&D expenses cause a reduction by 0,97% in export volume. As mentioned in Chapter 2, R&D expenses may reflect on product upgrading and improvement of existing production technology in a medium-term period. Therefore, one period is insufficient to see its effects. In connection with the positive sign of the bank credit that reflect financial needs of medium-sized exporter firm, one might also think that increase in the research and development

expenses of medium firms restrict the funds that could be allocated for the finance of exports and thereby has a negative effect indirectly on exports.

Coefficients of the sectoral real exchange rates and sectoral trade partners' growth rate are significant in explaining medium firms' export performance at 10 percent significance level. A 10 percent increase in the real exchange rate causes an increase by 3,36% in export volumes. The findings are coherent with the existing theory and the results of empirical studies on Turkey and other countries. However, the statistically significant reel exchange rate coefficient with its positive sign contradicts the theoretical explanation. In other words, a decrease in the real exchange rate causes a decline in exports. This result might be explained by the extent of the import dependency of the Turkish manufacturing industry exportable goods and the exchange rate pass-through effect.

Table 17 summarizes the IV-2SLS and system GMM estimation outcomes of equation (1) for large-sized firms.

Table 17: Estimation Results of Model 4 (Large-Sized Firms)

VARIABLES	IV-2SLS	One-Step System GMM
L.logR&D	0.058**	0.032
	(0.025)	(0.066)
L.P	-3.653*	2.610**
	(1.903)	(1.097)
L.logEX	0.932***	0.664***
	(0.032)	(0.166)
logBC	0.038	0.185**
	(0.035)	(0.084)
LogWP	-0.026	-0.089
	(0.029)	(0.229)
logREER(CBRT)	-0.372***	-0.379**
	(0.118)	(0.151)
TPG	0.006	0.006
	(0.006)	(0.012)
Constant	2.601***	5.941**
	(0.807)	(2.693)
Observations	110	

VARIABLES	IV-2SLS	One-Step System GMM
R-squared	0.983	
F Test	856.7	
Prob > F	0.000	
Sargan test	0.742	
Sargan test p-value	0.388	
Basmann test	0.686	
Number of Group		19
Number of Instruments		18
AR1 p-value		0.053
AR2 p-value		0.431
Hansen p-value		0.205

Notes: The table presents the IV-2SLS results for the large-sized firms at sectoral level whilst the first stage regressions are not provided to save space. "L" refers to the lagged of variable. Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

Sargan test p-value of 0.388 and Basmann test p-value of 0.686 indicate that our instruments are valid for the IV-2SLS regressions. Likewise, Hansen Test p-value, which is 0.205 in Table 13, indicates that the instrument set for the system GMM is valid. Moreover, both the AR(1) and AR(2) tests satisfy the conditions that the error term should not include a serial correlation, and it also should not be correlated with instruments. Finally, the instruments are 21 while the groups are 23.

According to estimation results for large-sized firms, lagged value exports volume, R&D expenses, enterprises' profitability and the sectoral real exchange rates impact on large-sized firms' export performance.

The estimation results for large-sized firms imply that lagged export volume highly affects the export performance of those firms as expected. Accordingly, a 10 percent rise in last year's exports increases the current year's exports by 9,32% in large-sized firms. Moreover, the coefficients of the variables such as R&D expenses and firm profits are significant at 5 and 1 percent. 10% increase in the value of R&D expenses raises export volumes by 0,58%. The coefficient of the profit variable has a negative sign in IV-2SLS estimation but it has a positive sign in the system GMM. That's why it can be interpreted that profitability is not a robust estimator of the large-sized firms' exports. Another striking result is that the bank credit variable is not correlated with export performance in IV-2SLS estimation method but it has a positive sign and is statistically significant in the system GMM method. That's why it can be interpreted that like profitability, bank credit

variable is not a robust estimator of the large-sized firms' exports. These two results together indicate that large firms are not heavily dependent on bank credits and their profit level for financing exports since they can access alternative external resources like bonds and stock markets easily.

The sectoral real exchange rates are the other statistically significant variable in explaining large enterprises' export performance with its negative sign. Accordingly, a 10 percent decline in the real exchange rate causes an increase in the export volume by 0,372%. This result means that large firms may raise the export volume due to the depreciation of the domestic currency. Model 4 does not reveal a significant relationship between sectoral trade partner growth rate and export performance.

In sum, the results of one-step system GMM estimations are similar to those of IV-2SLS estimations. This indicates that there is no substantial variation between the results and verify the robustness of the results.

The estimation results based on the firm size point out that both small and medium-sized firms use bank credits and their profits to overcome the additional cost of entering into the new markets. However, large-sized firms are not heavily dependent on bank credits and their profit level for financing exports since their access to alternative finance resources is easier than the SMEs. The estimation results also indicate that large-sized firms' R&D activity can stimulate their export volume to a certain extent. Indeed, an increase in medium-sized firms' R&D expenditures can affect negatively their export performance. The result is not surprising as large-sized firms are more productive and allocate more resources for the R&D activities than medium sized-firms.

The real exchange rate with its negative sign can influence the sectoral exports (Model 1) and large-sized firms' exports (Model 4). However, it can be said that the real exchange rate may not be a sound tool to improve their export performance of medium-sized firms. Despite the high import dependency, large-sized firms managed to keep their price competitiveness from a decrease in the real exchange rate due to their relatively higher productivity compared to medium-sized firms. In other words, cost-increasing effects of the depreciation of TL due to the increase in the cost of imported intermediate goods outweighs the relative price advantage created by the decrease in the value of TL. Small

and medium-sized firms' export performance is affected more by external demand compared to large-sized firms. Indeed, the estimation results reveal that an increase in partner countries' demand is a more important determinant of small firms' exports than the price competitiveness brought by the real depreciation of the exchange rate.

Our estimation results of the real exchange rate and external demand combined with the insignificant coefficient of the labor productivity in all models reveal that export performance of the Turkish manufacturing industry, in general, depends on the external demand and exchange rates rather than the productivity gains that will increase the price competitiveness.

CHAPTER 5

CONCLUSION

The manufacturing industry export performance draws a growing interest in theoretical and empirical studies. Almost all economic theories argue a solid relationship between export and economic growth, and exports are considered the key elements of economic development and growth. In a globalizing world, sustainable economic performance needs export success than ever. Export is the source of foreign exchange earnings, economies of scale and specialization, and new technology. At the same time, exporter sectors and firms face more intense competition due to external demand conditions. The competition in the foreign market enforce sectors and firms to be efficient and productive (learning by export) or productive and efficient sectors, and firms easily enter the export markets (self-selection).

In international trade literature, many empirical studies explore export performance and its determinants. In empirical studies based on traditional trade theories, the real exchange rate and trade partners' income are merely modeled as determinants of export performance. Both of them are considered demand-side factors. Many empirical studies draw attention to macroeconomic variables such as exchange rates, external demand, foreign direct investments, and import content of exports to identify the high export performance of firms or sectors. Taken together, the findings of the studies suggest that both the exchange rate and the foreign demand can affect the firm size or sector export performance in the short term. At the same time, these studies implicitly reveal that price competition and foreign demand developments may influence on export volumes.

Parallel to recent developments in the international trade theories, recent empirical studies consider the supply factors in addition to the above-mentioned macroeconomic variables. Within this context, the empirical studies use R&D, profitability, capital intensity, bank credit or bonds, productivity, product diversification, and efficiency indicators that we labeled in our study as microeconomic variables. The findings on the effects of these variables on export performance are somewhat mixed. The results vary considerably based on the variables selected, period, sector, and firm size, the country in

which sector and firm operate. Overall, the evidence from the studies implies that firms that are productive, profitable, allocating enough resources to R&D activities, accessing finance, and adapting to trends and developments in the markets, may display a high export performance. However, studies also point out that in the medium- and long-term structural factors such as efficient production and marketing, skilled labor, technological infrastructure, export-oriented business strategy, product diversity, and innovation can be prominent.

The main purpose of the thesis is to address microeconomic (sector-specific) and macroeconomic variables that affect export performance both at the sectoral level and at the sectoral level classified according to small, medium, and large firm size. The main objective of the thesis is to contribute to a growing research area by exploring the impact of both variables on sectoral exports. Besides, we also aim to answer whether determinants of exports will differ if we classify the sectoral exports based on firm size. In that way, our estimation results enable us to suggest policy recommendations according to the firm size. To the best of our knowledge, our study is the first one examining the microeconomic and macroeconomic determinants of export performance of 23 Turkish manufacturing industry sectors and sectors by firm size.

R&D Expenses (RD), sectoral capital intensity (CI), bank credits (BC), the real exchange rate (RER), labor productivity (WP), sectoral profitability (P), and foreign demand (TPG) are used as main explanatory variables to estimate the export performance equation for 23 sectors from 2006 to 2018 (Model 1). The same equation is also estimated for small, medium and large-sized firms at the sectoral level. In the estimation of four different models, instrumental variable 2 stages least square (IV-2SLS) and, the system GMM methods are preferred to overcome the potential endogeneity problems.

The data are collected from various sources for the sectors and the same sectors classified based on the firm size (small, medium, and large-sized firms) from 2006 to 2018. The sector-specific weighted growth rate of trade partners and the sectoral exchange rate are calculated for each manufacturing industry sector. The models are estimated by using panel data techniques. Because of endogeneity in the models, the instrumental variable

two-stage least square (IV-2SLS) method is applied to estimate the models. Moreover, the system GMM method is also employed to compare the robustness of IV-2SLS results.

The empirical results for the sectors suggest that R&D expenses, bank credits, and lagged export volume positively affect export performance. Similarly, trade partners' growth rate (external demand) has a positive impact on exports. Since this result shows the sensitivity of exports to changes in the income of the trade partners, it emphasizes the importance of market and destination diversification for sustainable export performance. The real exchange rate as an indicator of the price competitiveness is negatively correlated with export performance in accordance with the existing studies. It means that sectoral export volume increases if the Turkish Lira depreciates against trade partners' currencies and vice versa. This finding highlights an important point: exchange rates are still a causal factor on products exported.

