THE IMPACT OF EXPORTING ON WOMEN EMPLOYMENT: A STUDY ON TURKISH MANUFACTURING INDUSTRY

THE GRADUATE SCHOOL OF SOCIAL SCIENCES

OF

TOBB UNIVERSITY OF ECONOMICS AND TECHNOLOGY

BEGÜM DİKİLİTAŞ

THE DEPARTMENT OF ECONOMICS

THE DEGREE OF MASTER OF SCIENCE

JULY 2019

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science

Prof. Serdar SAYAN

Director of the Graduate

School of Social Sciences

This is to certify that I have read this thesis and that it, in my opinion, is fully adequate, in scope and quality, as a thesis for the Degree of Master of Science in the field of Economics of the Graduate School of Social Sciences.

Thesis Advisor

Assoc. Prof. Dr. Burcu FAZLIOĞLU

(TOBB ETU, International Entrepreneurship)

Thesis Committee Members

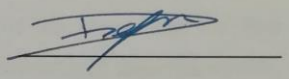
Asst. Prof. Dr. Eray CUMBUL

(TOBB ETU, Economics)

Assoc. Prof. Dr. Başak DALGIÇ

(Hacettepe University, Economics)

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



Begüm DİKİLİTAŞ

ABSTRACT

THE IMPACT OF EXPORTING ON WOMEN EMPLOYMENT: A STUDY ON TURKISH MANUFACTURING INDUSTRY

DİKİLİTAŞ, Begüm

M.Sc., Department of Economics

Supervisor: Assoc. Prof. Dr. Burcu FAZLIOĞLU

Exploiting a recent and comprehensive firm level data, we aim to evaluate exports' impact on women employment rate for Turkish manufacturing firms between the years 2003-2015. We shed light on the possible mechanisms for job creation by distinguishing between several sub-samples of firms according to export sophistication, wage level and technology intensity of the sector that the firm operates. To investigate the effect of initiating to export on women employment rate, treatment models are constructed and propensity score matching (PSM) techniques accompanied by the difference-in-differences (DID) methodology are utilized.

The estimation results indicate that starting to export increases women employment rate in Turkish manufacturing industry. It is observed that the effect of turning into two-way trader on women employment rate is more than becoming one-way trader. We find differential effects of exporting across different types of industries. Gains in female employment rates are observed for the firms operating in low and medium low technology intensive sectors, low wage sectors as well as labor intensive goods exporting sectors.

Key Words: Exports, Manufacturing Industry, Women Employment, Gender Inequality, Propensity Score Matching

ÖZ

İHRACATIN KADIN İSTİHDAMINA ETKİSİ: TÜRKİYE İMALAT SANAYİ ÜZERİNE BİR ÇALIŞMA

DİKİLİTAŞ, Begüm

Yüksek Lisans, İktisat Bölümü

Tez Danışmanı: Doç. Dr. Burcu FAZLIOĞLU

Bu çalışma 2003-2015 yılları arasında firma düzeyinde kapsamlı ve en güncel veri kullanarak Türk imalat firmaları için ihracatın kadın istihdam oranına etkisini incelemeyi amaçlamaktadır. Firmanın faaliyet gösterdiği sektörün ihracat niteliği, ücret düzeyi ve teknoloji yoğunluğu açısından firmaları çeşitli alt gruplara bölerek iş alanları açmak için olası mekanizmalar açıklığa kavuşturulmaktadır. İhracata başlamanın kadın istihdam oranına etkisini analiz etmek için tedavi modelleri oluşturulmuş ve eğilim skoru eşleştirmesi tekniği farkların farkı metodolojisi ile kullanılmıştır.

Tahmin sonuçları Türk imalat sanayinde ihracata başlamanın kadın istihdam oranını artırdığını göstermektedir. İki yönlü ticaret yapmanın kadın istihdam oranına etkisinin tek yönlü ticaret yapmaktan daha fazla olduğu gözlemlenmiştir. İhracatın farklı sektörlerde farklı etkileri olduğu bulunmuştur. Kadın istihdam oranlarındaki artışlar düşük ve orta düşük teknoloji yoğun, düşük ücretli ve emek yoğun mal ihracatı yapan sektörlerde faaliyet gösteren firmalarda gözlenmiştir.

Anahtar Kelimeler: İhracat, İmalat Sanayi, Kadın İstihdamı, Cinsiyet Eşitsizliği, Eğilim Skoru Eşleştirmesi

To my precious family

ACKNOWLEDGEMENTS

First of all, I would like to thank my thesis supervisor Assoc. Prof. Dr. Burcu FAZLIOĞLU for sharing her profound knowledge with me from the moment I participated in her econometrics class in my undergraduate study. Not only did she provide her support to me in my undergraduate study, but also she spared her precious time for my graduate thesis and motivated me during all phases of my study. This thesis would not have been possible without her patience, helpfulness, kindness and first and foremost moral support.

I present my thanks to all the academicians in the Departments of Economics and Mathematics who helped me to succeed in my education. I am very fortunate to be a part of the family of TOBB University of Economics and Technology teaching me to be disciplined and patient in my working life as well.

I owe special thanks to my family for their continuous inspiration and love throughout whole of my life.

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATION LIST

ATT	:	Average Treatment Effect on the Treated
BRICS	:	Brazil, Russia, India, China and South Africa
CBRT	:	Central Bank Republic of Turkey
CEDAW	:	Convention on the Elimination of All Forms of Discrimination Against Women
CGE	:	Computable General Equilibrium
DID	:	Difference in Differences
FE	:	Fixed Effects
FDI	:	Foreign Direct Investments
GDP	:	Gross Domestic Product
GNP	:	Gross National Product
GPI	:	Gender Parity Index
HM	:	Hinloopen and Marrewijk
IMF	:	International Monetary Fund
LSDV	:	Least Square Dummy Variable
NAFTA	:	North American Free Trade Agreement

OECD	:	Organization for Economic Co-operation and Development
OLS	:	Ordinary Least Squares
PSM	:	Propensity Score Matching
R&D	:	Research & Development
RE	:	Random Effects
TURKSTAT	:	Turkish Statistical Institute
UN	:	United Nations
WITS	:	World Integrated Trade Solutions

LIST OF GRAPHICS

CHAPTER I

INTRODUCTION

Among the primary materializations of globalization, there exist several benefits of exporting on the economies of host countries. Regarding the economic aspects of these benefits, there is a huge literature focusing on the impacts of development. To dig deeper into the socio-economic effects of exporting, one needs to focus on the driving forces of economic development. 'Achievement of gender equality and empowerment of women' is among these drivers which takes part in the Sustainable Development Goals described by the United Nations (UN) and planned to be carried out by 2030. Prevention of low female employment rates plays an important role for achieving this goal. Motivated by these facts, we aim to assess socio-economic impacts of exporting on women employment in Turkey.

Exports' impact on women employment can be attributed to the new-new trade theories. The theoretical background of firms' participation to international trade has been founded by the inspiring studies of Bernard et al. (2003) and Melitz (2003), while its empirical grounds dates as back as to the firm level studies of Aw and Hwang (1995) and Bernard et al. (1995). With the emergence of firm-level data sets, new evidence reveals that internationalized firms perform better than non-trading firms i.e. firms serving only to domestic markets. While substantial entry costs within the export markets are considered the main reason for these performance differentials, the main framework of the literature claims that great performance of internationalized firms is derived both from "self-selection" and "post-entry effects". Namely, for explaining this evidence, two theoretical expositions as "self-selection

hypothesis" and "post-entry mechanisms" are introduced. "Self-selection hypothesis" claims that merely the most productive firms select themselves in export markets. The reason behind this is sunk costs of exporting. Besides, "post-entry mechanisms" assert that performance of firms will be better after starting to export via learning by exporting or with the economies of scale effects by getting contact with foreign customers and starting severe competing in international markets (De Loecker, 2007; Girma et al. 2004; Van Biesebroeck, 2005).

Regardless of which mechanism predominates, the main result is that exporters are larger and more productive with respect to other firms (non-traders) in the market. Its result for labor market shows that exporters are larger-scale firms with higher sales, and they employ more workers than non-traders. This can be explained by scale effects (i.e. more workers are needed to produce more products) and preparation effects (i.e. preparation of firms for exporting by enhancing their production processes and employing more workers, especially including those who have gained experience in other exporting firms, see Molina and Muendler, 2009 and Iacovone and Javorcik, 2012). We can express the effect of exporting on employment through both mechanisms where firms have to expand their businesses to sell their products in international markets not only in domestic markets. Accordingly, they increase their demand for labor. In the literature, there exist several studies which support the finding for increasing demand for labor and reveal employment-oriented exporter premium. De Loecker (2007) finds that exporting firms employ five times more workers than others in Slovenian market. Van Biesebrock (2005) illustrates exporters hire seven times more employees with respect to non-exporters in some African countries. Ranjan and Raychaudhuri (2011) reveals that the employment gap between exporters and non-exporters is 150 percent for

Indian market. For Turkey, Dalgıç et al. (2015) illustrates exporters employ three times more workers compared to non-exporters. Thus, it is well-documented that exporting firms perform better in terms of size however, there is no consensus on the gender distribution of this employment generation.

There exists an expanding literature regarding trade's impacts on the labor market in terms of gender inequality. According to the Becker's employer prejudice model (1957), a part of employers has "taste for discrimination" against women. Hence, women employees may have to be either more productive with respect to men in the same wage level or have to accept lower wages in the same productivity level with men. If employers prefer to hire male employees and give lower wages to female employees which are as productive as male, highly productive female employees leave their jobs. Therefore, discriminating firms facing with the severe global competition may downsize and not maintain their activities in the long term. To avoid such disappointing results, firms change their discriminatory practices by decreasing their discrimination against women with the increased product market competition due to trade and accordingly, female labor participation and their relative wages increase. Thus, merely the most profitable firms i.e. least discriminators will keep their activities up. Exporting firms compete not only with the non-trader firms producing only for domestic markets but also in international markets. Therefore, discrimination against women is less in exporter firms than the non-exporters.

Based on Becker's (1957) model, there are many empirical studies investigating the impacts of competition in international markets on gender-based discrimination. However, the empirical literature gives mixed results about exports' effects on gender inequalities, while some studies provide positive effects (see among others

Aguayo-Tellez et al., 2010; Amin et al., 2016; Başlevent and Onaran, 2004; Bussmann, 2009; Chen et al., 2013; Ederington et al., 2010; Juhn et al., 2014; Özler, 2000; Pradhan, 2005; Siddiqui, 2009; Terra et al., 2007; Wood, 1991) others indicate zero (see among others Aboohamidi and Chidmi, 2013; Gray et al., 2006) or negative effects (see among others Banerjee and Veeramani, 2015; Cooray et al., 2012; Maqsood, 2014). The results indicate that gender wage gap decreases due to increasing market competition (Black and Brainard, 2002; Chen et al., 2013; Ernesto et al. 2012; Fontana and Wood, 2000; Garcia-Cuellar, 2001). To illustrate, Chen et al. (2013) reveals that exporters have higher gender wage gaps compared to non-exporting firms. However, this wage gap represents gender productivity differentials because women employees highly likely to work in jobs requiring low training and low technology. The author also indicates that exporting firms hire more female employees compared to non-exporters. There exist other studies finding negative effects of wage differentials in favor of men employees (Darity and Williams, 1985; Zaki, 2011).

Apart from the gender wage gap, in terms of employment firms faced with a dilemma between profits and discrimination against women choose hiring more women as a respond to increasing competition (Çagatay and Özler, 1995; Ederington et al., 2010; Juhn et al., 2012; Standing, 1999). Such effects of exporting on female employment rates are found to differentiate with respect to the skill levels of female workforce. While there exist studies revealing that trade liberalization rises unskilled labor demand (Chen et al., 2013; Siddiqui, 2009) and decreases the demand for skilled female labor force (Charmarbagwala, 2006; Ederington et al., 2009), some claim that it decreases the demand for unskilled female labor (Gaddis and Pieters,

2014). There exist other studies finding positive effects of skill level in favor of men employees (Darity and Williams, 1985; Zaki, 2011).

Apart from Becker (1957), from a different viewpoint, women may start working as additional breadwinners in order to peg the family income since wage-earners of the family may have lost their jobs with the globalization (Bussmann, 2009; Beneria, 1995; Cerruti, 2000; Lim, 2000; Salaff, 1990). Indeed, there exists descriptive evidence showing that high female employment rates are observed for plants with low capital intensity, high rate of unskilled employees and that pay lower wages (Özler, 2000). Moreover, women are more condensed in export-oriented and labor-intensive industries (Çağatay and Berik, 1990; ILO, 1985; Pearson, 1998; Özler, 2000).

In the majority of the literature, the link between exporting and women employment is investigated at the macro-economic/aggregate level. It is crucial to examine exports' impact on women employment with micro-level data focusing on firms since the relationship can change depending on firm level factors. In addition, firms form the demand part of labor market whereas employees do the supply part. While firm level evidence on the export-employment nexus is very limited, it is rather scarce for Turkey. Even so, the firm level researches for Turkey investigate the impact of exporting on employment rather than women employment. Among them, Turco and Maggioni (2013) reveals that firms' labor demand in Turkish manufacturing increases if non-trader firms start to export. Özsarı (2017) illustrates that exporting rises labor demand of Turkish manufacturing firms. Few exceptions are Özler (2000) and Çağatay and Berik (1990) which utilize micro-level plant data and manufacturing industry level data. Özler (2000) determines a positive link between export share of output and women employment share. Moreover, Çağatay

and Berik (1990) reveals that a raise in export share of output enhances the abovementioned share. However, unlike our extensive firm-level data set between 2003-2015 comprising average twenty-one thousand manufacturing firms on annual basis, these studies focus on around one thousand and four hundred plants and one hundred industries respectively for much shorter time periods.

To fulfill the above-mentioned gap in the literature, we aim to investigate exports' effect on the share of women employment for Turkish manufacturing firms between 2003-2015. We address two major questions in this study: The primary question is "Does starting to export increase women employment rate in manufacturing industries?". To have a better understanding of how the mechanism works we also ask, "In which sub-sectors of manufacturing industries does women employment rate increase?"

We apply PSM techniques accompanied by DID methodology. Using PSM techniques, we have a matched sample of firms having similar properties which are independent of their preference of trading activity and we assign propensity scores to each firm depending on their structural properties (Rosenbaum and Rubin 1983). Moreover, DID estimators were calculated for eliminating the biases, caused by the time-invariant un-observables, which could not be removed by the PSM methodology. For this purpose, we separate firms as one-way and two-way traders. For one-way traders, we determine the effects of exporting by constructing a treatment group comprises of firms which are previously selling only to domestic markets (non-traders) and later become one-way traders (by starting to export), while the control group comprises of non-trader firms. On the other side, for the two-way traders the treatment group covers firms which are previously only-importers and

then turn into two-way traders, while the control group consists of firms remaining as only-importers.