The empirical results of sectoral export performance based on firm size indicate that for all firm sizes exports (small, medium, and large) have a positive and significant relationship with export performance of the past year. Our Estimation results also point out that determinants of sectoral exports vary across small, medium and large-scale firms. First of all, R&D expenses positively affect exports of the large-size firms while there is no correlation and a negative correlation for small and medium-sized firms, respectively. The apparent lack of correlation for small-sized firms can be because these firms have a limited external and internal capacity to allocate resources for R&D activities. But, a negative relationship in medium-sized firms is interesting. One might also think that an increase in the research and development expenses of small-sized firms restrict the funds that could be allocated for the finance of exports and, thereby, negatively effect on exports. Our results concerning the R&D variable suggest that government should adopt an R&D policy prioritizing firm-size rather than the sectoral level to promote exports.

The other striking finding in financing the cost of exports is that bank credits positively influence the small and medium-size firms' export performance while it has no impact on that of large-size firms. This result would be because large-sized firms can have significant opportunities to access more diversified external sources such as capital market instruments and foreign financing facilities such as seller credits under favorable

conditions. Therefore, our result points out the importance of implementing the credit policies to alleviate the export financing problem of small and medium-sized firms.

Comparing of our estimation results of microeconomic variables with those of other countries, it seems that the results R&D, bank credits and profitability variables are consistent with the previous empirical studies. In contrast, the productivity variable is different from the previous studies. The positive correlation between R&D and export performance for sectors and large scale firms is compatible with the results of the studies for Argentina, Brazil, China, Colombia, Mexico, India, Philippine and Malaysia, and developed countries such as Sweden, UK and Canada. For bank credits, the results of empirical studies for Italy, Belgium, China and Turkey (Demirhan and Ercan, 2015) are similar to our results. On the other hand, we find no correlation between productivity and export performance for all models, however, previous studies find the positive correlation for some developing countries including Chile, China, Estonia, Colombia, Morocco, and Sub-Saharan African countries. This difference might be due to the variable that we define to identify the productivity effect.

The real exchange rate has a negative and significant effect on the exports of large-sized firms. However, the positive sign of the real exchange rate variable shows the decrease in export performance of medium-sized firms as a result of the decrease in the value of the real exchange rate. This result suggests that the negative influence of the increase in the cost of imported intermediate goods as a result of the depreciation of the currency is greater for medium-sized firms than large-sized firms. The insignificant coefficient of the real exchange rate for small-scaled firms' exports emphasizes that a decrease in the value of the real exchange rate does not lead to an increase in their exports unless they do not decrease their import dependency. Therefore, within the context of increasing the export performance of the small and medium-sized firms, we should emphasize the importance of the implementing policies to decrease the high import dependency of exports. The previous studies on Turkey often find statistically positive correlation before the 2000s, while the results of studies examining the period of 2000-2019 are mixed. Our results that show the varying effect of real exchange rate on different firm size are consistent with the studies focusing on the period of 2000-2019.

The growth rate of trade partners is a statistically significant variable irrespective of the firm size. This result strengthened the importance of market and destination

diversification for sustainable export performance. The results are similar to those of previous studies for Indonesia, Italy, Canada, Euro Area, and Turkey (Kara and Sarıkaya (2004), Aydın et al. (2007), Togan and Berument (2007), Bozok et al. (2015)).

Undoubtedly, like all quantitative studies, this thesis has limitations. First of all, since sectoral and firm-size data are used in the study, dynamics of exports at firm-level data are not covered in our analysis. Similarly, future studies that examine the dynamics and the determinants of exports at the regional level are also crucial for the Turkish economy. Besides, data on sectoral subsidies and trade-in value-added can be collected at NACE 2 classification. Future studies could add these variables to estimate determinants of export performance extensively. In addition, future studies can analyze the period by dividing two-time zones, exchange rates appreciation (2006-2011) and exchange rates depreciation (2012-2019). Thus, they can identify which micro variables stand out during exchange rate depreciation and appreciation period and suggest sound policy recommendations. We hope that our study motivates further studies that will shed light on the factors determining the export performance of individual firm-level, various sectoral classifications (NACE 1-2, ISIC Rev with three digits, etc.), and regional level.

BIBLIOGRAPHY

Aaby, Nils-Erik and Slater, Stanley (1989), Management Influences on Export Performance: A Review of the Empirical Literature 1978-88. International Marketing Review. Vol. 6. pp. 7-26.

Aitken, Brian, Hanson, Gordon and Harrison, Ann, (1997), Spillovers, foreign investment, and export behavior, Journal of International Economics, 43, issue 1-2, pp. 103-132,

Akgunduz, Y.E. and Salih Fendoglu, (2019), Exports, Imported Inputs, and Domestic Supply Networks, Working Papers 1908, Research and Monetary Policy Department, Central Bank of the Republic of Turkey.

Akkoyunlu, Arzu, (1996), Yeni Dış Ticaret Teorileri, Ekonomik Yaklasim, 7, issue 21, pp. 71-99, https://EconPapers.repec.org/RePEc:eyd:eyjrnl:v:7:y:1996:i:21:p:71-99.

Aldan, altan and o. Y. Çulha (2013), The Role of Extensive Margin in Exports of Turkey: A Comparative Analysis, CBRT Working Paper No:13/32, pp. 1-26

Allard, Céline (2009), Competitiveness in Central-Europe: What Has Happened Since EU Accession?, IMF Working Paper, WP/09/121, pp. 1-23.

Alvarez, R. and R. A. López (2005), Exporting and Performance: Evidence from Chilean Plants', Canadian Journal of Economics, Vol. 38, Issue 4, pp. 1384– 400.

Andersson, Martin, Hans Lööf and Sara Johansson (2008). Productivity and international trade: Firm Level Evidence from a small open economy. Review of World Economics Vol. 144, Issue 4, pp. 774-801.

Andersson, Martin, Urban Gråsjö and Charlie Karlsson (2006), Industry R&D Location – the role of accessibility to university R&D and institutions of higher education**,** CESIS, Electronic Working Paper Series, Paper no: 68, pp. 1-22

Anwar, Sajid and Sizhong Sun (2016). Foreign direct investment, domestic sales and exports of local firms: a regional perspective from China, Journal of the Asia Pacific Economy, Vol. 21, Issue 3, pp. 325-338.

Aw, B. Y. and A. R. Hwang (1995), 'Productivity and the Export Market: A Firm-level Analysis', Journal of Development Economics, Vol. 47, Issue 2, pp. 313-32.

Aydın, F., Saygılı H. and Saygılı, M. (2007), Empirical Analysis of Structural Change in Turkish Exports, Central Bank of Turkish Republic Working Paper Series, No: 07/08.

Aydin, M. and Ciplak, Ugur and Yucel, Eray (2004), Export Supply and Import Demand Models for the Turkish Economy.

Aydin, Faruk, Saygili, Hulya, Saygili, Mesut and Yılmaz, Gökhan (2010), Dis Ticarette Kuresel Egilimler ve Turkiye Ekonomisi, Working Papers, Research and Monetary Policy Department, Central Bank of the Republic of Turkey, https://EconPapers.repec.org/RePEc:tcb:wpaper:1001.

Aydin, Faruk, Hülya Saygili, Mesut Saygili and Gökhan Yilmaz (2010), Dış Ticarette Küresel Eğilimler ve Türkiye Ekonomisi, CBRT Working paper No:10/01, pp.1-107

Aydin, Faruk, Baskaya, Yusuf and Demiroglu, Ufuk, (2015), An Empirical Analysis on the Export/Import Coverage Ratio in Turkey, Working Papers, Research and Monetary Policy Department, Central Bank of the Republic of Turkey, https://EconPapers.repec.org/RePEc:tcb:wpaper:1510.

Bhagwati, J. N. (1982), Directly Unproductive, Profit-Seeking (DUP) Activities, Journal of Political Economy, Vol. 90, No. 5,, pp. 988-1002.

Balassa, B. (1966), Tariff Reductions And Trade in Manufacturers Among The Industrial Countries", The American Economic Review, Vol. 56, No:3

Baldwin, J. R. and W. Gu (2003), Export-market Participation and Productivity Performance in Canadian Manufacturing, Canadian Journal of Economics, 36, 3, pp. 634-57.

Barrios, Salvador, Holger Görg, Eric Strobl (2003), Multinational Enterprises and New Trade Theory: Evidence for the Convergence Hypothesis Open Economies Review Vol. 14, pages 397–418

Bas, Maria and Strauss-Kahn, Vanessa, (2014), Does importing more inputs raise exports? Firm-level evidence from France, Review of World Economics (Weltwirtschaftliches Archiv), Vol. 150, Issue 2, pp. 241-275.

Bayoumi, Tamim, Richard Harmsen and Jarkko Turunen (2011), Euro Area Export Performance and Competitiveness, IMF Working Paper, 11/140, Washington.

Beleska-Spasova, Elena (2014), Determinants and measures of export performance: Comprehensive literature review, Journal of Contemporary Economic and Business Issues, Vol. 1, Issue 1, pp. 63-74

Bellone, F., Musso, P., Nesta, L. and Qu´er´e, M. (2008). Market selection along the firm life cycle, Industrial and Corporate Change Vol. 17, Issue 4, pp. 753-77.

Berman, Nicolas and Héricourt, Jérôme (2010), Financial factors and the margins of trade: Evidence from cross-country firm-level data, Journal of Development Economics, Elsevier, Vol. 93, Issue 2, pp. 206-217.

Bernard, A. and Jensen B. (2004), Why some firms export?, The Review of Economics and Statistics, Vol. 86, Issue 2, pp. 561-569.

Bernard, A., B. Jensen, B.J. Redding, and P. Schott, (2007). Firms in International Trade, The Journal of Economic Perspectives, Vol. 21, Issue 3, pp. 105-130.

Bernard, A. B. and J. B. Jensen (1999), Exceptional Exporter Performance: Cause, Effect, or Both?, Journal of International Economics, Vol. 47, Issue 1, pp. 1– 25.

Bernard, Andrew and Jensen, J. (1995), Exporters, Jobs and Wages in U.S. Manufacturing: 1976-1987. Brookings Papers on Economic Activity Microeconomics. 1995. 10.2307/2534772.

Bernard, Andrew B. and Wagner, Joachim (1996), "Exports and Success in German Manufacturing", MIT Dept. of Economics Working Paper No. 96-10, Available at SSRN: https://ssrn.com/abstract=139528

Biesebroeck, Johannes Van (2005), Firm Size Matters: Growth and Productivity Growth in African Manufacturing, National Bureau of Economic Research, p. 545-583

Binatlı, Ayla Ogus and Niloufer Sohrabji, (2009), Elasticities of Turkish Exports and Imports, Working Papers 0906, Izmir University of Economics.

Bleaney, Michael and Katharine Wakelin (1999), Sectoral and Firm-Specific Determinants of Export Performance: Evidence from the United Kingdom, Centre For Research On Globalization And Labour Markets, Research Paper 99/12, University of Nottingham

Boehm, Christoph E., Aaron Flaaen and Nitya Pandalai-Nayar (2017), Multinationals, Offshoring, and the Decline of U.S. Manufacturing, Center for Economic Studies (CES), pp. 17-22

Bonaccorsi, Andrea, (1992), On the Relationship between Firm Size and Export Intensity, Journal of International Business Studies, Vol. 23, pp. 605- 635.

Boratav, K., Erinç Yeldan (2001), Financial Liberalization, Macroeconomic (In)-Stability, And Patterns of Distribution, pp. 1-73, http://yeldane.bilkent.edu.tr/B&YCEPA2002.PDF, access date: 31 August 2020

Bozok, Ihsan, Bahar Şen And Doğan Çağlar Yüncüler (2015), Estimating Income and Price Elasticity of Turkish Exports with Heterogeneous Panel Time-Series Methods, CBRT, WP 15/26 Ankara, p. 26

Brancati, E., Brancati, R., and Maresca, A. (2017), Global value chains, innovation and performance: Firm-level evidence from the Great Recession. Journal of Economic Geography, Vol. 17, Issue 5, pp. 1039-1073.

Brander, J. (1981), Intra-industry trade in identical commodities. Journal of International Economics, Vol. 11.

Brander, James and Spencer, Barbara, (2015), Intra-industry trade with Bertrand and Cournot oligopoly: The role of endogenous horizontal product differentiation, Research in Economics, Vol. 69, Issue 2, pp. 157-165, https://EconPapers.repec.org/RePEc:eee:reecon:v:69:y:2015:i:2:p:157-165. Access date: 23 August 2020.

Bradley, Frank and Meyer, Ralf and Gao, Yuhui. (2006), Use of Supplier-Customer Relationships by SMEs to Enter Foreign Markets. Industrial Marketing Management - 35. pp. 652-665.

Brander, James and Spencer, Barbara, (1985), Export subsidies and international market share rivalry, *Journal of International Economics*, Vol. 18, Issue 1-2, pp. 83-100, https://EconPapers.repec.org/RePEc:eee:inecon:v:18:y:1985:i:1-2:p:83-100.

Brander, James A. and Paul Krugman (1983), A 'Reciprocal Dumping' Model of International Trade. Journal of International Economics, Vol. 15, No. 3/4, pp. 313-321

Breinlich, Holger and Alessandra Tucci (2008), "Foreign Market Conditions and Export Performance: Evidence from Italian Firm-Level Data," Development Working Papers 258, Centro Studi Luca d'Agliano, University of Milano.

Breschi, Stefano and Palma, Daniela (1999), Localised Knowledge Spillovers and Trade Competitiveness: The Case of Italy.

Calof, J.L. (1993), The Impact of Size on Internationalization', Journal of Small Business Management, Vol. 31, Issue 4, pp. 60-69.

Caneghem, Tom and Geert Campenhout (2012), "Quantity and quality of information and SME financial structure," Small Business Economics, Springer, Vol. 39, Issue 2, pp. 341-358.

Cantwell, John (1995), The Globalization of Technology: What Remains of the Product Cycle Model?, Cambridge Journal of Economics, Vol. 19, Issue 1, pp. 155-74, https://EconPapers.repec.org/RePEc:oup:cambje:v:19:y:1995:i:1:p:155-74. Access date:12 July 2020.

Castellani, D. (2002), 'Export Behavior and Productivity Growth: Evidence from Italian Manufacturing Firms', Weltwirtschaftliches Archiv/Review of World Economics, Vol. 138, Issue 4, pp. 605-28.

Chaney, Thomas (2013), Liquidity Constrained Exporters, NBER Working Paper Series, Working Paper 19170, Working Paper 19170 pp. 1-32 https://www.nber.org/papers/w19170

Chaney, Thomas (2016), "Liquidity Constrained Exporters" Journal of Economic Dynamics and Control, Vol. 72, issue C, pp. 141-154.

Chen, N., Imbs, J., and Scott, A. (2009). The dynamics of trade and competition. Journal of International Economics, Vol. 77, Issue 1, pp. 50-62.

Choi, Changkyu (2002). Linder Hypothesis Revisited. Applied Economics Letters. Vol. 9. pp. 601-05. Access date: 6 May 2020.

Clementi, Gian Luca and Hugo A. Hopenhayn (2006), "A Theory of Financing Constraints and Firm Dynamics , The Quarterly Journal of Economics, Vol. 121, Issue 1, pp.229-265.

Clerides, S. K., S. Lach and J. R. Tybout (1998), 'Is Learning by Exporting Important? Micro-dynamic Evidence from Colombia, Mexico, and Morocco', Quarterly Journal of Economics, CXIII, 3, pp. 903-947.

Crozet, Matthieu and Trionfetti, Federico (2013), Firm-level Comparative Advantage, Journal of International Economics, Elsevier, Vol. 91, Issue 2, pp. 321-328.

Ciuriak, D., Lapham, B., Wolfe, R., C. W. Terry, Curtis, John M. (2011), New-new trade policy, Department of Economics Queen's University, Queen's Economics Department Working Paper No. 1263 pp. 1-16.

Dalgic, B., Fazlioglu, B. and Gasiorek, M. (2015). Costs of Trade and Self-selection into Exporting and Importing: The Case of Turkish Manufacturing Firms, Economics Discussion Papers 2015-17, Kiel Institute for the World Economy (IfW).

Damijan, Joze and Rojec, Matija and Majcen, Boris and Knell, Mark (2013), Impact of Firm Heterogeneity on Direct and Spillover Effects of FDI: Micro-evidence from Ten Transition Countries. Journal of Comparative Economics. Vol. 41, pp. 895-922. 10.1016/j.jce.2012.12.001.

Damijan, Joze & Kostevc, Črt. (2014), Learning from Trade through Innovation. Oxford Bulletin of Economics and Statistics. 77. 10.1111/obes.12071.

Davis, D. R. (1995), Intra-industry trade: A Heckscher-Ohlin-Ricardo Approach. Journal of International Economics. 39 (3/4), pp. 201-226.

De Loecker, Jan (2007), Do Exports Generate Higher Productivity? Evidence from Slovenia, Journal of International Economics, Elsevier, Vol. 73, Issue 1, pp 69-98.

De Grauwe, P. (1992), The Benefits of a Common Currency. In: De Grauwe, P. (Ed.), The Economics of Monetary Integration. Oxford University Press, New York.

Delgado, M. A., J. C. Farinas and S. Ruano (2002), Firm Productivity and Export Markets: A Non-parametric Approach, Journal of International Economics, Vol. 57, Issue 2, pp. 397-422.

Demirhan A. A. (2015), Export Behavior of Turkish Manufacturing Firms. Emerging Markets Finance and Trade. Vol 52, No 11, pp. 2646-2668.

Deshmukh, Jayeeta and Pradyut Kumar Pyne (2013), Labour productivity and export performance: Firm-level evidence from Indian manufacturing industries since 1991, ARTNeT Working Paper Series, No. 126, Bangkok, ESCAP

Dixit A., and J. S. Stiglitz (1977), Monopolistic competition and optimum product diversity. American Economic Review, Vol. 67, Issue 3, pp. 297-308.

Donckels, R. (2000), Financing Growth: Recent Developments in the European Scene, in Sexton, D. and Landstrom, H. (Eds), The Blackwell Handbook of Entrepreneurship, Blackwell Publishers, Oxford, pp. 199-220.

Dueñas-Caparas, Ma (2006), Determinants of Export Performance in the Philippine Manufacturing Sector, East Asian Bureau of Economic Research, Microeconomics Working Papers.

Duenas-Caparas, Maria Teresa S. (2006), Determinants of Export Performance in the Philippine Manufacturing Sector, No DP 2006-18, Discussion Papers, Philippine Institute for Development Studies.

Eaton J., and H. Kierzkowski (1982), Oligopolistic Competition, Product Variety, and International Trade. Seminar Paper No: 204, Institute for International Economic Studies, Stockholm, Sweden.

Ebghaei, Felor and A.A Wigley (2018), The Role of Exports in the Transmission of Horizontal and Vertical Spillovers of Foreign Direct Investment: The Case of Turkish Manufacturing Industry, Journal of Developing Economies, Vol. 56, Issue 1, pp. 35-50

Eurepean Central Bank (2019), The Impact of Global Value Chains on the Euro Area Economy, ECB Occasional Paper Series, No: 221, web page: https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op221~38185e6936.en.pdf

Eickelpasch, A., and Vogel, A. (2009), Determinants of Export Behavior of German Business Services Companies. Discussion Papers 876, DIW, Berlin: German Institute for Economic Research.