With the aim of examining the effects of exporting on women employment according to gender equality, the choice of Turkey is telling. Firstly, Turkey is at the beginning of the process of its economic development and being a developing economy trade is an important trigger for its economic growth. Our analysis period is also critical for Turkey since during the regarding period Turkey has benefited from an export boom and had a transformation in its structure. Besides, both the female employment rate and their participation into the labor force are extremely low in Turkey. Although these rates have been increasing in recent years, Turkey has lagged behind the developed countries and even Asian and Latin American countries that are within the process of rapid industrialization. For instance, it has the lowest rate of women employment among OECD countries in 2017 (OECD Employment Outlook 2018). For the analysis, manufacturing industry is chosen since it is the leading sector with its share in total export above 90 percent since 2000.

We make contribution to the literature which examines exports' impact on women employment in several ways. As far as known, this is the first study that attempts for exploring exports' impact on women employment utilizing firm-level data for Turkey. Secondly, this study is different from other studies on women employment in terms of its empirical approach and method of analysis. We separate one-way and two-way traders to analyze the impact on women employment by starting to export activities that any research has not been made for Turkey, yet. In addition, this is the first research utilizing PSM technique to analyze exports' impact on women employment. Finally, with a novel attitude the impact of initiating to export on women employment is also investigated in terms of export sophistication of firms

(natural resource intensive and primary good exporter, human capital intensive exporter, technology intensive good exporter and labor intensive good exporter), wage level of the sector that the firm operates (sectors paying lower wages versus higher wages) and technological knowledge intensity of the sector the firm operates (low-medium low/medium high-high technology). Thus, we not only investigate employment creation effects for women but also explore the possible mechanisms for job creation.

To summarize our results: Firstly, we demonstrate that starting to export increases women employment rate in Turkish manufacturing industry. Such increase arises in the year when a firm start exporting and continues in the upcoming years. Next, we observe that the impact of becoming two-way trader on women employment rate is more than becoming one-way trader. Put differently, the findings illustrate that the higher the degree of internationalization (two-way trading) the higher the increase in women employment rate. On the other side, we find differential effects of exporting across different types of industries. We find significantly positive impact on female employment rates for the firms operating in low-medium low technology intensive sectors, low wage sectors as well as labor intensive goods exporting sectors where no influence of exporting is detected for medium-high technology intensive, high wage, primary/resource intensive sectors.

This thesis is formed as follows: Chapter 2 examines the literature regarding trade's impact on women employment. Chapter 3 gives an overview of structure of Turkish exports and women employment in Turkey. Following this, in chapter 4, data set and variables used in the estimations were presented along with the descriptive findings. Chapter 5 gives empirical analysis and results along with

estimations for Turkish manufacturing industry. Finally, Chapter 6 provides concluding remarks along with policy recommendations for coming researches.

CHAPTER II

BACKGROUND LITERATURE

There exists variety of macroeconomic studies analyzing trade and women employment nexus. While some of them focus on a single country case, remaining have utilized panel data. Still, firm level studies are rather scarce.

2.1. Single Country Studies

Zaki (2011) studies on the connection between trade, gender and employment for Egypt from 1960 to 2009. For investigating mainly trade's impact on employment, he builds an econometric model of which its dependent variable is logarithm of employment. Utilizing probit model the author analyzes trade's impact on the probability of a switching employment status (from being inactive or unemployed to being employed)1. The results illustrate that women are less hired by employers as employees with respect to men since they may take maternity leaves and are responsible in both working life and at home etc. Regarding trade's impact on employment, the influence of exporting on women employment is significantly positive. However, in terms of wages, exporting improves wages of men in parallel with their education level, while it has no effect on the wages of women.

By comparing 494 microregions for Brazil, namely clusters of contiguous municipalities which have similar economic and geographic features, in terms of their exposure to trade reforms, Gaddis and Pieters (2014) investigates the link

[1] Exports shares, import penetration rate of the sector in which the individual is working, education attainment, membership in a trade union (1 if individual is a member of the union) and regional dummies (1 if the individual is leaving outside Cairo) are utilized as explanatory variables.

between trade liberalization and female labor force participation. They combine two datasets while the first panel data set is constructed from Demographic Census for the period 1991-2000, the second data set includes the data comprising of nominal tariffs along with industrial protection rates over the period of 1987-1998. Employing difference-in-difference methodology the results reveal that growth in employment and labor force participation rates are less in microregions which are more exposed to trade liberalization than others. Besides, the growth in unemployment is revealed to be higher in the microregions more exposed to trade liberalization. Labor force participation and employment rates for female/male are decreasing within microregions which are more exposed to trade liberalization, but its effect on male employment rate is significantly larger than that on female. A negative impact is observed for low-skilled men and women, while no net impact is observed for high skilled male and female workers since they only switch from tradable sectors to non-tradable sectors.

By using difference in difference methodology, Dell (2005) investigates the impacts of North American Free Trade Agreement (NAFTA) on female labor participation rate in some regions of Mexico for the period of 1987-1992. The only rise in the mentioned rate emerges in central Mexico due to employment opportunities created by NAFTA. Thanks to NAFTA, female intensive export production increased in central Mexico. Owing to an increase in product market competition, in order to compete domestic firms decrease the discrimination of women since women employees are earning lower wages than their man counterparts.

[2] Along with many different explanatory variables, import penetration ratio, export and FDI in industry level were used as globalization related variables.

For reviewing trade openness's impact on wages, employment and time allocation in Uruguay, Terra et al. (2007) employs a computable general equilibrium (CGE) model. The authors find that women employment and wages increased with trade openness and increase in female labor supply is seen mainly among skilled and educated women. The gender gap is shown to decrease, and demand for labor force is found to increase if net exports to Argentina increases. The demand for unskilled male employees increases if there exists an increase in net exports to Brazil as well as other countries.

By using individual and household level data set, Chamarbagwala (2006) analyses the skill gap and gender wage differential in India with factor content, decomposition (between and within industry shifts) approach. The data is divided into labor classes which consist of two gender classes (men, women), five education classes (less than primary, primary, middle, high school, college) and ten different age classes (15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60, 60+). In addition, also wage sample for demographic classes is used. The author determines a positive link between trade liberalization and demand for especially skilled women workers. Moreover, the gender wage gap decreases with the increased demand for skilled women, particularly for high school and college graduates. In terms of sector types, demand for skilled female employees decreases with trade in the manufacturing, while demand for female college graduates increases with the trade in services.

Through building a CGE model, Siddiqui (2009) investigates gender dimensions[3] of trade liberalization on employment in Pakistan for the year 1990 by using a Social Accounting Matrix. The results signify that trade liberalization rises the female labor

[3] Welfare and poverty in terms of income, time and capability are indicators for measuring the gendered impacts.

force participation especially in unskilled jobs. In addition, it raises their real wages relatively compared to men's. Besides, women in relatively poorer households are adversely affected by trade liberalization due to worsening of their capabilities, increase in their workload and relative income poverty, while trade liberalization's impact does not differ by gender or positive for female in the richest households.

Gaddis and Pieters (2012) estimates trade liberalization's impact on female labor force participation and employment rates for the period 1987-1996 for Brazil. The results illustrate that women employment shifts from agricultural to trade and other services in states with reductions in trade protection. Men employment rates increase with the tariff reductions in these sectors and a decline in manufacturing employment was also observed after trade reforms. Besides, the rise in abovementioned rates is higher in states which are highly exposed to trade liberalization.

Author(s) (year)	Scope-Sector-Year	Method	Related Variables	Result	Sign
Zaki (2011)	Egypt 1591 individual (within ages 15-64 working in manufacturing sector) 1960-2009	Panel Probit	probability of being employed (1, 0)	At an individual level, export effects the probability of being employed for women statistically positive while does not for male.	+, 0
Gaddis and Pieters (2014)	Brazil 494 microregions in 21 sectors (20 tradable and a non-tradable sectors) 1991 and 2000 Census data, 1987-1998 for tariffs	Panel Difference in difference	female/male labor force participation rate sectoral nominal tariff rates effective rate of protection (industry level)	The subject rate for female and male are decreasing with trade liberalization, but the effect is significantly larger for male. Moreover, gender convergence is affected by tariff reductions positively.	-
Dell (2005)	Mexico 2.8 million observations 1987-1999	Panel Difference in difference	female labor force participation imports exports	Trade liberalization under 1994 NAFTA increased the mentioned rate in central Mexico in which the industries shifted from import competing to the export oriented.	+
Terra et al. (2007)	Uruguay 23 sectors of production 2000	CGE model	female employment tariffs by sector	Trade liberalization rises female employment.	+
Chamarbagwala (2006)	India agriculture, manufacturing, service 1983-2000	Factor content approach	employment rate for 10 demographic groups net imports/output (industry level)	Trade in manufacturing effects the female labor demand negatively, nevertheless in services it increases this demand for college graduates.	+, -
Siddiqui (2009)	Pakistan Social Accounting Matrix 1990	CGE Model	female labor force participation average tariffs (industry level)	Female labor force participation mainly in unskilled jobs was increased with the trade liberalization.	+

Table 2.1. Single Country Studies about Trade and Women Employment

2.2. Studies on a Panel of Countries

Cooray et al. (2012) utilizes panel data set covering eighty developing countries for examining trade's effects and foreign direct investment (FDI) on female labor force participation rate. Using fixed effects (FE) methodology for the period between 1980-2005, they show that the impacts of both FDI and trading activities on the subject rate are generally negative. They find that such negative effect is more powerful for younger women since they are more flexible than older women. In addition, the possible increase in skill premium resulting from internationalization encourages them to take education instead of attending the labor force.

By employing FE estimation and using data for one hundred and eighty countries between 1975-2000, Gray et al. (2006) studies on the effect of globalization (measured by FDI, international trade, being a member of the United Nations (UN) and World Bank, approval of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)) mainly on female labor force participation. The findings indicate that neither international trade nor FDI have significant impact on the mentioned rate. Besides, involvement in the CEDAW agreement along with becoming a member of World Bank and UN raise the female participation.

Meyer (2006) regresses the female labor force participation rate on trade openness, transnational corporate penetration and development level, female secondary enrollment, the ratio of child to women, sex ratio, labor force growth and geographic region (dummy variables) as national level determinants over the period of 1971 to 1995 for one hundred twenty countries. He shows that trade openness' impact on mentioned rate differs by region and income level. The author further finds that economic development initially reduces the mentioned rate, while it

increases this rate in further stages of industrialization, thus there exists U-shaped correlation between the mentioned rate and economic development. Female are more concentrated in labor markets having female dominant working age population. Besides, the subject rate rises in countries with labor force growth.

By using the pooled ordinary least squares (OLS), FE and random effects (RE) panel data models, Aboohamidi and Chidmi (2013) analyzes the effects of literacy rate, education, fertility rate, urbanization, trade openness and per capita GDP on female labor force participation rate in for four countries including Turkey between 1990-2008. They uncover that trade openness' impact on the mentioned rate is insignificant. Besides, the effect of literacy and urbanization rates on the subject rate is significantly positive, whereas per capita GDP and fertility rate have negative effects.

Maqsood (2014) investigates the effect of globalization (measured by different variables including trade openness) on female labor force participation rate for five countries. Utilizing FE and RE methodologies between 1990-2010, the study reveals that trade openness reduces the mentioned rate.

Bussmann (2009) investigates female labor force participation's determinants, female health and education and female allocation of workforce in different sectors via a panel data set for one thousand thirty-four developed and developing countries between 1970-2000 through a static FE model and a dynamic generalized method of moments approach. Trade openness is described by the ratio of trade to GDP and other related variables. The results illustrate that trade openness rises the female labor force participation in developing countries while reduces in developed countries (OECD countries). In addition, female life expectancy is not directly affected by trade to GDP ratio and while such share increases the female enrollment

in primary and secondary schools. Moreover, with trade openness, women share rises in agricultural sector for developing countries while fewer women work in services sector.

Wood (1991) examines the change in female intensity of manufacturing sector compared to the difference in female intensity of non-traded sectors (except agriculture, mining and manufacturing) by using the data from population censuses and labor force surveys over the period of 1960 to 1985. The North and South represent the developed and developing countries, respectively. In South countries, females are mostly employed in manufacturing sector exporting to developed countries. Besides, in developed countries, they are under-represented in this sector exporting to developing countries. Therefore, with North-South trade Wood (1991) expects to observe a rise in female intensity of manufacturing sector for developing countries whereas a decrease for developed countries. However, the results show that an increase in exporting activities rises relative female labor demand in South while not reducing the female labor demand in North contrary to expectation. In addition, developing countries, which export increasing share of their manufactured goods to developed countries, are more prone to hire more female workers in manufacturing sectors and their manufacturing sectors which are export-oriented tend to be female intensive.

Employing simple pooled OLS methodology, Assaf (2018) explores trade openness' impact on female employment rate, the share of female employees in total labor force and gender gap with regard to gender inequality in education for sixteen Middle East countries. As an explanatory variable trade share of GDP (%) is used to estimate trade openness. In addition, gender parity index (GPI) is used for analyzing gender gap results. He could not discover a statistically significant effect of trade

openness on the share of female employee in total labor force for all countries. Besides, trade openness has no significant effect on female employment rate for whole countries. In addition, significant impacts are not positive for all the countries. For some countries including Turkey, trade openness' impact on gender gap is statistically significant but it is not positive for all of them. The gender gap is in favor of male for some countries including Turkey, while it is in favor of female for Kuwait. However, no significant effect in terms of gender gap was found for Egypt, Israel, Jordan, and Qatar.

By using different estimation methodologies for five countries, Nordas (2003) studies trade's impact on women's share in employment. Firstly, employing weighted least squares the study indicates that the correlation of female employment share in total employment with exporting is statistically significant and positive, while its correlation with import is statistically significant and negative for all the countries. Utilizing sector FE for discriminating variations within and between industries over time, the study reveals that women tend to be hired in export-competing industries instead of import-competing industries that are prone to employ men. Moreover, the author notes that trade openness gives rise to a boost in female labor force participation. In addition, gender wage gap can narrow with improvements in relative wages of women.

Aguayo-Tellez et al. (2012) estimates female employment rate, female expense items and gender wage gap during 1990-2000 in Mexico. They utilize specifically trade related explanatory variables including export at plant-level. The authors reveal that labor market outcomes of women are improved with the trade liberalization policies (NAFTA). The results indicate that relative wages of women with respect to men increase after NAFTA so that the household expenditures shifted from goods

mostly preferred by male (tobacco, alcohol, male clothing etc.) to female oriented goods (children's education, female clothing etc.) due to a rise in earning power of women.