Erduman, Yasemin, Eren, Okan and Gül, Selçuk (2020), Import Content of Turkish Production and Exports: A sectoral analysis. Central Bank Review.

Esteves, Paulo and António Rua (2015). Is There A Role For Domestic Demand Pressure On Export Performance?, Empirical Economics, Springer, Vol. 49, Issue 4, pp 1173-1189..

Fagerberg, Jan (1987), A Technology Gap Approach To Why Growth Rates Differ, Research Policy, Vol. 16, Issue 2-4, pp. 87-99, https://EconPapers.repec.org/RePEc:eee:respol:v:16:y:1987:i:2-4:p:87-99. Access date: 3 June 2020

Feng, Ling and Li, Zhiyuan and Swenson, Deborah (2016), The Connection Between Imported Intermediate Inputs And Exports: Evidence From Chinese Firms. NBER Working Paper101.

Fu, D., Wu, Y. and Tang, Y. (2009), The Effects Of Ownership Structure And Industry Characteristics On Export Performance, Discussion Paper 10.09, The University of Western Australia.

Gabbitas, Owen and Gretton, Paul (2003), Firm Size and Export Performance: Some Empirical Evidence. Productivity Commission Working Paper No. 1739

Gilbert, Richard J. and Carmen Matutes (1993), Product Line Rivalry with Brand Differentiation, *the Journal of Industrial Economics,* Vol. 41, No. 3, pp. 223-240

Gonzalez, Javier Lopez (2016), Using Foreign Factors to Enhance Domestic Export Performance. OECD Trade Policy Papers No. 191.

Goldberg, Linda. (2004), Industry Specific Exchange Rates for the United States. Economic Policy Review. Vol. 10. No:1-16., Fed. Reserve Bank of New York, pp. 1-17

Gonzalez, Javier Lopez (2017), Mapping the participation of ASEAN small-and medium-sized enterprises in global value chains OECD Trade Policy Papers, no:139, Paris

Greenaway, David and Kneller Richard (2007), Firm Heterogeneity, Exporting and Foreign Direct Investment The Economic Journal, Vol. 117, Issue 517,, pp.134-161.

Greene, W. (2012) Econometric Analysis. 7th Edition, Prentice Hall, Upper Saddle River.

Gros, Daniel (1987), A note on the optimal tariff, retaliation and the welfare loss from tariff wars in a framework with intra-industry trade, Journal of International Economics, Vol. 23, Issue 3-4, pp. 357-367.

Grossman, g. M. and e. R. Hansberg (2010), Task Trade between Similar Countries, Econometrica, Vol. 80, No. 2, pp. 593–629

Grubel H.G. and Lloyd P.J. (1975), Intra-Industry Trade: The Theory and Measurement of International Trade on Differentiated Products, John Willey&Sons, London and New York

Guner, B., Lee, J., and Lucius, H. (2010), The Impact Of Industry Characteristics On Export Performance: A Three Country Study, International Journal of Business and Economics Perspectives, Vol. 5, No. 2, pp. 126-141.

Halpern, Laszlo, Miklos Koren and Adam Szeidl (2015), Imported Inputs and Productivity, the American Economic Review, Vol. 105 No. 12. pp. 3660-3703.

Hart, Jeffrey and Prakash, Aseem. (1997), The Decline Of 'Embedded Liberalism' And The Rearticulation Of The Keynesian Welfare State. New Political Economy Vol. 2. pp. 65-78.

Head, Keith Charles and Spencer, Barbara J. (2017), Oligopoly in International Trade: Rise, Fall and Resurgence (December / Décembre 2017). Canadian Journal of Economics/Revue canadienne d'économique, Vol. 50, Issue 5, pp. 1414-1444, https://ssrn.com/abstract=3094769.

Helpman, Elhanan (2006), Trade, FDI, and the Organization of Firms, Journal of Economic Literature, Vol. 44, pp. 589-630.

Helpman, Elhanan, and Paul R. Krugman (1985), Market Structure and Foreign Trade. Increasing Returns, Imperfect Competition, and the International Economy, Cambridge, MA: MIT Press. https://books.google.com.tr/books?hl=tr&lr=&id=KB_bO8w4JgoC&oi=fnd&pg=PR11&dq=Helpman+and+Krugman,+1985&ots=dGprri1XOW&sig=qtq-vZJ0UW5GIEYqiq6RgwH3hj0&redir_esc=y#v=onepage&q&f=false Access date: 1 June 2020.

Helpman, Elhanan, (1990), Monopolistic Competition in Trade Theory, Princeton Studies in International Economics, International Economics Section, Department of Economics Princeton University.

Hsiao, Cheng (2006), Panel Data Analysis - Advantages and Challenges. IEPR Working Paper No. 06.49, pp. 1-33, https://ssrn.com/abstract=902657

Hufbauer, Gary C. (1966), Synthetic Materials and the Theory of International Trade, Harvard University Press.

Hultman, Magnus, Katsikeas, Constantine and Robson, Matthew (2011), Export Promotion Strategy and Performance: The Role of International Experience. Journal of International Marketing. Vol. 19, Issue 4, pp.17-39.

Isgut, A. E. (2001), What's Different about Exporters? Evidence from Colombian Manufacturing, Journal of Development Studies, Vol. 37, Issue, 5, pp. 57– 82.

Jägerstedt, Hannes (2016), the Relationship Between firm-level R&D, Markups and Exporting. Evidence from Swedish Manufacturing, Master Thesis, Lunds Universitet, Sweden.

Jones, R.W., Kierzkowski, Henryk and Arndt, S.W. (2001), A framework for fragmentation. Fragmentation: new production patterns in the world economy. Oxford University Press, USA. pp. 17-34.

Jones, Ron (1956), Factor Proportions and the Heckscher-Ohlin Theorem, Review of Economic Studies, Vol. 24, No. 1, pp. 1-10. https://www.jstor.org/stable/pdf/2296232.pdf access date: 16 July 2020

Jongwanich J, A Kohpaiboon (2008) Private Investment: Trends and Determinants in Thailand World Development, Vol. 36, No. 10, pp. 1709-1724

Kara, Hakan and Sarıkaya, Çağrı (2014), Current Account Deficit in Turkey: Cyclical or Structural?. Koç University-TUSIAD Economic Research Forum Working Papers.

Kasman, Adnan and Kasman, Saadet (2005), Exchange Rate Uncertainty in Turkey and Its Impact On Export Volume. METU Studies in Development Vol. 32, pp. 41-58.

Kelly, Morgan and Hageman, Anya (1999), Marshallian Externalities in Innovation, Journal of Economic Growth, Vol. 4, Issue 1, pp. 39-54.

Keesing D. B. (1968), Population and Industrial Development: Some Evidence from Trade Patterns. The American Economic Review, Vol. 58, N. 3, pp. 448-455.

Kılıç, E , Yıldırım, K . (2015), Sektörel Reel Döviz Kuru Oynaklığı İthalat Hacmini Etkiler mi? Türkiye üzerine bir uygulama. Dumlupınar Üniversitesi Sosyal Bilimler Dergisi, (43)

Kimura F. and K. Kiyota, (2006), Exports, FDI, and Productivity: Dynamic Evidence from Japanese Firms, Review of World Economics (Weltwirtschaftliches Archiv) 142(4) pp. 695-719.

Kokko, Ari; Mario Zejan and Ruben Tansini (2001), Trade Regimes and Spillover Effects of FDI: Evidence from Uruguay. Weltwirtschaftliches Archiv, Vol. 137, pp. 124-149.

Kokko, Ari; Ruben Tansini and Mario C. Zejan (1996), Local Technological Capability and Productivity Spillovers from FDI in the Uruguayan Manufacturing Sector. Journal of Development Studies, Vol. 32, pp. 602-611.

Koymen Ozer, Seda, Taglioni, Daria and Winkler, Deborah (2016), Turkey's Participation and Economic Upgrading in Global Value Chains. In book: Handbook of Research on Comparative Economic Development Perspectives on Europe and the MENA Region pp.418-468

Kraay, A. (2002), 'Exports and Economic Performance: Evidence from a Panel of Chinese Enterprises', in M.-F. Renard (Ed.), China and its Regions. Economic Growth and Reform in Chinese Provinces (Cheltenham: Edward Elgar), pp. 278– 99

Krugman, P. (1980), Scale Economies, Product Differentiation and The Pattern of Trade, American Economic Review, Vol. 70, Issue 5, pp. 950 959.

Krugman, P. (1987), The narrow Moving Band, the Dutch Disease, and the Competitive Consequences of Mrs. Thatcher: Notes on Trade in the Presence of Dynamic Scale Economies, Journal of Development Economics, Vol. 27, Issues 1–2, pp. 41-55

Krugman, P. and Obstfeld, M. (2003), International Economics: Theory and Policy, Addison Wesley, 6th edition.

Krugman, Paul. (2009), The Increasing Returns Revolution in Trade and Geography, American Economic Review, Vol. 99, No. 3, pp. 561-71.

Lall, S. (1986), Technological development and export performance in LDCs: Leading engineering and chemical firms in India. Weltwirtschaftliches Archiv 122, pp. 80–92

Lancaster, K. (1980), Intra-Industry Trade Under Perfect Monopolistic Competition. Journal of International Economics, Vol. 10, pp. 151-175.

Lefebvre, E., lefebvre, L. Y M. Bourgault (1998), R&D-Related Capabilities as Determinants of Export Performance, Small Business Economics, Vol. 10: pp. 365-377.

Lefebvre, A., and Lefebvre, L. A. (2001), Innovative Capabilities as Determinants of Export Behavior and Performance: A Longitudinal Study of Manufacturing SMEs. Innovation and Firm performance. Econometric exploration of survey data. London: Palgrave.

Leonidou, Leonidas, Katsikeas, Constantine and Samiee, Saeed (2002), Marketing Strategy Determinants of Export Performance: A Meta-Analysis. Journal of Business Research. Vol. 55. pp. 51-67.

Li, Yifan and Miao, Zhuang (2018), Trade costs, import penetration, and markups, MPRA Paper 85668, University Library of Munich, Germany.

Liu, X., Parker, D., Vaidya, K. and Wei, Y. (2001), The Impact of Foreign Direct Investment on Labour Productivity in the Chinese Electronics Industry, International Business Review Vol. 10, Issue 4 pp. 421–439.

Liua, Qing and Larry D. Qiub (2016), Intermediate input imports and innovations: Evidence from Chinese firms' patent filings, Journal of International Economics, Vol 103. Pp. 166-183

Lunderg, Helene (2018), Bank Relationship' Contributions to SME Export Performance, International Journal of Bank Marketing, Vol 37, No: 5 pp. 1143-1164.

Lundberg, Clark (2019), Identifying Horizon-Based Heterogeneity in the Cross Section of Portfolio Returns, San Diego State University, Economic Bulletin, Vol. 39, Issue 2, pp. 1-14.

Majocchi, A., Mayhofer, U. and Bacchiocchi, E. (2005), Firm Size, Business Experience and Export Intensity in SMEs: A Longitudinal Approach to A Complex Relationship, International Business Review, Vol. 14 No. 6, pp. 719-738.

Manova, K. S-J Wei and Z. Zhang (2009), Firm Exports and Multinational Activity under Credit Constraints, Stanford University, Mimeo.

Manova, Kalina (2013), Credit Constraints, Heterogeneous Firms, and International Trade, Review of Economic Studies 80, pp. 711–744.

Manova, Kalina, Shang-Jin Wei, and Zhiwei Zhang (2015), Firm Exports and Multinational Activity under Credit Constraints, the Review of Economics and Statistics, July 2015, 97(3): 574–588

Markusen, J. R. (2013), Putting Per-Capita Income Back Into Trade Theory. Journal of International Economics, Vol. 90, No.2, pp. 255-265.

Melitz, M. (2003), The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity, Econometrica, Vol. 71, Issue 6, pp. 1695-1725.

Melitz, Marc J, and Stephen J Redding (2014), Heterogeneous firms and Trade Handbook of International Economics, 4th edition, Elsevier B.V.

Metin-Özcan, Kivilcim, Ebru Voyvoda, Erinç Yeldan (2002), The impact of the liberalization program on the price-cost margin and investment of Turkey's manufacturing sector after 1980, Emerging Markets Finance & Trade, 38, pp. 71-101

Meyer, K., Skak, A. (2002), Networks, Serendipity and SME Entry into Eastern Europe. European Management Journal, 2 (2), 179–188.

Mıhcı, S. and Wigley, A. A. (2002), Diş Ticaret Serbestisinin Türk Imalat Sanayi Sektörleri Üzerindeki Yoğunlaşma ve Karlilik Etkileri, Gazi Üniversity Journal of İ.İ.B.F., Vol.5, No.3, pp. 77-91.

Miltenburg, John. (2008), Setting Manufacturing Strategy for A Factory-Within-Factory. International Journal of Production Economics. Vol. 113, Issue 1. pp. 307-323.

Minetti, Raoul and Susan Chun Zhu (2011), Credit Constraints and Firm Export: Microeconomic Evidence from Italy, Journal of International Economics, Vol. 83 pp. 109–125

Montobbio, Fabio and Rampa, Francesco, (2005), The Impact of Technology and Structural Change on Export Performance in Nine Developing Countries, World Development, Vol. 33, Issue 4, p. 527-547.

Nas, Tevfik. (2008), Tracing the Economic Transformation of Turkey from the 1920s to EU Accession. Tracing the Economic Transformation of Turkey from the 1920s to EU Accession, Leiden Publisher, ISBN 9789004167926 p.1-199.

Nazar, Muhammad, Mujtaba, Hassan and Saleem, Hassan. (2011), Firm-Level Determinants of Export Performance. International Business & Economics Research Journal (IBER). Vol. 8.

Neary, J Peter and Tharakan, Joe. (2006), Endogenous Mode of Competition in General Equilibrium CEPR Discussion Papers 5943, C.E.P.R. Discussion Papers.

OECD (2013), Interconnected Economies: Benefitting from global value chains, OECD Publishing, Paris.

OECD (2014), Global Trade and Specialization Patterns over the Next 50 Years, OECD Economic Policy Paper No: 10, Paris, pp.1-45.

Palazuelos-Martinez, Manuel (2007), The Structure and Evolution of Trade in Central and Eastern Europe in the 1990s, Europe-Asia Studies, Jan., 2007, Vol. 59, No. 1, pp. 111-135.

Park, Hun Myoung (2011), Practical Guides to Panel Data Modeling: A Step by Step Analysis Using Stata, International University of Japan, pp.1-53,

Porter, M. E. (1985), Competitive Advantage, New York: The Free Press.

Porter. M.E. (1990), The competitive advantage of nations. New York The Free Press. http://www.afi.es/eo/The%20competitive%20advantage%20of%20nations%20(Porter%20HBR%20marzo-abril%201990).pdf, Access date: 12 July 2020.

Posner, M. V., (1961), International Trade and Technical Change, Oxford Economic Papers, 13, issue 3, pp. 323-341, https://EconPapers.repec.org/RePEc:oup:oxecpp:v:13:y:1961:i:3:p:323-341. Access date: 30 May 2020

Rahmaddi, Rudy and Ichihashi, Masaru. (2012), How Do Foreign and Domestic Demand Affect Exports Performance? An Econometric Investigation of Indonesia's Exports. Modern Economy. Vol. 3. pp. 32-42.

Redding, Stephen. (2010), Theories of Heterogeneous Firms and Trade. C.E.P.R. Discussion Papers, CEPR Discussion Papers. 3.

Rikard Forslid and Okubo Toshihiro (2011), Are Capital Intensive Firms the Biggest Exporters?, Discussion papers 11014, Research Institute of Economy, Trade and Industry (RIETI).

Roberts, Mark, and James Tybout (1997), The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs, American Economic Review, Vol. 37 pp. 545-564

Ruffin, Roy J. (1999), The Nature and Significance of Intra-industry Trade. Economic & Financial Review, Vol. 1999, No. 4,

Saatcioğlu, C. and Karaca, O. (2004), Türkiye'de İhracat ile Büyüme Arasındaki Nedensellik İlişkisi: 1980 Dönüşümünün Etkisi. Yönetim Dergisi: İstanbul Üniversitesi İşletme Fakültesi İşletme İktisat Enstitüsü, Vol. 15, No. 49, pp. 30 - 40.

Samuels, W.J., Jeff E.B., John B.D. (2003), A Companion to The History of Economic Thought, Blackwell Publishing, Oxford.

Sarikaya, Cagri. (2004), Export Dynamics in Turkey. Central Bank Review. Vol. 4. pp. 41-64.

Saygılı, M., Şahinbeyoğlu, G. and Özbay, P. (1998), Competitiveness Indicators and the Equilibrium Real Exchange Rates Dynamics in Turkey, Macroeconomic Analysis of Turkey: Essays on Current Issues, ed. E.M. Quarterly, CBRT.

Saygili, Seref, Cihan, Cengiz, Yalcin, Cihan and Hamsici, Turknur (2010), Turkiye İmalat Sanayiin İthalat Yapısı, CBRT Working paper No:10/02, pp.1-151

Serti, Francesco; Tomasi, Chiara (2007), Self Selection and Post-Entry Effects of Exports: Evidence from Italian Manufacturing Firms, LEM Working Paper Series, No. 2007/20 pp. 1-32, https://www.econstor.eu/bitstream/10419/89296/1/575600349.pdf

Sertic, Basarac, Martina, Vučković, Valentina and Skrabic, Blanka (2015), Determinants of manufacturing industry exports in European Union member states: a panel data analysis. Economic Research-Ekonomska Istraživanja. Vol. 28. pp. 384-397.

Sinani, E. (2003), 'Export Market Participation: The Importance of Sunk Costs and Spillovers' (Centre for East European Studies, Copenhagen Business School, Mimeo.

Singh, Tarlok (2010), Does International Trade Cause Economic Growth? A Survey, The World Economy, Wiley Blackwell, Vol. 33. Issue. 11, pp. 1517-1564.

Sodersten B., Geoffrey Reed (1994), International Economics, Macmillan Education, 3th edition, New York p. 749

Sousa, Carlos, Martínez-López, Francisco and Coelho, Filipe (2008), The Determinants of Export Performance: A Review of the Research in the Literature Between 1998 and 2005. International Journal of Management Reviews, Vol.10, Issue 1,

Sterlacchini, Alessandro (2001), The determinants of export performance: A firm level study in Italian Manufacturing, Vol. 137. pp. 450-472.

Stolper, Wolfgang F. and Samuelson, Paul, (1941), Protection and Real Wages, Review of Economic Studies, 9, issue 1, pp. 58-73,

Ş. Saygılı, C. Cihan, C. Yalçın, T.H. Brand (2014), Türkiye Imalat Sanayinde Ithal Girdi Kullanimindaki Artişin Kaynaklari, Journal of Economics, Business and Finance, Vol. 29, No. 342, pp. 9-44

Şahinbeyoğlu, G. and Ulaşan, B. (1999), An Empirical Examination of the Structural Stability of Export Function: The Case of Turkey, Central Bank of Turkish Republic Discussion Paper Series, No: 9907.

Taylor, Mark, (1986), The Product-Cycle Model: A Critique, Environment and Planning A, Vol.18, Issue 6, pp. 751-761, https://EconPapers.repec.org/RePEc:sae:envira:v:18:y:1986:i:6:p:751-761.