Çağatay and Özler (1995) studies on the link between female share of the labor force and the course of development and economic revisions in the long run. The explanatory variables are logarithm of per capita GNP, its square for capturing the feminization U, fertility, urbanization and female education as demographic characteristics, trade openness and some other variables for investigating adjustment programs' economic effects and adjustment variable as a dummy variable to specify the countries carrying out adjustment programs. Cross-country data for ninety-six countries between 1985-1990 are utilized. In addition, the model is estimated by OLS. Moreover, FE model is applied to check the unobservable characteristics cross-sectionally or over time. Since the sample for countries is not comprehensive to use the individual country indicators, year and geographic indicators for checking the unobservable changes in time are also used. The authors find that the mentioned share rises due to shifts in trade openness explained with export share of GNP along with worsening income distribution.

For about hundred countries, Okşak and Koyuncu (2017) studies on the relationship between globalization (in terms of various globalization indexes from KOF Index) and female labor force participation rate between 1990-2014. By applying the FE method, the results of the research illustrate the correlation between the mentioned rate and politic globalization is significantly negative, while the link between the subject rate and remaining indexes is significantly positive.

Author(s) (year)	Scope-Sector-Year	Method	Related Variables	Result	Sign
Cooray et al. (2012)	80 developing countries 1980-2005	Panel FE	trade share of GDP female labor force participation rate	Trade's impact on the subjet rate is generally negative. This effect is stronger for younger women since potential increase in skill premium based upon globalization creates the opportunity for these women by creating incentive to take education instead of participating in the labor force.	-
Gray et al. (2006)	180 developing countries 1975-2000	Panel FE	female percentage of labor force trade ratio	Trade have no significant impact on female percentage of labor force.	0
Meyer (2006)	120 countries 1971-1995	Panel OLS	female labor force participation rate trade risk index trade openness index (combination of exports/GDP and trade/GDP) transnational corporate penetration	In the static model, trade openness has positive effects on the mentioned rate. However, this effect is negative in dynamic model. Moreover, the effects of trade openness results differ in terms of income level and region.	+,-
Aboohamidi and Chidmi (2013)	Egypt, Morocco Turkey and Pakistan 1990-2008	Panel Pooled model, FE and RE	fem. labor force participation trade openness	Trade openness' impact on the subject variable is not significant.	0
Maqsood (2014)	South Asian Countries 1990-2010	Panel FE,RE	fem. labor force participation trade openness	Correlation between fem. labor force participation with trade openness is significantly negative.	-
Bussmann (2009)	134 OECD/non-OECD countries 1970-2000	Panel FE, GMM	female labor force participation trade openness	Trade openness rises the subject variable in developing countries while decreasing in developed countries (OECD countries).	+,-
Wood (1991)	17 developed and 35 developing countries manufacturing 1960-1985	Descriptive statistics, scatter plots	fem. intensity of manufacturing export performance	An increase in export give rises to increase in female labor demand in South while not reducing the female labor demand in North.	+,0
Assaf (2018)	16 middle east countries 2014	Cross section OLS	trade openness measured as trade share of GDP (%) female employment rate for ages over 15 gender parity index (GPI) female share of total labor force	Trade openness has statistically significant impact on fem. employee share of total labor force and fem. employment rate (ages 15+) in some countries, while do not in others.	+,0,-
Nordas (2003)	Mauritius, Mexico, Peru, Philippines, Sri Lanka 1990-2000	Weighted LS Sector FE	female share in employment export and import	The correlation of women share of employment with export is positively significant, while its correlation with import is statistically significant and negative. In addition, women are tended to be employed in export-competing industries rather than import-competing industries.	+,-
Aguayo-Tellez et al. (2012)	Mexico Surveys data in manufacturing sector 1990-2000	Panel Decomposition	female employment rate tariff rates/trade flows export	Trade liberalization under NAFTA causes the rise in the subjet rate.	+
Çağatay and Özler (1995)	96 countries 1985, 1990	Panel OLS, and FE (over time)	female share of the labor force trade openness	Structural adjustment policies by way of shifts in trade openness causes feminization of labor force.	+
Okşak and Koyuncu (2017)	101 countries 1990-2014	Panel Fixed time effect model	female labor force participation rate (ages 15+) various globalization indexes from KOF Index	While the link between related rate and economic globalization, social globalization and overall globalization indexes is positive statistically significant, it is negative statistically significant with politic globalization.	+,-

Table 2.2. The Studies on a Panel of Countries about Trade and Women Employment

2.3. Firm-level Studies

Compared to the vast literature on macroeconomic studies, there is little microeconomic evidence. Ederington et al. (2009) uses plant-level data comprising

industrial production for all three-digit ISIC industries in Colombia between 1984-1991 to unravel the relationship between female employment and trading activities. They aim to answer whether exporting plants are women-intensive and whether gender discriminating plants are driven out of the market due to competition in international markets stemming from trade openness. Moreover, they search trade liberalization's impact on hiring decisions of firms. The results indicate that exporting plants hire more female employees since they face higher competition than the non-exporting counterparts which only produce goods for domestic market (as one of the results of Becker's (1957) theory). Thus, discrimination by employers which have a "taste for discrimination" against female employees is decreasing in the short run in order to eliminate the cost of discrimination. Because employers that seesaw between profits and their female share of workforce will employ more women due to increasing competition. The rise in foreign competition is measured with the decrease in tariff protection. The results illustrate that firms in the industries with greater reduction in tariffs increase their female work force more than the firms facing with less or no reduction in tariffs. The study also reveals that tariff change has greater effect on the share of unskilled female employees than for skilled female employees in a plant.

Using plant level data for Indian manufacturing industry, Pradhan (2006) studies trade's effect, technology, foreign investment (FDI), firm size, firm age and relative wage rates on different employment patterns in terms of gender, contract, skill. Trade is mainly explained by imports and exports. Estimation results indicate that trade (via exporting) rises the share of female worker in a plant. Regarding skill employment pattern, import rises the ratio of unskilled to skilled employees in a plant. Besides, FDI decreases the rate of unskilled to skilled employees, while the author does not

find any relation between FDI and the share of female. The impact of capital intensity on the shares of female workers and unskilled workers are found negative. Regarding the firm size and firm age, the authors determine that employment opportunities for female employees are relatively higher in large firms and these firms also prefer fewer female workers as compared to males and unskilled workers as compared to skilled workers. The results also illustrate industries prefer to hire more female employees in case females' wages are relatively lower than the wages of males and this argument supports that main reason of the rise in female labor force participation is low wages they receive.

Amin et al. (2016) studies the correlation between women employment and export orientation between 2006-2013 for more than seventeen thousand manufacturing firms across eighty-one developing countries. The main dependent variable is the ratio of permanent full-time female workers at a firm. The measure of export orientation of firms is used for trade related explanatory variable, while other variables are firm size, firm age, firm part of larger establishment, foreign ownership, severity level of labor laws on 0-4 scale and dummy variables: women owner (firms having one or more women owners), foreign technology, training (firms providing formal training to its employees), quality certificate (firms having quality certificate), website (firms having its own website for business purposes), crime (firms experienced losses due to crime). The authors illustrate that there exists a positive link between women employment rate and export orientation. Moreover, women employment rates are higher among the firms which are larger in size, have foreign ownership, have one or more women owners and are relatively younger.

By using unbalanced panel data, Banerjee and Veeramani (2015) analyzes the effects of trade liberalization and technology-related elements to determine the

women employment intensity for one hundred and twenty-five Indian manufacturing industries between the years 1998 and 2008. Female employment intensity represents the dependent variable. The regression was estimated by using different models such as fractional logit, tobit and Least Square Dummy variable (LSDV) method. The results of the study show that import tariff rates' effect on female employment intensity is negative since firms, due to foreign competition, is in tendency to decrease their costs through preferring women employees to male since female labor cost is lower w.r.to men. Moreover, the effects of export orientation and participation in the international market on female employment intensity is positively significant which is consistent with the other studies that females are preferred in unskilled labor-intensive works in which the developing countries have comparative advantages. Apart from the positive results, it is also found that the usage of new technologies and capital-intensive production effects female workforce negatively and increase the preferences of firms towards male workers. In addition, labor laws in India enable for employing more male workers by promoting capital-intensive production.

Chen et al. (2013) analyses globalization's impact on gender inequality by utilizing data set covering legal Chinese corporations along with national organizations and enterprises. They estimate the dependent variable, the proportion of female workers of enterprises. The independent variables are the share of skilled labor in an enterprise, export dummy variable (1, if enterprise exports), ownership dummy variables, province dummy variable, sector as an industry dummy variable. The authors illustrate that the highest female employment share is found in state-owned and foreign affiliated enterprises. Regarding the skill intensity, they demonstrate that women employment share is greater in enterprises with lower skill

compositions. The authors also find that it is higher in firms receiving foreign direct investment and firms that are exporting with respect to domestic and non-exporters. It is determined that exporting firms considered as internationally integrated enable more job opportunities to female workers than the non-exporters for whole ownership groups. In other words, share of women employment is high in exporting firms and foreign direct investment intensive industries. The results show that a raise in the share of regional and industrial foreign employment rises women employment shares of local firms. In addition, the share of female employment increases with the raise in employment share in regional and industrial exporters. In a nutshell, a decline in gender inequality is observed since gender discrimination becomes more costly along with an increase in local market competition. Some firm related factors are also controlled, and the results show the share of female employment is greater in older, larger and more labor-intensive firms. The authors also find gender wage gap is narrow in foreign owned and exporters in the same region and industry and the observation of wage discrimination is only for private non-exporting firms.

Author(s) (year)	Scope-Sector-Year	Method	Related Variables	Result	Sign
Ederington et al. (2009)	Colombia 6,035 manufacturing plants in 1984, 6,972 manufacturing plants in 1991 1984-1991	Panel OLS	plant's female share of labor according to skill level plant's export intensity ad-valorem tariff level and effective protection rates	Exporting plants hire more female than others and along with the competition, discrimination against female employee is decreasing since discriminating employers employ more female due to raise in the cost of discrimination.	+
Pradhan (2006)	India About 4,000 manufacturing enterprises 2000	Pooled OLS	trade (export, import) employment gap	Trade via export increases the female employment relative to men.	+
Amin et al. (2016)	81 developing countries over 17,000 manufacturing firms 2006-2013	Cross section OLS	proportion of all permanent full-time workers at firm the average of exports to sales ratio	Utilizing differences within a country and across firms, there exists a positive link btw. women empl. and export orientation changing in terms of firm size, firm age and the sector to which the firm belongs.	+
Banerjee and Veeramani (2015)	India 25 manufacturing industries 1998-2008	Panel Fractional logit, LS dummy variable method, tobit	female employment intensity import tariff rate the ratio of export to output import penetration rate global production sharing capital goods imports intensity	Import tariff rates has a negative impact on female employment intensity since firms, for international competition, tend to decrease their costs through preferring female to male.	-
Chen et al. (2013)	Chinese Enterprise-population-level data set 2004	Cross section Tobit (Regional and industrial FE)	proportion of females of enterprise exporter enterprise (1, 0)	Female employment share is higher exporting firms w.r.to non-exporting firms. Moreover, female workers are employed less in domestic and non-exporting firms than foreign and exporters.	+

Table 2.3. Firm-Level Studies about Trade and Women Employment

2.4. Studies for Turkey

Using plant level data set between the years 1983 and 1985 for manufacturing sector in İstanbul, Özler (2000) investigates the determinants of female employment share in total employment and utilize a series of independent variables including exports. The author reveals female employment share rises with the increase in export share of total output of the industry where plant operate. The results also indicate that higher female employment share is observed in plants with low capital intensity, high ratio of unskilled workers and which gives lower wages to its workers. In terms of capital intensity, the study supports the claim that increasing female employment share due to globalization may be affected negatively by the technological developing.

By applying the OLS regression techniques, Çağatay and Berik (1990) studies the impacts of manufacturing industry sub-sectors' features, ownership types and industrialization on female employment share for manufacturing industry sub-sectors. Along with the data covering public/private manufacturing establishments between 1966-1982, the share of female employment is estimated by employing a series of explanatory variables. The authors find that female employment share decreases with the rise in the share of skilled employees, whereas increases with the rise in ratio of exports to output. Estimation results indicate that the share of female is higher in industries which are more export-oriented, more labor intensive and has high share of non-skilled workers.

Using household labor force survey data accompanied by macro data at province-level for the years 1988 and 1994, Başlevent and Onaran (2004) observes export-oriented growth strategy's effect on female labor force participation and employment decisions. By employing probit model, they reveal that there exists a positive link between export orientation and women labor force participation and employment, but it is only observed for single and/or younger women. Moreover, it is illustrated that export's impact on married women's employment outcomes is only forceful in female-intensive sectors.

Author(s) (year)	Scope-Sector-Year	Method	Related Variables	Result	Sign
Özler (2000)	İstanbul 1,345 manufacturing plants 1983-1985	Panel logit	decision to hire females, fem. employment share exports scaled by sales	An increase in export share of output rises fem. employment share.	+
Çağatay and Berik (1990)	Turkey 102 manufacturing industry subsectors 1966, 1982	Cross section OLS	female share of wage workers exports/output	Growing export orientation rises fem. employment share.	+
Başlevent and Onaran (2004)	Turkey 16,900 women in 1988 and 10,081 women in 1994, province level GDP data 1988,1994	Panel probit	labor force participant (1,0) export-orientation index individual employed (1,0) female intensive export-orientation index	Positive link between export orientation and fem. labor force employment/participation is observed, but it is restricted and not strong (valid just for single and/or younger female).	+

Table 2.4. The Studies for Turkey about Trade and Women Employment

CHAPTER III

OVERVIEW OF EXPORT AND WOMEN EMPLOYMENT IN TURKEY

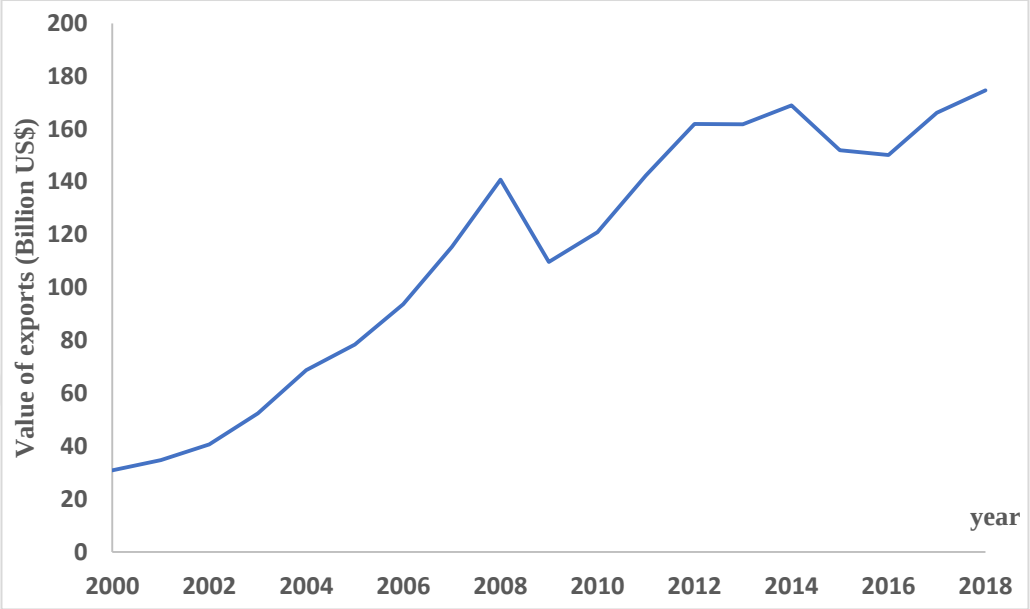
(BIG PICTURE)

3.1. Exports in Turkey

With the aim of being an outward and export-oriented economy in the long run, stabilization and liberalization programme was implemented as of 24 January 1980, in Turkey. Thus, transition to free market economy was introduced and neo-liberalization era began. Since the 90s, public sector deficit increased due to the reasons including increasing budget deficit, duty losses of public economic enterprises and deficits of social security institutions. Moreover, public sector deficit continued to rise extremely since it was financed with domestic debt of public banks. Due to high real interest and inflation rates and deterioration in public balance along with political instabilities, financial crisis outbroke in 2001.

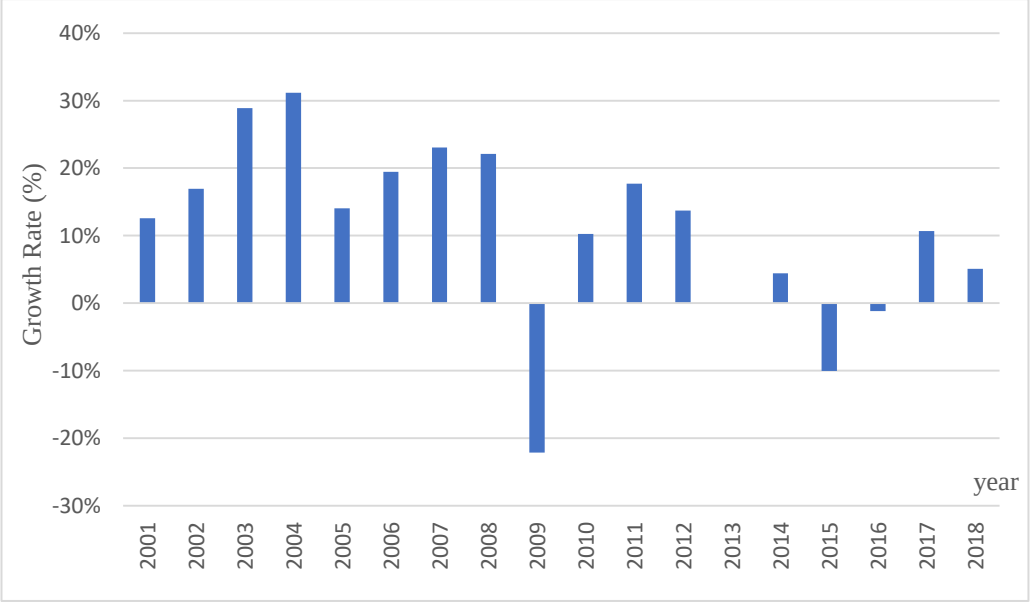
Following several constitutional and economic reforms, the negative effects of the 2001 crisis were recovered perceptibly. After 2002, Turkey has been faced with a trade boom. Accordingly, it entered in the process of constitutional transformation in its structure of trade and production. Total exports which are about US$40 billion in 2002 reached to US$140,906 in 2008 by increasing every single year. Turkey faced with nearly 20 percent decline in its total exports in 2009, the year global financial crisis outbroke. Following this temporary decline, exports improved in 2010 and accelerated between 2011-2012 perceptibly, overreaching the peak in 2008 and

passing the US$160 billion in 2012. After continued increase in 2010-2012, exports fluctuated between 2012-2018 and reached its maximum value US$174,61 billion in 2018 (Graph 3.1 and Graph 3.2).



Graph 3.1. Total Exports, 2000-2018 (In millions of US$)

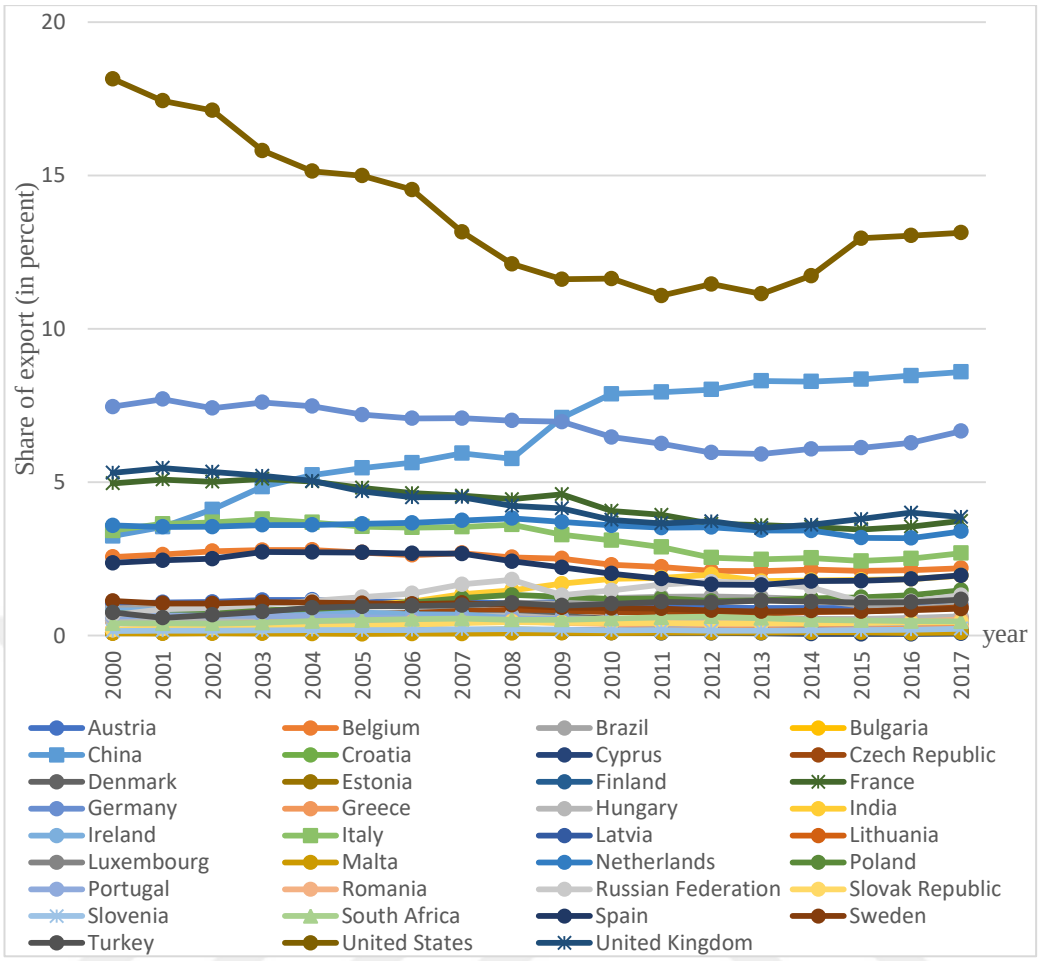
Source: Central Bank Republic of Turkey (CBRT)



Graph 3.2. Annual Export Growth Rate, 2001-2018

Source: Central Bank Republic of Turkey (CBRT)

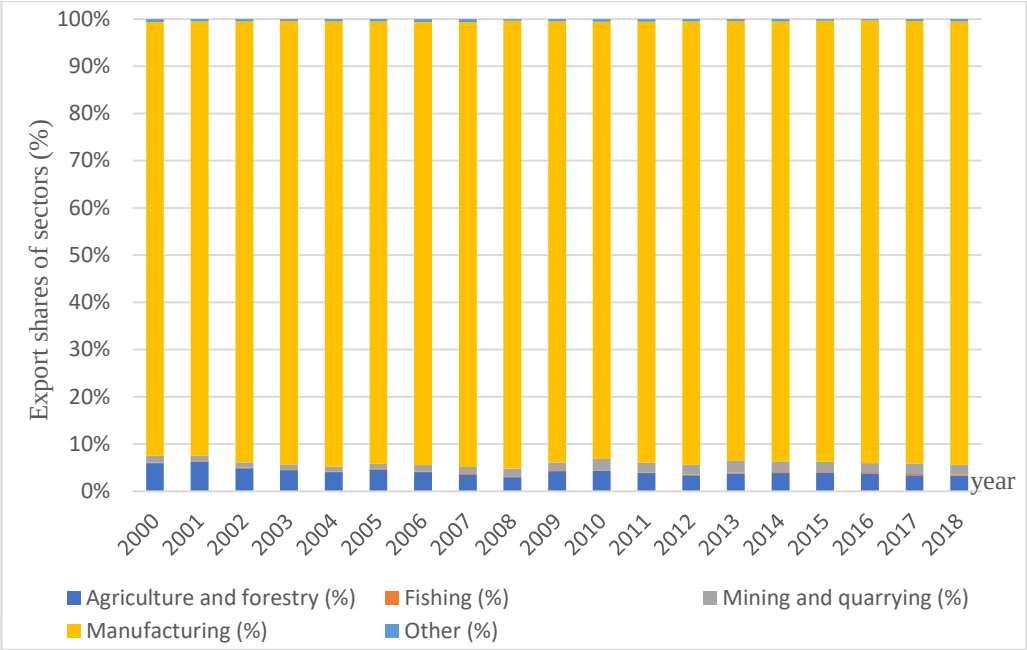
Graph 3.3 indicates Turkey's share in world total exports in comparison with BRICS countries, EU 28 countries and United States. United States has the highest export share in the world compared to BRICS countries, EU countries and Turkey. Presider among the BRICS countries, China, follows it with the second highest share. Compared to BRICS countries in 2000-2017, Turkey fell behind India, China and Russian Federation and got ahead South Africa. Moreover, Brazil has lagged behind Turkey in terms of export share as of 2015, while it had higher export share than Turkey before the year global financial crisis outbroke. Compared to EU countries, Turkey has the ninth highest export rate after Germany, United Kingdom, France, Netherlands, Italy, Belgium, Spain and Poland respectively.



Graph 3.3. Export Share of Turkey vs. USA, BRICS and EU countries, 2000-2017

Source: World Integrated Trade Solutions (WITS) Database

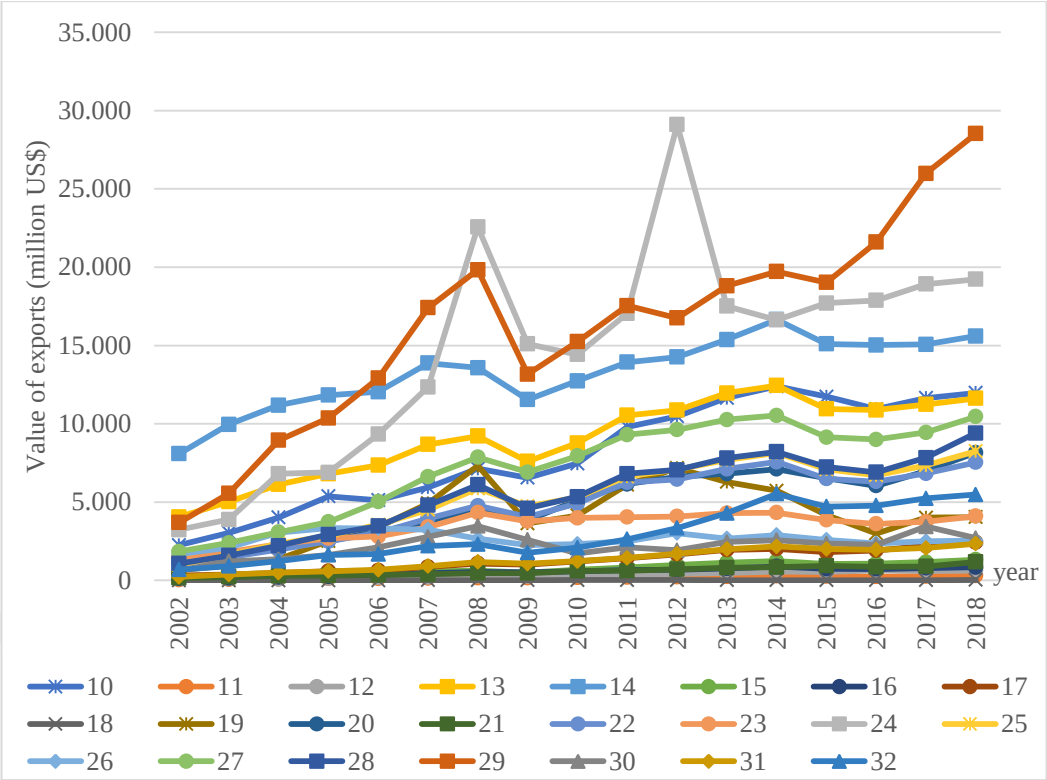
There is no significant alteration in the sectoral distribution of Turkey's export between 2000-2018 with manufacturing sector having the highest export share among the sectors, agriculture and forestry, fishing, mining and quarrying and other sectors composed of electricity, gas and water supply, wholesale and retail trade, real estate, renting and business activities and other community, social and personal service activities. More than 90 percent of exports have been made in manufacturing sector over the period 2000–2018 (Graph 3.4). Motivated by this observation, we restrict our analysis to manufacturing sector in this study.



Graph 3.4. Exports by Sector, by ISIC Rev.3 (1 digit), 2000-2018

Source: TURKSTAT

To get detailed information about the distribution of exports in manufacturing sector, we present sectoral exports during 2002-2018 by NACE-2 sectoral classification (see Appendix, Table A.1). Apart from a rise in total exports of nearly whole sectors, there is a remarkable rise in the total export of motor vehicles, trailers and semi-trailers (NACE-29). It raised more than five times between 2002-2018. The second biggest change is observed for basic metals (NACE-24) with nearly five times increase in its value from 2002 to 2018. In 2018, the sectors with the highest exports are motor vehicles, trailers and semi-trailers (NACE-29), basic metals (NACE-24), wearing apparel (NACE-14), food products (NACE-10) and textiles (NACE-13) respectively. Besides, sectors with the lowest exports are printing and reproduction of recorded media (NACE-18), beverages (NACE-11), tobacco products (NACE-12), wood and products of wood and cork, except furniture; articles of straw and plaiting materials (NACE-16) and basic pharmaceutical products and pharmaceutical preparations (NACE-21) respectively.