Taymaz, Erol, Ebru Voyvoda and Kamil Yılmaz (2011), Uluslararasi Üretim Zincirlerinde Dönüşüm Ve Türkiye'nin Konumu, Ekonomik Araştirma Forumu Çalişma Raporlari Serisi, EAF-RP/11–01, pp. 1-190

Tebaldi, E. (2011), The Determinants of High-Technology Exports: A Panel Data Analysis. Atlantic Economics Journal, Vol. 39, pp. 343–353.

Tesfom, Tsegay Goitom and Lutz, Clemens. (2006), A Classification of Export Marketing Problems of Small and Medium-Sized Manufacturing Firms in Developing Countries. International Journal of Emerging Markets, Vol.1, Issue 3. pp 262-281

Togan, S. and H. Berument (2007), The Turkish Current Account, Real Exchange Rate and Sustainability: A Methodological Framework, Journal of International Trade and Diplomacy, Vol. 1, Issue 1, pp.155- 192.

Toraganli, Nazli and Cihan Yalcin (2016), Exports, Real Exchange Rates and External Exposures: Empirical Evidence from Turkish Manufacturing Firms, Working Papers 1624, Research and Monetary Policy Department, Central Bank of the Republic of Turkey.

Toubal, Farid, Kleinert, Joern and Buch, Claudia (2003), Determinants of German FDI: New Evidence from Micro-Data, Discussion Paper Series 1, No 2003/09 Economic Studies, Deutsche Bundesbank, https://EconPapers.repec.org/RePEc:zbw:bubdp1:4206.

UNCTAD (2005), Determinants of Export Performance‖. UNCTAD, Geneva

Uysal, M, Doğru, B. (2013), Efektif Euro Kurundaki Belirsizliğin Euro Bölgesi Ihracatina Etkisi. Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, Vol. 27, No.3, pp. 245-262

Veron, R. (1966), International Investment and International Trade in the Product Cycle. Quarterly Journal of Economics, pp. 190-207, https://doi.org/10.2307/1880689, access date: 15 June 2020

Vinh, N. T. T., T. T. T. Duong (2020), Firm export and the impact of foreign ownership in Vietnam: a micro-data analysis, journal of economic development, Volume 45, Number 1, pp. 123-143

Vural, I. Y. and Zortuk, M. (2011), Foreign Direct Investment as a Determining Factor in Turkey's Export Performance, Eurasian Journal of Business and Economics, Vol. 4, Issue 7, pp. 13-23.

Wagner, J. (2011), International trade and firm performance: a survey of empirical studies since 2006. Rev World Econ 148, pp. 235–267

Wagner, Joachim (1995), Exports, Firm Size, and Firm Dynamics, Small Business Economics, Vol. 7, No. 1, pp. 29-39.

Wagner, Joachim (2001), A Note on the Firm Size – Export Relationship. Small Business Economics, Vol. 17, Issue 4, pp. 229-237.

Wagner, Joachim (2007), Exports and productivity: a survey of the evidence from firm level data, Working Paper Series in Economics, No. 4.

Wakelin, Katharine (1998), Innovation and export behavior at the firm level, Research Policy, Vol. 26, Issue 7-8, pp. 829-841.

Ward, Peter & Duray, Rebecca (2000), Manufacturing strategy in context: Environment, competitive strategy and manufacturing strategy. Journal of Operations Management, Vol. 18. pp. 123-138.

Williams, F.P., D'Souza, D.E., Rosenfeldt, M.E. & Kassaee, M. (1995), Manufacturing strategy, business strategy and firm performance in a mature industry. Journal of Operations Management, Vol. 13, Issue 1, pp. 19-33.

Yeldan, Erinc, Günay, Asli and Metin Ozcan, Kivilcim (2005), Real wages, profit margins and inflation in Turkish manufacturing under post-liberalization. Applied Economics, Vol. 37. pp. 1899-1905.

Yılmaz, K. (2011), The EU –Turkey Customs Union Fifteen Years Later: Better, Yet not the Best Alternative, South European Society and Politics Vol. 16, No. 2, pp. 235–249.

Yükseler, Zafer and Türkan, Ercan (2008), Türkiye'nin Üretim ve Dış Ticaret Yapısında Dönüşüm. TÜSİAD-TCMB, pp. 1-170

Zaclicever, Dayna (2019), Imported Inputs and Export Performance: Evidence from Chilean Manufacturing Industries, United Nations, ECLAC.

Zhai, Fan (2008), Armington Meets Melitz: Introducing Firm Heterogeneity in a Global CGE Model of Trade, ADB Institute Discussion Paper No. 108, pp. 1-30

APPENDIX 1: TRADE PARTNER COUNTRIES USED IN CALCULATION OF EXTERNAL DEMAND

1	Afghanistan	33	India	65	Poland
2	Argentina	34	Indonesia	66	Portugal
3	Albania	35	Ireland	67	Romania
4	Algeria	36	Iraq	68	Russian Federation
5	Australia	37	Israel	69	Qatar
6	Austria	38	Italy	70	Serbia
7	Azerbaijan	39	Iceland	71	Singapre
8	Bahrain, Kingdom	40	Iran	72	Slovakia
9	Bangladesh	41	Japan	73	Slovenia
10	Belarus	42	Jordan	74	Saudi Arabia
11	Belgium	43	Kazakhstan	75	Syria
12	Bolivia	44	Kyrgyz Republic	76	South Africa
13	Bosnia and Herzegovina	45	Kosovo	77	South Korea
14	Brazil	46	Kuwait	78	Spain
15	Bulgaria	47	Latvia	79	Sweden
16	Canada	48	Libya	80	Switzerland
17	Czech Republic	49	Lebanon	81	Thailand
18	Chile	50	Luxemburg	82	Tunisia
19	China	51	Malaysia	83	Turkmenistan
20	Colombia	52	Macedonia	84	Ukraine
21	Croatia	53	Mexico	85	United Arab Emir.
22	Denmark	54	Morocco	86	United Kingdom
23	Estonia	55	Moldovia	87	USA
24	Egypt	56	New Zealand	88	Uzbekistan
25	Finland	57	Netherlands	89	Uruguay
26	France	58	Norway	90	Venezuela
27	Greece	59	Oman	91	Vietnam
28	Georgia	60	Pakistan	92	Yemen
29	Germany	61	Panama		
30	Honduras	62	Paraguay		
31	Hong Kong	63	Peru		
32	Hungary	64	Philippines		

APPENDIX 2: THE COUNTRIES USED IN CALCULATION OF THE REAL EXCHANGE RATE

1	Argentina	33	Kuwait	65	Ukraine
2	Albania	34	Latvia	66	United Arab Emir.
3	Algeria	35	Libya	67	United Kingdom
4	Australia	36	Lithuania	68	USA
5	Austria	37	Malaysia	69	Vietnam
6	Azerbaijan	38	Mexico	70	Yemen
7	Bahrain	39	Morocco		
8	Bangladesh	40	Moldovia		
9	Belgium	41	Netherlands		
10	Bosnia and Herzegovina	42	Norway		
11	Brazil	43	Oman		
12	Bulgaria	44	Pakistan		
13	Canada	45	Panama		
14	Czech Republic	46	Philippines		
15	China	47	Poland		
16	Croatia	48	Portugal		
17	Denmark	49	Romania		
18	Egypt	50	Russian Federation		
19	France	51	Qatar		
20	Greece	52	Saudi Arabia		
21	Georgia	53	Senegal		
22	Germany	54	Serbia		
23	Hungary	55	Singapore		
24	India	56	Syria		
25	Indonesia	57	South Africa		
26	Ireland	58	Sudan		
27	Israel	59	Spain		
28	Italy	60	Sweden		
29	Iran, Islamic Rep.	61	Switzerland		
30	Japan	62	Thailand		
31	Jordan	63	Tunisia		
32	Kazakhstan	64	Uganda		

APPENDIX 3: OLS AND FIXED EFFECTS REGRESSION RESULTS

A. OLS Regression Results

VARIABLES	Sectors	Small-Sized Firms	Medium-Sized Firms	Large-Sized Firms
L.logR&D	0.002	-0.008	-0.048*	-0.000
	(0.007)	(0.012)	(0.026)	(0.014)
L.P	0.861**	0.914	3.431***	0.914**
	(0.379)	(1.195)	(1.155)	(0.411)
L.logEX	0.955***	0.914***	0.923***	0.951***
	(0.014)	(0.036)	(0.051)	(0.014)
logBC	0.045***	0.057	0.069	0.032
	(0.013)	(0.036)	(0.078)	(0.019)
LogWP	0.001	0.058	0.109	0.015
	(0.018)	(0.037)	(0.117)	(0.037)
logREER(CBRT)	-0.105**	0.099	0.233*	-0.274***
	(0.048)	(0.114)	(0.118)	(0.077)
TPG	0.012**	0.010	0.010*	0.001
	(0.005)	(0.008)	(0.005)	(0.008)
Constant	0.470	-0.551	-2.054	1.536**
	(0.407)	(0.828)	(1.753)	(0.710)
Observations	268	198	176	165
R-squared	0.990	0.955	0.949	0.986
rank	8	8	8	8
ll_0	-438.2	-280.3	-231.3	-247.3
ll	176.9	27.14	31.41	105.8
r2_a	0.990	0.954	0.947	0.986
rss	4.190	8.814	7.212	2.678
mss	408.6	187.8	135.5	190.9
rmse	0.127	0.215	0.207	0.131
r2	0.990	0.955	0.949	0.986
F	3894	1226	277.2	1748
df_r	22	19	19	18
df_m	7	7	7	7
N_clust	23	20	20	19