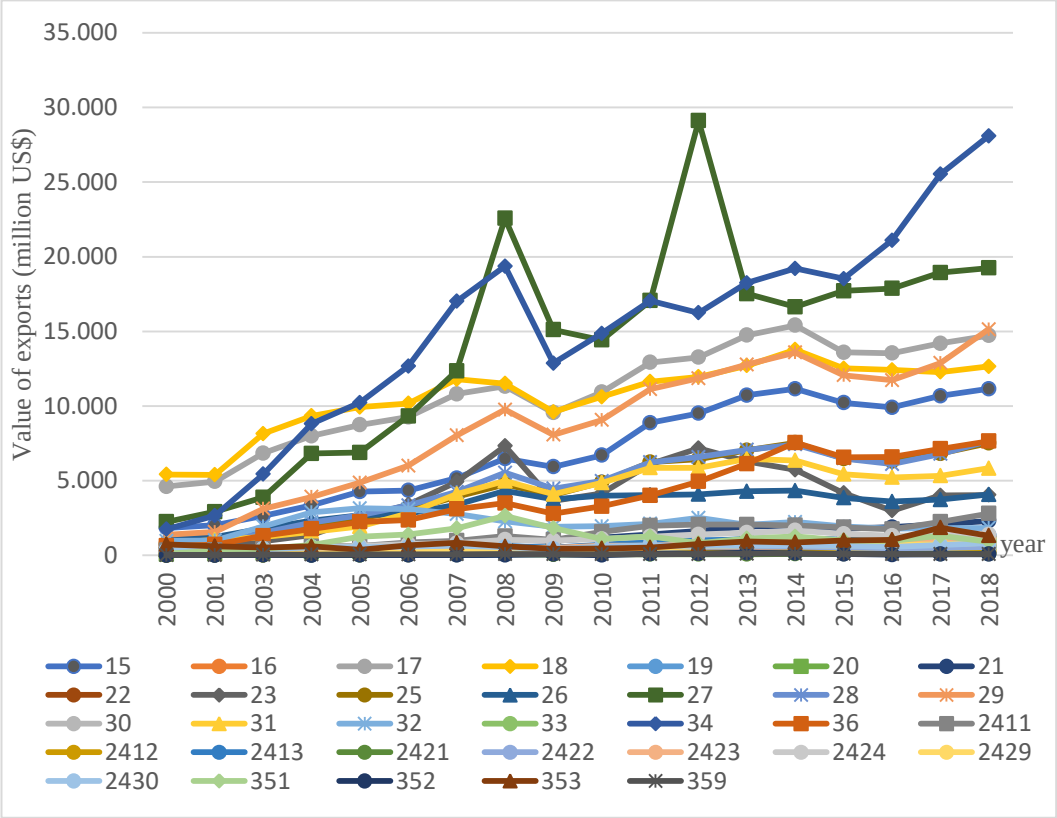
Graph 3.5. Total Sectoral Exports, by NACE-2, 2002-2018 (million US$)

Source: TURKSTAT

Legend: See Table A.1 in Appendix for sector names

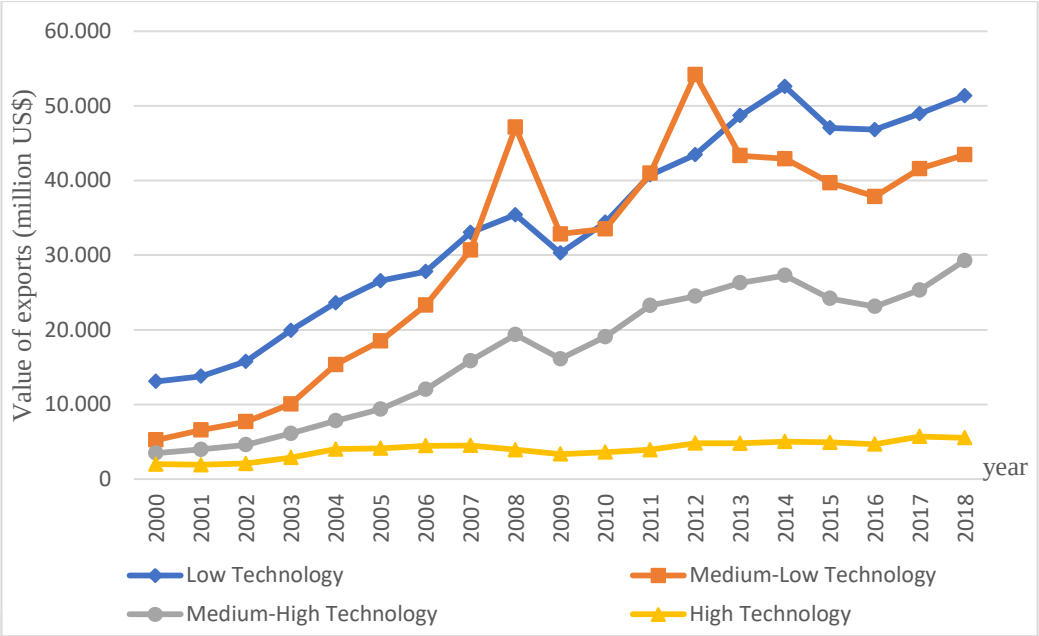
Utilizing ISIC Rev.3 technology classification (see Appendix, Table A.3), Graph 3.6 illustrates the total exports of manufacturing sectors between 2002-2018. Two sectors, motor vehicles, trailers and semi-trailers (34) and basic metals (27) have the highest rise in value of total exports between 2000-2018. Considering that motor vehicles, trailers and semi-trailers sector is also a critical importer sector, one can say that its contribution to balance of international trade is restricted. In 2018, textiles and wearing apparel; dressing and dyeing of fur sectors are two prominent traditional sectors in manufacturing and the sum of their export shares is nearly 17.3 percent. This result shows that almost twenty percent of manufacturing sector's total export is comprised of these two sectors with lower technology. In order to see the big picture in terms of OECD technology classification (see Appendix, Table A.3), we aggregate

these sectors as high technology, medium-high technology, medium-low technology and low technology intensive sectors. Graph 3.7 indicates the total exports for each technology group from 2000 to 2018. Low technology exports have the highest share in total manufacturing exports followed with medium-low technology, medium-high technology and high technology respectively. While there has been a substantial increase in total exports of sectors with low technology, medium-low technology and medium-high technology over the years, total exports of sectors with high technology is almost stable. In other words, the export boom in Turkish manufacturing sector has arisen in low/low-medium technology intensive sectors instead of high technology.



Graph 3.6. Total Exports in Manufacturing Sector, by ISIC Rev.3, 2000-2018 (million US$)
Source: TURKSTAT

Legend: See Table A.3 in Appendix for sector names



Graph 3.7. Total Exports in Manufacturing Sector, by OECD Technology Classification, 2000-2018 (million US$)

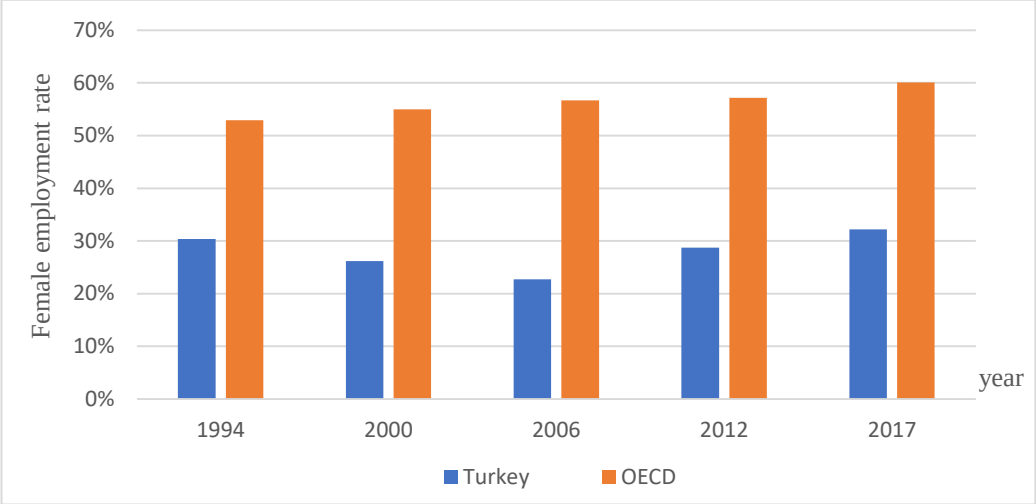
Source: Author's calculation from TURKSTAT by using OECD ISIC Rev.3 technology classification

3.2. Women Employment in Turkey

With the stabilization programme in 1980, policies including import liberalization and encouragement of exports subsidies and tax deductions were implemented. Trade liberalization led to increase in exports of Turkey even though there was a strong competition in labor intensive good markets and trade barriers were hedged off by industrialized countries. The structure of GDP and export evolved into manufactured goods and wages fell due to the legislation in 1983 which makes unionizing difficult for workers and minimize their bargaining power (Çağatay and Berik, 1990). In order to compensate the decreasing household income, women also started to attend the labor force with lower wages than men's. Moreover, the demand for women which constitutes the "cheap" source of labor increased because of increasing price competition in foreign markets caused by the outward-oriented economy. Accordingly, the concept of "feminization of the labor force" was formed through

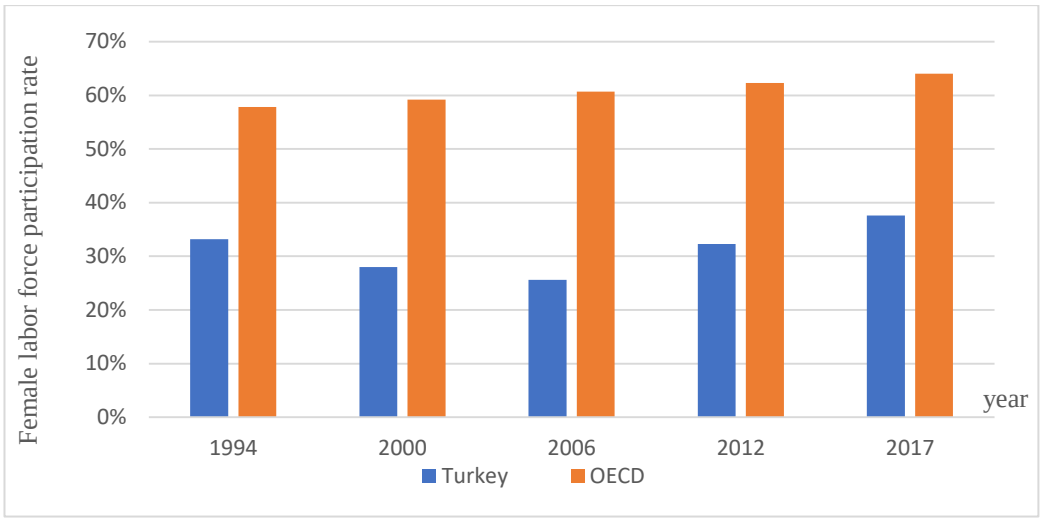
increasing demand for cheap labor force. This demand arose especially in the export-oriented industries of developing countries having comparative advantage in sectors which prone to employ unskilled and cheap labor.

The studies about the status of women employment in Turkey indicate that both female employment and labor force participation rates are extremely low. Not only has Turkey trailed the developed Western countries but also it has fallen behind Latin American and Asian countries in the course of accelerated industrialization. Turkey has the lowest female labor force participation and employment rates among OECD countries in 2017, and these rates are below the OECD average (Graph 3.8 and 3.9).



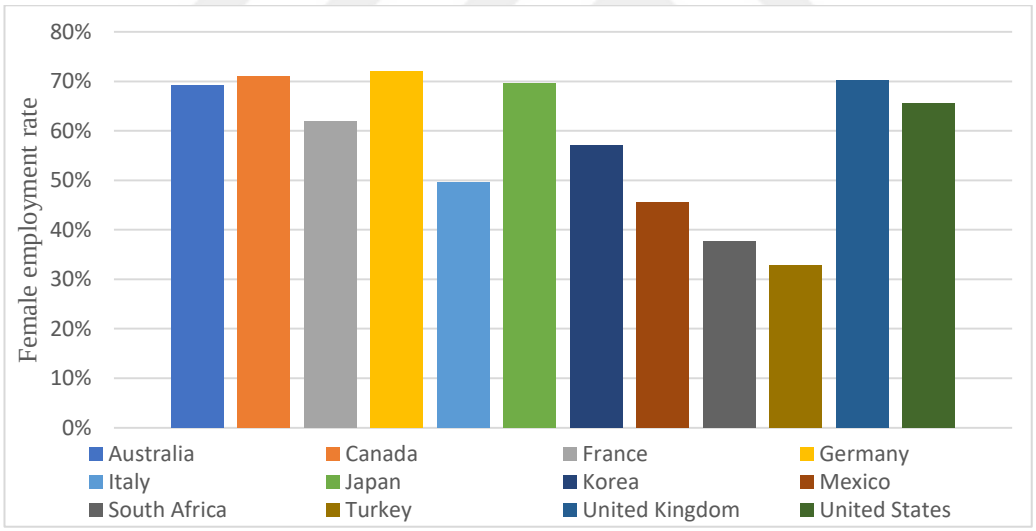
Graph 3.8. Female Employment Rate for Turkey vs OECD Countries

Source: OECD Employment Outlook 2011, 2014, 2018.



Graph 3.9. Female Labor Force Participation Rate for Turkey vs OECD Countries
Source: OECD Employment Outlook 2011, 2014, 2018.

In addition, Turkey has the lowest female employment rate among G-20 countries in 2018 with its 32.9 percent female employment rate (Graph 3.10).



Graph 3.10. Female Employment Rate in Turkey and G-20 Countries for 2018
Source: OECD (2018)

Although there exists a continuous increase in female labor force participation rate since 2006, the participation of female in the workforce has fallen behind the male's rate. Even though the rates of working age women and men are nearly equal, the female labor force participation rate is almost 33 percent while is about 72 percent for male (World Bank Data, 2017).

Even though the rate of women working as unpaid family workers has decreased in recent years, it is still very high and nearly 23 percent of women has been working as unpaid family employees in 2018 (TURKSTAT). Moreover, women are generally preferred in low-wage and labor-intensive sectors of manufacturing industry. Table 3.1 indicates that in terms of all educational attainments, monthly average gross wages[4] and annual average gross earnings[5] of women are lower than men have for the years 2006, 2010 and 2014.

Educational attainment	Monthly average gross wage (TL)			Annual average gross earnings (TL)		
Year	**2006**	**2010**	**2014**	**2006**	**2010**	**2014**
Male						
Primary school and below	784	1 066	1 594	9 952	13 526	19 417
Primary education and secondary school	788	1 061	1 562	9 999	13 505	19 081
High school	943	1 317	1 755	12 042	16 907	21 758
Vocational high school	1 298	1 649	2 373	17 312	22 195	29 561
Higher education	2 231	2 842	4 296	29 258	37 878	55 633
Female						
Primary school and below	650	874	1 289	8 159	11 065	15 748
Primary education and secondary school	640	870	1 318	8 064	10 949	15 981
High school	870	1 177	1 576	11 182	15 049	19 760
Vocational high school	944	1 336	1 851	11 990	17 109	22 842
Higher education	1 837	2 380	3 470	23 899	31 437	45 483

Table 3.1. Wages and Earnings by Gender and Education Status (TURKSTAT)

The education level for Turkey plays also an important role for women's labor force participation compared to males. One reason of low women employment rate and that women work in low-wage jobs may be lower education rates of women with respect to male (Uraz et al., 2010). Table 3.2 shows the percentages of women and men according to last formal education completed. Having reviewed the data, it has been seen that the percentages of women for all education levels are lower than the percentages of men.

[4] Monthly wages cover monthly basic wages; overtime, night work along with other payments.

[5] Annual earnings cover basic wages and regular/irregular/in-kind payments.

Year	Primary Education	Junior high school	High school	Higher education	Postgraduate	Doctorate
Male						
2008	1	9	18,8	10,2	0,8	0,2
2009	1,7	8,8	19,6	11,2	0,8	0,3
2010	10,6	9,3	21,3	11,9	1	0,3
2011	13,2	8,2	22,2	13,4	1,1	0,4
2012	13,9	8	22,7	14	1,1	0,3
2013	14,6	7,8	22,2	15,1	1,4	0,4
2014	14	9,4	23,2	16,2	1,5	0,4
2015	13,6	9,5	23,5	17,9	1,6	0,4
2016	14,9	10,2	23,4	18,7	1,7	0,4
2017	15,7	9,9	23,7	18,9	2,1	0,5
Female						
2008	0,7	4,9	12,2	6,5	0,5	0,1
2009	1,2	4,9	12,6	7,3	0,5	0,2
2010	6,1	5,5	13,8	7,7	0,7	0,2
2011	8,1	5,1	14,5	8,8	0,7	0,2
2012	8,7	5	14,8	9,5	0,8	0,2
2013	9,4	4,9	14,4	10,7	0,9	0,3
2014	9,3	6,1	15	11,7	1	0,3
2015	9,2	5,9	15,6	13,1	1,1	0,3
2016	10,3	7	15,6	14,1	1,2	0,3
2017	11	6,8	15,9	14,5	1,6	0,3

Table 3.2. Formal Education Completed by Sex (%) (TURKSTAT)

One reason of lower female employment rates with respect to male is that there is not any mechanism to encourage women's educational development and access to the labor market as well as continuity of employment (Ministry of Family and Social Policies, 2015).

CHAPTER IV

TURKISH DATA AND DESCRIPTIVE FINDINGS

While firm level evidence on the export-employment nexus is very limited, it is rather scarce for Turkey. Even so, the firm level researches for Turkey investigate the impact of exporting on employment rather than women employment. There are few exceptions which utilize micro-level plant data and manufacturing industry level data. However, these studies focus on only around one thousand four hundred plants and one hundred number of industries respectively for much shorter time periods.

To fulfill the above-mentioned gap in the literature, we aim to analyze exports' impact on women employment rate for Turkish manufacturing firms between 2003-2015. We address two major questions in this study: First question is "Does starting to export increase women employment rate in manufacturing industries?". To have a better understanding of how the mechanism works we also ask, "In which sub-sectors of manufacturing industries does women employment rate increase?"

We use the most comprehensive and recent firm-level panel data and merge Annual Industry and Service Statistics and Annual Trade Statistics which have been conducted by TURKSTAT.[6]

Annual Industry and Services Statistics database is an enumeration of firms employing more than nineteen workers. At the same time, it represents the firms employing less than twenty workers. Firms are assorted in terms of their economic activities determined by EUROSTAT's NACE Revision 2. This study covers

[6]All analyses are conducted in TURKSTAT's Microdata Research Centre, Ankara under an agreement due to data security standards and confidentiality.

manufacturing industry firms having twenty or more employees between 2003-2015 by utilizing data on twenty-four manufacturing sectors (see Table A.1 under Appendix for categorization of manufacturing sector). Total number of observations is two hundred seventy-four thousand and five hundred twenty-one. The data of twenty-one thousand firms (uniquely fifty-six thousand firms) on the average on annual basis is covered by our panel (see Appendix, Table A.4 for summary statistics).

Annual Trade Statistics is obtained from customs declarations. Export flows are gathered for all exporters of goods at the twelve-digit Customs Tariff Statistic Positions (GTIP) classification.

The independent variables used in the estimations are labor productivity, wage for employee, total number of employees, capital intensity, unit labor cost, average sectoral output, concentration ratio (CR4). In addition, foreign affiliation, tangible vs. intangible assets, two-digit industry, region and time dummy variables are utilized as well.

For understanding the effect of starting to export on women employment, manufacturing industries are divided into different sectors with respect to their wage structure (low wage-high wage), their technology intensity (low-medium low technology, medium high-high technology) [7] and their export sophistication level (natural resource intensive and primary good exporter, human capital intensive good exporter, technology intensive good exporter and labor intensive good exporter).

We take average wages in each sector in order to categorize sectors in terms of their wage structures. ‘Low-wage sectors’ represent the sectors whose average wages

[7]This technology classification is based on OECD Technology Intensity Definition for manufacturing industries.

are below the average wage while ‘high-wage sectors’ represent the sectors with higher average wages than the average. According to data, 58.40 percent of manufacturing firms take part in low wage sectors, while 41.60 percent of them do in high wage sectors.

Based on the data and OECD technology intensity classification, 80.96 percent of manufacturing firms operate in low-medium low technology intensive sectors. On the other hand, 19.04 percent of these firms take part in medium high-high technology intensive sectors.

In terms of export sophistication levels, goods are categorized in accordance with Hinloopen and Marrewjik (HM, 2008) classification. They separated trade into six groups which consist of primary products, natural resource intensive products, unskilled labor-intensive products, technology intensive products, human capital-intensive products, and other. Based on this, we divide exporters into four classes: natural resource intensive and primary good exporter, human capital-intensive good exporter, technology intensive good exporter and labor-intensive good exporter. With the aim of describing firms’ export sophistication levels according to HM classification, we sort export products with different types according to their share within firms’ total value of exports. To illustrate, the firm is described as “technology intensive goods exporter” if the largest share in its total exports value belongs to technology intensive goods. Other three types of exporters are defined similarly. According to data, 15.86 percent of manufacturing firms are natural resource intensive and primary good exporters, 23.24 percent are human capital-intensive good exporters, 27.97 percent are technology intensive good exporters and 32.92 percent are labor-intensive good exporters. The shares of firms in terms of their export sophistications are given in Appendix, Table A.2.

Table 4.1 illustrates the rate of women employment, average number of women employees in overall employment and average number of employees for firms in manufacturing industry between 2003-2015.

year	women employee share (%)	average number of women employee	average number of employee
2003	23.25845	27.8006	116.5865652
2004	23.08147	26.3428	110.773789
2005	22.2298	22.0748	94.83667832
2006	22.18306	21.5042	94.72637642
2007	22.16607	23.0012	102.1561746
2008	22.20276	22.9589	104.525677
2009	21.84541	23.0049	106.4239954
2010	21.3348	19.8994	92.59751698
2011	21.74928	20.0976	93.78125673
2012	21.82092	20.1982	92.85602945
2013	23.24155	21.4123	94.51749439
2014	23.6842	21.7938	94.97700542
2015	24.07496	22.3237	95.96917737

Table 4.1. Women Employees in Manufacturing Industry during 2003-2015

Table 4.2 indicates the rate of women employment, average number of women employees in overall employment and average number of employees by NACE-2 industry codes. While the sector with the highest women employment rate, about 45 percent, is manufacture of wearing apparel, the sector namely repair and installation of machinery and equipment has the lowest women employment rate (about 6.5 percent).

NACE-2 (2 digit)	women employee share (%)	average number of women employee	average number of employee
Food products	25.57417	30.5898	110.8168586
Beverages	14.97541	12.1164	103.2329287
Tobacco products	36.1371	183.775	724.5688073
Textiles	28.5369	32.6062	124.2619021
Wearing apparel	45.96704	43.8438	88.34732336
Leather and related products	18.425	12.697	61.18984227
Wood and products of wood and cork, except furniture; articles of straw and plaiting materials	11.38088	6.60238	67.77764411
Paper and paper products	18.70985	13.4082	82.72662761
Printing and reproduction of recorded media	20.20864	11.4584	58.51524433
Coke and refined petroleum products	21.10052	25.5984	180.6131222
Chemicals and chemical products	25.36057	20.8471	97.07775391
Basic pharmaceutical products and pharmaceutical preparations	34.60348	83.1124	256.0170092
Rubber and plastic products	17.39943	12.2233	78.16359488
Other non-methallic mineral products	11.30924	10.205	97.65935694
Basic metals	8.85747	9.52523	155.5704937
Fabricated metal products, except machinery and equipment	11.62333	7.81015	73.6894077
Computer, electronic and optical products	30.28557	41.8736	153.5573544
Electrical equipment	20.48528	24.334	126.3948179
Machinery and equipment n.e.c.	11.4874	7.54383	71.29096967
Motor vehicles, trailers and semi-trailers	13.08991	23.2963	167.6690362
Other transport equipment	8.56004	10.8352	131.21974
Furniture	12.58044	8.18197	73.21856351
Other manufacturing	25.79619	15.9973	61.67324394
Repair and installation of machinery and equipment	6.48432	3.11295	58.45324772

Table 4.2. Women Employees in Manufacturing Industry, by NACE-2

Table 4.3 illustrates the share of firms by their trade types: only-exporter, only-importer, two-way trader, non-trader, exporter and importer during 2003-2015. It is striking that the share of non-traders has been increasing in time.

year	only-exporter (%)	only-importer (%)	two-way trader (%)	non-trader (%)	exporter (%)	importer (%
2003	9.64321	15.88029	45.08852	29.38797	54.73173	60.96882
2004	9.97157	15.18332	43.1081	31.73701	53.07967	58.29142
2005	11.41489	14.49413	39.4454	34.64558	50.86029	53.93953
2006	10.97696	13.77402	37.74022	37.5088	48.71717	51.51424
2007	10.68575	13.44858	38.69013	37.17554	49.37588	52.13872
2008	10.27021	12.09099	38.194	39.4448	48.46422	50.28499
2009	11.30274	11.03172	41.5214	36.14413	52.82415	52.55312
2010	11.67415	11.64666	36.49317	40.18602	48.16732	48.13983
2011	10.9625	11.67083	34.70833	42.65833	45.67083	46.37917
2012	11.5262	11.09618	34.73987	42.63774	46.26608	45.83605
2013	12.1376	10.57763	34.41869	42.86608	46.55629	44.99632
2014	12.68953	9.94025	33.54402	43.8262	46.23355	43.48427
2015	12.67286	10.1715	32.71082	44.44482	45.38368	42.88232

Table 4.3. Share of Firms by Their Trade Types

CHAPTER V

EMPRICAL ANALYSIS AND RESULTS

This study investigates whether export in manufacturing industry rises the employment rate of women that is the disadvantaged group of employment in Turkey. Treatment models namely, 'having treatment', which may also be described as the state of 'starting to export' are formed in order to avoid sample selection and possible endogeneity and PSM techniques are utilized.

Treatment models have been formed to examine post-entry effects of initiating to export. We attest the impact of initiating to export on two groups of firms, i.e. only-exporters and two-way traders. Only-exporter firms were compared with the firms that neither import nor export, in other words, 'non-traders'. Two-way traders which are both exporter and importer firms are compared with the firms that only import without any exporting activities, called as 'only-importers'.

We construct four treatment models. In the first one, the treatment group are composed of 'non-traders', at time t-1 and initiate merely exporting at time t. In the second model, the treatment group covers non-traders at time t-1, initiate merely exporting at time t and continue merely exporting at time t+1. For these models, the control group covers non-traders during the entire analysis period (i.e. 2003-2015). In the third model, the treatment group are composed of 'only-importers' at time t-1 and initiate exporting at time t. In the last and forth model, the treatment group covers only-importers at time t-1, initiate to export at time t and continue to both exporting and importing activities at time t+1. For the last two models, the control group includes only-importers over the entire period in question (i.e. 2003-2015).

The last two models aim to determine whether two-way trade's impact on women employment rate is greater than the one-way trade. In this regard, the average treatment effect on the treated (ATT), that may represent exports' impact on women employment, is shown in the equation below:

$$ATT = E(y_{it}(1) - y_{it}(0)|d_i = 1) = E(y_{it}(1)|d_i = 1) - E(y_{it}(0)|d_i = 1) \quad (1)$$

In this equation, women employment rate in firm i at time t is represented with y_{it}. For example, the ATT for the first model illustrates the difference between women employment rate of a firm that was previously 'non-trader' ($d_i = 1$) and starts exporting at time t $(y_{it}(1)|d_i = 1)$ and its potential women employment rate if the firm would have never exported, 'non trader', $(y_{it}(0)|d_i = 1)$. Similarly, for the third model, the ATT represents the difference between women employment rate of a firm which was formerly only-importer and initiate to export at time t $(y_{it}(1)|d_i = 1)$ and its potential women employment rate if it would remained as only-importer $(y_{it}(0)|d_i = 1)$. The potential outcome of these models is unknown, but the outcome can be calculated for control groups, that can be described as $E(y_{it}(0)|d_i = 0)$. Selection bias may be observed in ATT's calculation. In equation (2), the bias is defined[8]. With the aim of overcoming the selection bias problem, PSM algorithm is utilized. PSM aims to identify firms which initiate to export and other firms which do not export with very similar observable characteristics.

$$Bias(ATT) = E(Y_{it}(0)|D_i = 1) - E(Y_{it}(0)|D_i = 0) \quad (2)$$

In PSM algorithm, propensity scores are assigned to each firm depending on their structural properties. Then, they are divided into two groups -treatment group and

[8]To compare treatment and non-experimental control groups with each other, we may have biased results due to self-selection problem or systematic attitude of the researcher in choosing treatment units (Dehajia and Wahba, 2002).

control group- by matching firms in accordance with their scores. Accordingly, two groups are generated by PSM algorithm to ensure that each group consists of firms with similar properties and similar export potential (firms with similar propensity scores). Nevertheless, one group covers firms that start exporting (treatment group), and the control group represent firms which do not export. To illustrate, in the first two models the treatment group covers firms starting to export while the control group preserve their non-trader status throughout the analysis period. In a similar manner, in the last two models treatment group becomes firms starting two-way trading and control group consists of the firms which are only-importers.