B. Fixed Effects Regression Results

VARIABLES	Sectors	Small-Sized Firms	Medium Sized-Firms	Large-Sized Firms
L.logR&D	0.002	-0.002	-0.000	-0.003
	(0.009)	(0.022)	(0.036)	(0.034)
L.P	0.779**	-1.352	2.069**	1.448***
	(0.327)	(0.973)	(0.882)	(0.378)
L.logEX	0.545***	0.309***	0.346***	0.528***
	(0.054)	(0.084)	(0.075)	(0.076)
logBC	0.118***	0.086	0.251***	0.119***
	(0.020)	(0.052)	(0.054)	(0.040)
LogWP	0.283***	0.608***	0.761***	0.377***
	(0.065)	(0.189)	(0.145)	(0.106)
logREER(CBRT)	-0.486***	0.058	-0.205*	-0.619***
	(0.090)	(0.117)	(0.110)	(0.098)
TPG	0.010**	-0.002	-0.003	0.003
	(0.005)	(0.005)	(0.004)	(0.005)
Constant	6.159***	4.652	0.248	6.001***
	(1.492)	(2.982)	(2.793)	(1.257)
Observations	268	198	176	165
R-squared	0.894	0.434	0.769	0.932
rank	7	7	7	7
ll_0	-45.85	36.64	-7.868	-55.27
ll	254.6	93.04	121.2	167.1
r2_a	0.891	0.413	0.760	0.929
rss	2.347	4.529	2.598	1.275
mss	19.75	3.477	8.670	17.60
rmse	0.0950	0.154	0.124	0.0901
r2	0.894	0.434	0.769	0.932
F	146.9	14.62	46.50	179.8
df_r	22	19	19	18
df_m	6	6	6	6
N_clust	23	20	20	19
Number of id	23	20	20	19
p	0	1.95e-06	1.24e-10	0
rho	0.962	0.963	0.970	0.965
sigma	0.509	0.845	0.761	0.512
sigma_e	0.0993	0.163	0.132	0.0958
r2_b	0.940	0.714	0.705	0.914
r2_o	0.931	0.644	0.572	0.904
corr	0.767	0.569	0.132	0.521

APPENDIX 4: HAUSMAN TEST RESULTS

Model 1 (Sectors)

```
**Hausman test: FE vs. RE
xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, fe
est store estfe


** RE estimates

xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, re
est store estre

hausman estfe estre

 /* Test:  Ho:  difference in coefficients not systematic

                  chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =      152.03
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite) <<< fixed
effects  */
```

Model 2 (Small Firms)

```
**Hausman test: FE vs. RE
xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, fe
est store estfe


** RE estimates

xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, re
est store estre

hausman estfe estre

 /*   Test:  Ho:  difference in coefficients not systematic

                  chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       91.02
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite) <<< fixed
effects  */
```

Model 3 (Medium Firms)

```
**Hausman test: FE vs. RE
xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, fe
est store estfe

** RE estimates

xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, re
est store estre

hausman estfe estre

 /*   Test:  Ho:  difference in coefficients not systematic

                 chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                                =      151.93
               Prob>chi2 =      0.0000

               (V_b-V_B is not positive definite) <<< fixed
effects  */
```

Model 4 (Large Firms)

```
**Hausman test: FE vs. RE
xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, fe
est store estfe

** RE estimates

xtreg logex l.logex logrd logcredit logwp p logreel(TCMB)
TPG, re
est store estre

hausman estfe estre

 /*   Test:  Ho:  difference in coefficients not systematic

                  chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       77.40
               Prob>chi2 =      0.0000

               (V_b-V_B is not positive definite) <<< fixed
effects  */
```

APPENDIX 5: DESCRIPTIVE STATISTICS OF THE TURKISH MANUFACTURING SECTORS (ISIC REV.4)

10: Manufacture of food products

	Mean	Standard Deviation	Min	Max
EX	8.703.371.775	2.860.299.883	5.539.768.807	14.428.989.360
R&D	186	47	111	263
CI	26.372	1.428	24.029	28.633
WP	148.674	9.492	134.919	165.781
P	0,02	0,01	0,01	0,05
BC	13.319.736.267	3.985.284.678	7.920.545.393	20.423.639.018
REER (SECTORAL)	108,33	16,49	75,00	134,47
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,04	2,28	-1,31	8,14
No of Firms in the sector	6.274,00	5.567,00	14,00	27.055,00
No of Employees in the sector	130.338,01	125.802,82	3.485	507.355

11: Manufacture of beverages

	Mean	Standard Deviation	Min	Max
EX	163.874.788	36.104.042	104.911.173	234.664.767
R&D	247	36	157	298
CI	94.431	9.191	81.327	110.081
WP	246.649	14.151	221.255	265.569
P	0,03	0,02	0,00	0,07
BC	755.520.791	218.639.614	508.857.628	1.184.681.511
REER (SECTORAL)	121,67	13,58	95,38	146,00
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,92	3,29	0,08	11,68
No of Firms in the sector	586,00	37,00	485,00	630,00
No of Employees in the sector	13.882,00	2.244,71	10.145	17.338

12: Manufacture of tobacco products

	Mean	Standard Deviation	Min	Max
EX	1.088.048.389	359.962.843	595.661.054	1.721.085.525
R&D	19	13	0	43
CI	167.466	75.250	57.407	287.219
WP	594.826	316.248	200.868	1.164.030
P	0,03	0,06	-0,09	0,10
BC	687.319.902	503.602.607	51.580.420	1.623.506.272
REER (SECTORAL)	134,31	26,17	86,01	191,07
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,23	1,99	0,64	6,61
No of Firms in the sector	38,00	8,30	14,00	51,00
No of Employees in the sector	7.019,46	3.859,47	3.485	14.008

13: Manufacture of textiles

	Mean	Standard Deviation	Min	Max
EX	8.134.140.033	1.032.482.129	6.527.572.430	10.157.615.095
R&D	74	16	47	102
CI	28.861	4.212	24.671	37.338
WP	100.071	5.393	93.499	110.574
P	0,02	0,01	-0,02	0,03
BC	11.397.622.716	4.391.749.123	6.591.363.633	17.234.390.758
REER (SECTORAL)	124,69	20,51	87,88	156,78
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,54	1,92	-2,78	4,90
No of Firms in the sector	11.236,60	634,10	10.404,00	12.802,00
No of Employees in the sector	372.219,54	54.825,00	292.213	447.919

14: Manufacture of wearing apparel

	Mean	Standard Deviation	Min	Max
EX	11.976.060.817	2.717.770.124	8.912.034.995	17.903.905.216
R&D	48	11	32	72
CI	10.548	1.000	9.370	13.067
WP	77.100	11.912	66.827	102.681
P	0,02	0,01	0,00	0,04
BC	5.373.129.434	2.085.655.492	2.730.463.561	8.299.228.184
REER (SECTORAL)	127,87	18,71	89,08	159,69
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	1,78	1,91	-3,98	3,59
No of Firms in the sector	15.753,40	2.503,20	12.608,00	20.621,00
No of Employees in the sector	430.028,23	69.645,74	335.100	507.355

15: Manufacture of leather and related products

	Mean	Standard Deviation	Min	Max
EX	697.313.400	134.235.385	508.756.265	1.072.796.078
R&D	45	22	23	91
CI	14.046	2.406	11.820	21.359
WP	83.993	10.834	73.858	110.571
P	0,02	0,01	0,01	0,03
BC	599.492.156	237.103.560	355.816.958	1.108.715.110
REER (SECTORAL)	131,55	22,57	86,23	162,66
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,09	2,22	-2,85	5,64
No of Firms in the sector	3.774,70	403,80	3.322,00	4.531,00
No of Employees in the sector	54.389,00	9.030,02	42.034	64.101

16: Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

	Mean	Standard Deviation	Min	Max
EX	723.560.615	304.877.187	272.359.674	1.233.162.607
R&D	32	18	6	69
CI	39.282	5.017	30.377	49.281
WP	120.914	14.824	97.004	149.765
P	0,02	0,02	-0,01	0,07
BC	2.215.896.245	902.523.077	1.020.180.585	3.481.505.348
REER (SECTORAL)	110,01	13,49	80,04	129,49
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	4,37	2,37	0,91	8,39
No of Firms in the sector	4.715,50	575,30	3.612,00	5.696,00
No of Employees in the sector	54.123,62	9.629,03	38.516	69.036

17: Manufacture of paper and paper products

	Mean	Standard Deviation	Min	Max
EX	1.753.364.091	968.295.960	634.563.717	3.388.134.621
R&D	88	38	36	161
CI	54.242	5.292	46.262	63.650
WP	177.519	28.150	152.522	239.895
P	0,02	0,02	-0,02	0,07
BC	2.594.681.930	1.505.762.904	1.122.935.188	4.878.923.215
REER (SECTORAL)	120,91	14,83	87,28	140,47
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,50	2,22	-1,23	7,26
No of Firms in the sector	2.305,70	415,80	1.883,00	3.001,00
No of Employees in the sector	53.591,85	14.179,73	37.580	73.177

18: Printing and reproduction of recorded media

	Mean	Standard Deviation	Min	Max
EX	348.553.885	115.920.318	178.490.890	519.000.809
R&D	209	114	31	436
CI	24.832	3.867	19.990	32.061
WP	115.593	18.120	92.681	150.148
P	0,02	0,01	-0,01	0,03
BC	690.660.965	306.267.812	347.296.932	1.112.036.949
REER (SECTORAL)	130,97	10,57	113,70	148,86
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,93	1,64	-0,63	5,91
No of Firms in the sector	6.530,50	287,30	6.077,00	6.859,00
No of Employees in the sector	43.668,46	4.925,95	34.975	50.837

19: Manufacture of coke and refined petroleum products

	Mean	Standard Deviation	Min	Max
EX	1.922.318.263	297.212.534	1.255.897.200	2.224.430.915
R&D	438	301	45	887
CI	159.769	61.457	106.493	295.834
WP	1.378.343	209.456	1.097.629	1.699.911
P	0,06	0,04	0,00	0,12
BC	1.418.799.987	1.147.717.978	222.019.265	3.584.219.286
REER (SECTORAL)	113,10	12,63	83,12	132,53
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,82	1,59	-1,68	4,89
No of Firms in the sector	334,60	46,90	279,00	422,00
No of Employees in the sector	7.808,77	1.119,53	6.262	9.652