The propensity score of each firm is described by Rosenbaum and Rubin (1983). The conditional probability of receiving treatment (starting to export) is calculated through the probit equation below:

$$P_i(z_i) \equiv \Pr(d_i = 1|z_i) = E(d_i|z_i) \quad (3)$$

In this equation, $d_i = \{0,1\}$ indicates the status of being treated (taking the value 1 if the non-trader firm starts exporting and become one-way trader or if the only-importer firm starts exporting and become two-way trader) and z_i shows the properties of firms used in the propensity matching algorithm. Firstly, probit models are utilized to estimate the propensity scores which enable to detect the control units to be matched with the treated units in the regarding model. The dependent variable is the probability of starting to export at time t and the characteristics of firms used as explanatory variables are labor productivity (defined as real value added per worker) to check the firm productivity, wage[9] per employee as a representation of skill-

[9] We define real wages by way of deflating by Consumer Price Index.

intensity, total number of employees to check the firm size, capital intensity[10], dummy variables to control for foreign affiliation and tangible and intangible assets, unit labor cost, average sectoral output, concentration ratio (CR4)[11], as well as two-digit industry dummies with respect to NACE Rev. 2.1 classification, region dummy variables classifying twelve regions with respect to NUTS2 and time dummies. In these probit regressions, all the explanatory variables are in their one period lagged values. The lagged values of the covariates are included as firms' exporting behavior may affect the current values of these variables as well. In order to utilize the propensity scores stemming from the probit estimates, Kernel matching method[12] is applied. After establishing the matched sample, we control whether the means of covariates are significantly different in the matched and unmatched samples to attest the quality of the matching.

The results (see Table 5.1 and 5.2) indicate that the inequality for means of covariates is eliminated through the matching procedure and significant differences

[10] Since capital stock series of firms are not readily available in the data, they are calculated by employing perpetual inventory methodology.

[11] Concentration ratio (CR4) is an index calculated as total market shares of the four largest firms to measure the concentration. According to the concentration evaluations in industry and service sectors calculated within the scope of the research, Annual Industry and Service Statistics, concentration levels are specified as following:

$CR4 < 30$ (low)

$30 \leq CR4 < 50$ (medium)

$50 \leq CR4 < 70$ (high)

$CR4 \geq 70$ (very high)

[12] Neighbourhood matching, stratification matching and radius can be also used as alternative matching methods. Any specific method is not clearly chosen (Becker and Ichino, 2002). We expect asymptotically similar results from all estimators because all of them come down to comparing merely definite matches in large samples (Smith, 2000). Nevertheless, in smaller samples different matching estimators' performance may change depending on the data structure (Zhao, 2004). For example, in order to increase precisions in estimations many comparable untreated individuals which utilize at least two nearest neighbors (via kernel matching or oversampling) might be recommended since this makes inquiries all the way from control groups (Caliendo and Kopeinig, 2008). Since we have a couple of observations for our treatment groups, kernel matching method is used.

observed in the unmatched sample also evanesce in the matched sample. To illustrate, in Model 4 (see Table 5.2, Panel B), while the difference in the mean employment between two-way traders and only-importers is significant and 0.35 in the unmatched sample, it decreases to 0.04 and becomes insignificant after matching.

Panel A (Model 1-Starter Firms)						
Treatment Group: Only Exporter Firms **Control Group: Non-Trader Firms**						
		Matched Sample		**Unmatched Sample**		
(Lagged values)	Only Exporters	Non-Traders	T-Test for the Mean Differences	Only Exporters	Non-Traders	T-Test for the Mean Differences
LP	9,27	9,22	0,68	9,29	9,16	7,69
CAPINT	9,77	9,66	0,61	9,78	9,4	3,65
ULC	2,96	3,05	0,56	2,96	3,13	9,77
WAGE_L	8,61	8,56	0,92	8,58	8,39	7,15
EMPLOYEE	4,52	4,5	0,67	4,52	3,91	11,12
TANGIBLE ASSETS	0,78	0,77	0,83	0,78	0,67	9,65
INTANGIBLE ASSETS	0,24	0,22	0,19	0,23	0,15	9,21
FDI	0.007	0.005	0,54	0.007	0.004	2,83
Sample size	1920	14675		4014	72166	
Panel B (Model 2-Sustainer Firms)						
Treatment Group: Only Exporter Firms **Control Group: Non-Trader Firms**						
		Matched Sample		**Unmatched Sample**		
(Lagged values)	Only Exporters	Non-Traders	T-Test for the Mean Differences	Only Exporters	Non-Traders	T-Test for the Mean Differences
LP	9,32	9,3	0,42	9,31	9,16	7,78
CAPINT	9,82	9,74	0,78	9,8	9,4	3,99
ULC	2,94	3,02	0,76	2,98	3,13	10,01
WAGE_L	8,72	8,68	1,23	8,69	8,39	8,12
EMPLOYEE	4,14	4,06	1,1	4,13	3,81	3,99
TANGIBLE ASSETS	0,82	0,8	1,03	0,82	0,67	8,24
INTANGIBLE ASSETS	0,28	0,26	0,34	0,27	0,15	9,21
FDI	0.008	0.006	0,97	0.007	0.004	3,04
Sample size	899	13534		1561	72166	

Table 5.1. Comparison of Treatment and Control Groups: Matched vs Unmatched-1

Panel A (Model 3-Starter Firms)						
Treatment Group: Two-way Traders **Control Group: Only Importers**						
		Matched Sample		**Unmatched Sample**		
(Lagged values)	Two-way Traders	Only Importers	T-Test for the Mean Differences	Two-way Traders	Only Importers	T-Test for the Mean Differences
LP	9,79	9,75	0,55	9,77	9,61	6,13
CAPINT	10,71	10,68	0,28	10,68	10,53	3,3
ULC	3,26	3,3	0,45	3,3	3,43	7,14
WAGE_L	8,81	8,78	0,6	8,81	8,74	6,17
EMPLOYEE	4,29	4,24	0,48	4,28	3,97	5,09
TANGIBLE ASSETS	0,86	0,83	1,21	0,86	0,76	10,08
INTANGIBLE ASSETS	0,43	0,41	0,78	0,42	0,35	7,38
FDI	0.009	0.008	0,82	0.008	0.005	3,01
Sample size	3598	1972		6144	4054	
Panel B (Model 4-Sustainer Firms)						
Treatment Group: Two-way Traders **Control Group: Only Importers**						
		Matched Sample		**Unmatched Sample**		
(Lagged values)	Two-way Traders	Only Importers	T-Test for the Mean Differences	Two-way Traders	Only Importers	T-Test for the Mean Differences
LP	9,81	9,79	0,99	9,8	9,61	5,56
CAPINT	10,75	10,72	0,36	10,73	10,53	4,21
ULC	3,29	3,34	0,82	3,32	3,43	6,87
WAGE_L	8,85	8,83	1,02	8,85	8,74	7,15
EMPLOYEE	4,33	4,29	0,67	4,32	3,97	5,87
TANGIBLE ASSETS	0,87	0,84	1,17	0,85	0,76	9,13
INTANGIBLE ASSETS	0,45	0,42	1,14	0,45	0,35	8,13
FDI	0.009	0.008	0,95	0.008	0.005	3,28
Sample size	2152	1015		3245	4054	

Table 5.2. Comparision of Treatment and Control Groups: Matched vs Unmatched-2

Proving the efficiency of the matching process, ATTs are calculated for calculating the impact of initiating to export on women employment rate for firms which are formerly non-traders, for first two models and the effect of being two-way trader (start to exporting) on women employment rate of the firms formerly one-way traders (only-importers) for third and fourth models.

The ATTs calculated through PSM estimations are shown in Table 5.3. The impact of initiating to export at time t on female employment rates at times t, t+1 and t+2 is demonstrated in Model 1. Results show that at time t, when firms start to export, their female employment rate increase by 6.4 percentage points. The significant and positive impact of starting to export also continues until the time t+2. However, the impact at time t+2 (6.6 percentage points) is less compared to the one in time t+1 (6.8 percentage points). In order to provide more robust analyses, we extend the treatment period. In Model 2, the impact is calculated for firms which are non-traders in time t-1 initiate to export at time t and continue exporting in time t+1. The firms in Model 1 are defined as starter firms, whereas the firms in Model 2 are called as sustainer firms. The result for sustainer firms shows that the effect of continuing to export at time t+1 on female employment rate is more powerful compared to Model 1. For example, the female employment rate of a firm starting to export at time t increases by 6.8 percentage points in time t+1 in Model 1, while we observe 7.7 percentage points increase for a firm continuing to export also in the time t+1 in Model 2. These effects remain unchanged for Model 3 and Model 4 except we observe a continued increase in the female employment rate for Model 4 at time t+2. The common result of these estimations is that starting to export rises female employment rate of firms, thereby it lessens gender inequalities in firms. Such effect is not only valid during the period that firms start exporting but also in the following periods.

Panel A: Only Exporters vs. Non-Traders					
	PSM			DID	
	FERt	***FERt+1***	***FERt+2***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Model 1-Starter)	0.064***	0.068***	0.066***	0.009***	0.011***
	(0.012)	(0.014)	(0.013)	(0.000)	(0.001)
ATT (Model 2-Sustainer)	0.068***	0.077*	0.071**	0.011***	0.016**
	(0.017)	(0.041)	(0.034)	(0.002)	(0.008)
Panel B: Two-way Traders vs. Only Importers					
	PSM			DID	
	FERt	***FERt+1***	***FERt+2***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Model 3-Starter)	0.068***	0.072***	0.070***	0.009***	0.012***
	(0.011)	(0.012)	(0.009)	(0.000)	(0.001)
ATT (Model 4-Sustainer)	0.071***	0.079**	0.082**	0.013***	0.014**
	(0.013)	(0.031)	(0.034)	(0.000)	(0.000)

Notes:

i) FER represents female employment rate.

ii) Standard errors are shown in parenthesis

iii) Asterisks show statistical significance of average treatment effects (ATT) [***: (p < 1%); **: (p<5%); *: (p<10%)].

Table 5.3. PSM and PSM-DID Estimations

As a different type of internationalized indicator, the same analysis is conducted for importing activities. However, no robust results can be found for importing activities.

Turning back to exporting activities, accordingly, to check the deviations that may result from factors that do not change in time i.e. time invariant or cannot be observed, difference-in-difference (DID) methodology is utilized. By eliminating the effect of shocks and time, DID methodology enables to assess the treatment impact on female employment rate differentials clearly. The PSM-DID estimator is defined below and the difference between average treatment effects of treated and non-treated groups where time-invariant un-observables are removed is shown by the resulting ATT:

$$\Delta^{PSM-DID} ATT = E(Y_{it}(1) - Y_{it}(0)|D_i = 1) - E(Y_{it}(1) - Y_{it}(0)|D_i = 0) \quad (4)$$

The results of DID estimation are illustrated in the last two columns of Table 5.3. ATTs display the difference between the post and pre-treatment female employment

rates of firms. Accordingly, similar results with PSM estimation are found. In Model 1 for starter firms, the change in female employment rates of firms in the time period when they start to export compared to that when they were non-traders is significantly higher than the change in firms which always remained as non-traders in the same period. From t-1 to t+1, we estimate the difference in these changes as 0.9%, while it is 1.1% in the long run (i.e. from t+2 to t-1). In Model 3 for starter firms, the change in female employment rates of firms in the time period when they start to export compared to that when were only-importers is again significantly higher than the change in firms which always remained as only-importers in the same period. Stronger findings are obtained from the results of Model 2 and Model 4 (sustainers) compared to Model 1 and Model 3 (starters), respectively.

In addition to the female employment rate, we assess the impact of starting to export on the number of female employees and we find similar results (see Appendix, Table A.5). Nevertheless, the female employment rate will be utilized as the output indicator in the following analyses since it is more meaningful than the number of female employees in determining the impact of initiating to export on gender inequalities.

In consideration of the above analyses, it is found that starting to export raises the female employment rate in Turkey. Taking into consideration that there are many positive social externalities of female employment, it is crucial to improve female employment rates. To understand the mitigating impacts of initiating to export on gender inequalities, these effects are also investigated in terms of export sophistication level of firms (natural resource intensive and primary good exporter, human capital intensive exporter, technology intensive good exporter and labor intensive good exporter), wage level of the sector that the firm operates (low

wage/high wage sector) and technological knowledge intensity of the sector that the firm operates (low- medium low and medium high-high). Since DID eliminates the effect of shocks and time invariant non-observables, estimations based on technology intensity, wages and export sophistication are made only through DID methodology and they are given in Table 5.4, 5.5 and 5.6 respectively.

Table 5.4 presents the findings with respect to technology classification while Panel A reveals the ATTs from low and low-medium technology intensive sectors, Panel B show the regarding results for medium-high and high technology intensive sectors. The findings in Table 5.4 show the impact of initiating to export on female employment is significant and positive only in low-medium and low technology intensive sectors. For instance, for low-medium and low technology intensive sectors the change in female employment rates of firms in the time period when they start to export compared to that when they were non-traders is significantly higher than the change in firms which always remained as non-traders in the same period. Over the period of t-1 to t, we estimate the differential change as 1.6 percent, while 2.3 percent and 2.1 percent in the long term, respectively. Stronger analysis findings are obtained by sustainer firms' results compared to starter firms. The change in female employment rates of firms in the time period when they start to export compared to when they are only-importers is higher than the change in firms which always remained as only-importers in the same period. Over the period of t-1 to t, the differential change of female employment rate is estimated to be 2 percent, while 2.9 percent and 2.4 percent in the long run, respectively. The result for sustainer firms is stronger compared to starter firms without any decrease in the rise. In addition, the effect of turning into two-way trader on women employment rate is found to be more than becoming one-way trader. For medium-high and high technology intensive

sectors we cannot attain any significant and robust impact of exporting on female employment rate. The only exception is for two-way sustainer firms where a significant change in the female employment rate is observed between time t-1 and t. However, in the long run no significant differential in the female employment rate is observed.