20: Manufacture of chemicals and chemical products

	Mean	Standard Deviation	Min	Max
EX	4.816.917.400	1.463.633.075	3.161.079.671	8.087.653.024
R&D	1.030	309	764	1.610
CI	67.213	9.017	55.958	84.599
WP	315.142	25.822	276.720	351.917
P	0,05	0,02	0,02	0,10
BC	4.949.278.099	1.887.345.121	2.299.982.819	8.459.893.619
REER (SECTORAL)	121,77	25,19	58,88	150,62
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,38	1,76	-0,49	6,45
No of Firms in the sector	4.782,50	119,10	4.664,00	5.108,00
No of Employees in the sector	71.345,54	10.009,52	59.049	87.356

21: Manufacture of pharmaceuticals, medicinal chemical and botanical products

	Mean	Standard Deviation	Min	Max
EX	1.667.301.367	946.724.489	512.364.699	3.759.775.488
R&D	4.294	1.313	2.574	6.868
CI	111.426	44.544	52.254	179.373
WP	447.389	124.975	288.345	665.398
P	0,04	0,03	-0,01	0,09
BC	3.550.626.604	1.959.514.903	1.142.119.719	6.594.369.127
REER (SECTORAL)	134,06	15,66	96,76	156,55
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,97	1,92	-2,05	5,61
No of Firms in the sector	418,70	85,80	319,00	541,00
No of Employees in the sector	32.145,77	3.203,30	26.559	39.061

22: Manufacture of rubber and plastics products

	Mean	Standard Deviation	Min	Max
EX	5.370.403.952	1.368.273.064	3.304.225.818	8.111.191.584
R&D	214	35	186	319
CI	30.666	1.349	29.060	34.411
WP	134.083	9.677	120.170	155.362
P	0,04	0,01	0,01	0,04
BC	5.230.642.664	2.162.445.528	2.109.018.920	8.481.733.327
REER (SECTORAL)	116,45	14,59	83,69	137,24
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,02	2,00	-1,92	5,97
No of Firms in the sector	9.275,20	1.650,60	6.384,00	12.035,00
No of Employees in the sector	169.021,15	37.352,42	112.066	223.162

23: Manufacture of other non-metallic mineral products

	Mean	Standard Deviation	Min	Max
EX	3.232.013.283	541.308.719	2.196.011.717	4.468.358.478
R&D	191	27	135	238
CI	43.971	4.822	35.392	51.568
WP	102.891	9.373	90.989	121.287
P	0,04	0,02	0,01	0,08
BC	6.681.177.893	2.781.266.203	3.220.520.114	11.094.916.579
REER (SECTORAL)	120,00	12,65	90,41	137,51
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,00	1,94	-1,17	6,80
No of Firms in the sector	7.992,60	1.173,90	5.839,00	9.901,00
No of Employees in the sector	215.928,85	36.470,01	157.645	262.570

24: Manufacture of basic metals

	Mean	Standard Deviation	Min	Max
EX	10.713.214.956	1.341.177.702	8.322.997.095	13.958.717.735
R&D	79	22	49	115
CI	73.126	16.720	42.051	107.909
WP	274.992	14.751	252.579	304.447
P	0,03	0,03	-0,02	0,06
BC	8.705.940.543	2.469.764.911	4.748.571.617	13.022.075.362
REER (SECTORAL)	117,54	14,68	85,65	137,79
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,88	1,62	-0,89	5,91
No of Firms in the sector	4.047,30	325,90	3.584,00	4.678,00
No of Employees in the sector	127.238,08	21.202,28	94.235	153.913

25: Manufacture of fabricated metal products, except machinery and equipment

	Mean	Standard Deviation	Min	Max
EX	4.611.572.071	1.757.100.012	2.443.403.227	8.129.197.855
R&D	141	47	86	214
CI	20.568	3.545	15.774	24.937
WP	97.054	11.851	77.831	117.510
P	0,04	0,01	0,02	0,05
BC	4.712.860.393	1.507.948.454	1.775.470.936	6.932.558.185
REER (SECTORAL)	120,21	18,90	89,17	170,28
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,28	1,86	-1,24	6,28
No of Firms in the sector	18.387,70	4.980,30	11.821,00	27.055,00
No of Employees in the sector	241.706,15	57.793,52	168.263	325.030

26: Manufacture of computer, electronic and optical products

	Mean	Standard Deviation	Min	Max
EX	4.560.257.662	799.838.554	3.112.709.058	5.707.899.251
R&D	5.475	1.563	3.021	8.074
CI	46.806	9.042	35.243	62.321
WP	340.305	36.152	287.106	410.753
P	0,03	0,02	-0,01	0,07
BC	2.149.345.734	550.532.233	1.344.992.437	2.910.331.006
REER (SECTORAL)	141,16	18,39	100,08	174,32
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,01	1,83	-3,58	3,85
No of Firms in the sector	1.105,40	218,20	851,00	1.452,00
No of Employees in the sector	31.305,15	5.364,26	24.874	40.462

27: Manufacture of electrical equipment

	Mean	Standard Deviation	Min	Max
EX	9.000.808.641	2.307.846.907	5.386.698.721	13.259.022.323
R&D	913	126	646	1.050
CI	23.522	2.032	19.925	26.398
WP	184.277	9.999	163.909	202.337
P	0,05	0,01	0,03	0,07
BC	4.132.147.287	1.213.228.048	2.076.799.594	5.762.771.099
REER (SECTORAL)	123,66	13,55	90,74	139,89
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,20	1,85	-1,23	6,09
No of Firms in the sector	4.570,80	962,2	3.162,00	6.237,00
No of Employees in the sector	130.394,46	28.813,18	92.960	174.489

28: Manufacture of machinery and equipment n.e.c.

	Mean	Standard Deviation	Min	Max
EX	5.934.313.411	2.255.307.130	3.305.587.756	10.405.220.062
R&D	397	80	275	559
CI	31.355	2.370	26.914	34.733
WP	117.454	15.021	91.845	143.762
P	0,05	0,01	0,03	0,07
BC	4.174.438.993	1.609.612.740	1.812.675.369	6.383.976.142
REER (SECTORAL)	127,98	13,36	94,14	146,89
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,29	1,79	-0,76	6,13
No of Firms in the sector	10.713,90	1.949,30	7.857,00	14.002,00
No of Employees in the sector	171.755,38	43.276,48	120.048	235.190

29: Manufacture of motor vehicles, trailers and semi-trailers

	Mean	Standard Deviation	Min	Max
EX	23.505.496.965	7.263.830.540	15.378.004.146	39.722.517.444
R&D	1.781	296	1.203	2.324
CI	49.175	4.305	43.598	57.367
WP	308.132	33.954	268.655	387.769
P	0,06	0,01	0,03	0,08
BC	6.500.310.794	2.932.098.029	2.917.916.265	10.858.422.769
REER (SECTORAL)	129,23	12,48	95,99	146,60
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	1,93	1,86	-3,39	4,15
No of Firms in the sector	3.260,30	255,10	2.892,00	3.670,00
No of Employees in the sector	161.948,15	32.715,09	119.932	217.219

30: Manufacture of other transport equipment

	Mean	Standard Deviation	Min	Max
EX	3.960.444.901	1.808.519.809	1.086.130.713	7.754.057.117
R&D	1.252	809	291	3.001
CI	100.284	22.020	75.031	138.674
WP	204.441	56.841	101.723	306.981
P	0,02	0,02	-0,02	0,06
BC	3.441.870.510	1.050.690.428	1.261.786.606	5.371.573.481
REER (SECTORAL)	149,06	21,11	117,41	194,68
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	2,20	1,61	-2,61	3,76
No of Firms in the sector	860,00	183,30	531,00	1.117,00
No of Employees in the sector	35.358,85	6.272,73	26.599	48.931

31: Manufacture of furniture

	Mean	Standard Deviation	Min	Max
EX	955.635.752	258.477.888	542.205.645	1.468.534.462
R&D	67	55	35	237
CI	11.009	631	9.875	11.816
WP	55.017	4.086	51.101	63.217
P	0,03	0,01	0,01	0,04
BC	1.223.572.229	453.345.998	690.185.770	1.857.632.643
REER (SECTORAL)	103,25	19,55	66,11	129,80
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	4,05	4,47	-0,76	17,11
No of Firms in the sector	9.462,00	2.411,50	6.544,00	13.766,00
No of Employees in the sector	136.728,08	31.590,31	96.950	176.571

32: Other manufacturing

	Mean	Standard Deviation	Min	Max
EX	3.714.256.061	825.072.363	1.949.058.528	5.207.182.643
R&D	249	130	67	552
CI	23.963	5.040	16.911	29.937
WP	255.945	73.516	170.604	390.650
P	0,02	0,01	0,00	0,03
BC	2.076.941.334	863.029.712	857.943.398	3.075.300.180
REER (SECTORAL)	128,54	25,73	71,39	155,91
REER (CBRT)	106,14	12,33	77,22	121,97
TPG	3,30	2,39	-2,70	7,21
No of Firms in the sector	7475,10	1346,10	5721	8962
No of Employees in the sector	59353	5155,530373	51281	65474

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ECONOMICS DEPARTMENT

Date: 2/05/2021

Thesis Title: DETERMINANTS OF SECTORAL AND FIRM SIZE EXPORT PERFORMANCE: EMPIRICAL EVIDENCE FROM THE TURKISH MANUFACTURING INDUSTRY

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1. Does not perform experimentation on animals or people.
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Date and Signature
2/5/2021

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Ph.D. DISSERTATION ORIGINALITY REPORT

HACETTEPE UNIVERSITY
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