	Only-Exporters vs. Non-Traders			Two-way Traders vs. Only-Importers		
Panel A: Low-Medium Low Technology						
	DID			**DID**		
	FERt-FERt-1	***FERt+1-FERt-1***	***FERt+2-FERt-1***	***FERt-FERt-1***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Starter)	0.016***	0.023***	0.021***	0.020***	0.029***	0.024***
	(0.001)	(0.007)	(0.009)	(0.006)	(0.007)	(0.000)
ATT (Sustainer)	0.018**	0.026***	0.026	0.025***	0.025***	0.028***
	(0.007)	(0.001)	(0.017)	(0.008)	(0.000)	(0.004)
Panel B: Medium High-High Technology						
	DID			**DID**		
	FERt-FERt-1	***FERt+1-FERt-1***	***FERt+2-FERt-1***	***FERt-FERt-1***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Starter)	0.008	0.008	0.010	0.008	0.009	0.011
	(0.011)	(0.012)	(0.011)	(0.017)	(0.021)	(0.019)
ATT (Sustainer)	0.011	0.009	0.012	0.013***	0.011	0.014
	(0.007)	(0.013)	(0.009)	(0.000)	(0.009)	(0.021)

Notes:

i) FER represents female employment rate.

ii) Standard errors are shown in parenthesis

iii) Asterisks show statistical significance of average treatment effects (ATT) [***: (p < 1%); **: (p<5%); *: (p<10%)].

Table 5.4. DID Estimations w.r.to Technology Intensity

Table 5.5 indicates the estimated ATTs for the sample involving low wage (Panel A) and high wage sectors (Panel B). The results show that starting to export rises female employment rate only in low wage sectors. To illustrate, for low wage sectors, the change in female employment rates of firms in the time period when they start to export compared to when they were non-traders is higher than the change in firms which always remained as non-traders in the same period. Over the period of t-1 to t, we estimate the difference in changes as 2.1 percent, while 2.7 percent and 1.7 percent in the long run, respectively. Stronger findings are obtained from the results of sustainer firms compared to starter firms. For starters, the change in female employment rates of firms in the time period when they start to export compared to

that when they were only-importers is higher than the change in firms which always remained as only-importers in the same period. Similar results are observed for sustainer firms compared to starter firms. In addition, the impact of becoming two-way trader on women employment rate is more than becoming one-way trader. To summarize, starting to export increases female employment rate for low wage sectors where higher internationalization brings about higher benefits. These results also show that in high wage sectors, significant increases in the female employment rate as 1.31 percent and 1.5 percent are observed only for sustainer firms between the time t-1 and t, but they are not robust.

	Only Exporters vs. Non-Traders			**Two-way Traders vs. Only Importers**		
Panel A: Low Wage Sectors						
	DID			**DID**		
	FERt-FERt-1	***FERt+1-FERt-1***	***FERt+2-FERt-1***	***FERt-FERt-1***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Starter)	0.021***	0.027***	0.017***	0.022***	0.030***	0.019***
	(0.001)	(0.000)	(0.000)	(0.007)	(0.011)	(0.007)
ATT (Sustainer)	0.022***	0.027***	0.018***	0.023***	0.025***	0.020***
	(0.007)	(0.003)	(0.003)	(0.008)	(0.000)	(0.004)
Panel B: High Wage Sectors						
	DID			**DID**		
	FERt-FERt-1	***FERt+1-FERt-1***	***FERt+2-FERt-1***	***FERt-FERt-1***	***FERt+1-FERt-1***	***FERt+2-FERt-1***
ATT (Starter)	0.009	0.008	0.007	0.011	0.009	0.009
	(0.010)	(0.011)	(0.011)	(0.016)	(0.015)	(0.015)
ATT (Sustainer)	0.011*	0.010	0.017	0.015**	0.012	0.015
	(0.006)	(0.012)	(0.012)	(0.007)	(0.010)	(0.011)

Notes:

i) FER represents female employment rate.

ii) Standard errors are shown in parenthesis

iii) Asterisks show statistical significance of average treatment effects (ATT) [***: (p < 1%); **: (p<5%); *: (p<10%)].

Table 5.5. DID Estimations w.r.to Wage Level

In Table 5.6, the impact of starting to export on female employment is investigated with respect to complexity of exports via Hinloopen and Marrewjik (HM) classification. Panels of A, B, C and D reveal the findings for firms exporting following goods, respectively: natural resource and primary goods, labor intensive goods, human capital-intensive goods and technology intensive goods. The findings illustrate that positive effect of exporting on women employment can only be observed in labor intensive sectors. For firms in sectors where natural resource and primary goods are produced, almost no significant effect of starting to export on

female employment rate is found. On the other hand, starting export activities of firms in sectors where labor intensive goods are manufactured has significantly positive impact on female employment rate. For starter firms, the change in female employment rates of firms in the time period when they start to export compared to that when they did not start to export is higher than the change in firms which always remained as non-traders in the same period. Over the period of t-1 to t, we estimate the change as 3.1 percent, while 3.1 percent and 2.7 percent in the long run. If firms continue to export in time t+1 as well, the effect is stronger compared to starter firms. For starter firms, the change in female employment rates of firms in the time period when they start to export compared to that when they did not start to export is higher than the change in firms which always remained as only-importers in the same period. Over the period of t-1 to t, we estimate the change as 3.1 percent, while 3.3 percent and 2.9 percent in the long run. If firms continue to export in time t+1 as well, the effect is stronger compared to sustainer firms. Similar results with the natural resource and primary goods exporters are found for the firms in sectors where human capital-intensive goods are manufactured. The most striking result is that starting export activities of firms in sectors where technology intensive goods are manufactured has no significant impact on female employment rate.

Panel A: Natural Resources and Primary Goods Exporters						
	Only Exporters vs. Non-Traders			Two-way Traders vs. Only Importers		
	DID			DID		
	FERt-FERt-1	*FERt+1-FERt-1*	*FERt+2-FERt-1*	*FERt-FERt-1*	*FERt+1-FERt-1*	*FERt+2-FERt-1*
ATT (Starter)	0.012	0.011	0.009	0.010	0.007	0.003
	(0.012)	(0.014)	(0.016)	(0.014)	(0.018)	(0.022)
ATT (Sustainer)	0.012	0.012	0.011	0.011**	0.008	0.007
	(0.017)	(0.019)	(0.017)	(0.005)	(0.011)	(0.015)
Panel B: Labor Intensive Goods Exporters						
	DID			DID		
	FERt-FERt-1	*FERt+1-FERt-1*	*FERt+2-FERt-1*	*FERt-FERt-1*	*FERt+1-FERt-1*	*FERt+2-FERt-1*
ATT (Starter)	0.031***	0.031***	0.027***	0.031***	0.033***	0.029**
	(0.010)	(0.009)	(0.010)	(0.009)	(0.012)	(0.015)
ATT (Sustainer)	0.032***	0.034***	0.030***	0.034***	0.036***	0.032***
	(0.011)	(0.012)	(0.009)	(0.012)	(0.013)	(0.010)
Panel C: Human Capital-Intensive Goods Exporters						
	DID			DID		
	FERt-FERt-1	*FERt+1-FERt-1*	*FERt+2-FERt-1*	*FERt-FERt-1*	*FERt+1-FERt-1*	*FERt+2-FERt-1*
ATT (Starter)	0.009	0.009	0.006	0.010	0.010	0.008
	(0.021)	(0.020)	(0.017)	(0.017)	(0.020)	(0.022)
ATT (Sustainer)	0.011***	0.010	0.011	0.009**	0.008	0.004
	(0.004)	(0.006)	(0.009)	(0.005)	(0.013)	(0.013)
Panel D: Technology Intensive Goods Exporters						
	DID			DID		
	FERt-FERt-1	*FERt+1-FERt-1*	*FERt+2-FERt-1*	*FERt-FERt-1*	*FERt+1-FERt-1*	*FERt+2-FERt-1*
ATT (Starter)	0.004	0.004	0.001	0.006	0.009	0.010
	(0.016)	(0.018)	(0.014)	(0.014)	(0.020)	(0.021)
ATT (Sustainer)	0.005	0.004	0.002	0.007	0.010	0.012
	(0.012)	(0.013)	(0.008)	(0.009)	(0.014)	(0.014)

Notes:

i) FER represents female employment rate.

ii) Standard errors are shown in parenthesis

iii) Asterisks show statistical significance of average treatment effects (ATT) [***: (p < 1%); **: (p<5%); *: (p<10%)].

Table 5.6. DID Estimations w.r.to Export Sophistication

These results match up with "self-selection" and "post-entry mechanisms" in terms of employment gains in general. Our results further indicate that in order to export or after starting to export firms are/become larger in scale by hiring more women employees in Turkish manufacturing industry. However, this impact looks to be more prominent in low and medium low technology intensive sectors, sectors paying lower wages and labor-intensive sectors.

Put differently, this finding indicates female employees are preferred mainly in low and medium low technology intensive, low wage sectors in labor intensive industries. These findings affirm some results of the studies in the literature that female employment is higher in low wage plants (Özler 2000) and women are concentrated in labor intensive industries (Çağatay and Özler 1995; Standing 1999).

CHAPTER VI

CONCLUSION

Being one of the goals of sustainable development, 'achievement of gender equality and empowerment of women', is of vital importance for the economies of countries, especially for developing ones. There is an expanding literature about the impact of exporting and women employment based on gender inequality. However, majority of the literature investigates this relationship at the macroeconomic/aggregate level. As far as known, this study is the first microeconometric firm-level study exploring exports' impact on women employment for Turkey.

Exploiting a recent and extensive firm level data, we aim to estimate exports' impact on women employment rate for manufacturing firms for the period from 2003 to 2015 in Turkey. We shed light on the possible mechanisms for job creation by distinguishing between several sub-samples of firms in terms of export sophistication, wage level and technology intensity of the sector that the firm operates. While doing so, PSM techniques as well as the DID methodology is employed. PSM enables to check possible self-selection issues and PSM-DID controls for time-variant un-observables.

The results point out that starting to export increases women employment rate and decreases gender inequalities. This increase arises in the year when firms starts to export and continues also in the following years. The findings also illustrate that higher the degree of internationalization (two-way trading) the higher the increase in women employment rate. These results match up with self-selection and post-entry

mechanisms in terms of positive employment effects. However, we find differentials effects of exporting across different types of industries where the positive employment gains are observed merely for the firms operating in low and medium low technology intensive sectors, low wage sectors and labor-intensive goods exporting sectors. Thus, our results indicate that exporting firms become larger in scale by hiring more women employees due to cost competition in Turkish manufacturing industry.

Being a developing economy, Turkey should minimize and even eliminate the gender inequality in order to catch up with the socio-economic level of developed countries. In this regard, government should determine policies for women employment and give priority to these policies right away.

Not only should the government work for the purpose of increasing its per capita income and production, but also should implement structural policies in the fields of economy, culture and society.

In Turkey, the exports of high value-added products are limited while the majority of the exports are produced in sectors with lower value-added such as basic metals, textiles, wearing apparel and food products. The share of women workers is quite high in the above-mentioned sectors which are labor intensive, mainly comprised of unskilled labor and paying lower wages. One reason behind the allocation of women in these sectors hinders in the lower education rates of women with respect to men. However, female labor force participation should not be limited with such labor-intensive sectors. As almost half of the working age population are women, Turkey has a great potential. The government should implement policies to increase the education levels of women and women should be employed in so called up-scale sectors. This way, not only does the low female labor participation rate increase but

also socio-economic level of Turkey may rise. There exist also some studies indicating that women which earn their own independent income tend to spend for activities reducing household poverty and to send their children to school (Goldmand Sachs, 2008 and World Bank, 2012). The fact that trained and skilled women will increase future generations' education levels, thus the number of skilled labors contributing to production will rise.

BIBLIOGRAPHY

Aboohamidi, Abbas and Benaissa Chidmi. 2013. "Female Labor Force Participation in Pakistan and Some MENA Countries" No. 1373-2016-109220.

Aguayo-Tellez, Ernesto, Jim Airola, Chinhui Juhn, and Carolina Villegas-Sanchhez. 2012. "Did Trade Liberalization Help Women? The Case of Mexico in the 1990s" *NBER Working Paper* 16195

Amin, Mohammed, Asif Islam, and Khrystyna Kushnir. 2016. "Uncovering the Relationship between Women's Employment and Trade Orientation Using Firm-level data"

Assaf, Ahmad Aref. 2018. "Evaluating the Impact of Trade Openness on Women's Job Opportunities: An Analysis for Middle East Countries" *Global Journal of Economics and Business* 4 (1): 99-110.

Baldwin, John R. and Wulong Gu. 2004. "Trade Liberalization: Export-market Participation, Productivity Growth, and Innovation" *Oxford Review of Economic Policy* 20 (3):372–392.

Banerjee, Purna and C Veeramani. 2015. "Trade Liberalization and women's employment intensity: Analysis of India's manufacturing industries" *Mumbai Working Papers* 52 (35)

Başlevent, Cem, and Özlem Onaran. 2004. "The Effect of Export-Oriented Growth on Female Labor Market Outcomes in Turkey" *World Development* 32 (8): 1375-1393.

Becker, G. S. (1957). The Economics of Discrimination. Chicago: University of Chicago Press.

Beneria, Lourdes. 1995. "Toward a greater integration of gender in economics" *World Development* 23 (11): 1839-1850.

Bussmann, Margit. 2009. "The Effect of Trade Openness on Women's Welfare and Work Life" *World Development* 37 (6): 1027-1038.

Cerruti, Marcela. 2000. “Economic Reform, Structural Adjustment and Female Labor Force Participation in Buenos Aires, Argentina” *World Development* 28 (5): 879-891.

Chamarbagwala, Rubiana. 2006. “Economic Liberalization and Wage Inequality in India” *World Development* 34 (12): 1997-2015.

Chen, Zhihong, Ying Ge, Huiwen Lai, and Chi Wan. 2013. “Globalization and Gender Wage Inequality in China” *World Development* 44: 256-266.

Cooray, Arusha, Isis Gaddis, and Konstantin M. Wacker. 2012. “Globalization and Female Labor Force Participation in Developing Countries: An Empirical (Re-) Assessment” No.129.

Cox-Edwards, Alejandra, and Sebastian Edwards. 1990. “Labor Market Distortions and Structural Adjustments in Developing Countries” *NBER Working Paper No 3346*

Çağatay, Nilüfer, and Günseli Berik. 1990. “Transition to Export-led Growth in Turkey: Is There a Feminization of Employment?” *Review of Radical Political Economics* 22: 115-134.

Çağatay, Nilüfer, and Şule Özler. 1995. “Feminization of the Labor Force: The Effects of Long-Term Development and Structural Adjustment” *World Development* 23 (11): 1883-1894.

Dalgıç, Başak, Burcu Fazlıoğlu, and Deniz Karaoğlan. 2015. “Entry to foreign markets and productivity: Evidence from a matched sample of Turkish manufacturing firms” *Journal of International Trade & Economic Development* 24 (5): 638-659.

Darity William, and Rohanda M Williams (1985). “Peddlers Forever? Culture, Competition, and Discrimination” *American Economic Review* 75(2): 256–61.

Dell, Melissa. 2005. “Widening the Border: The Impact of NAFTA on Female Labor Force Participation in Mexico”

De Loecker, Jan. 2007. “Do exports generate higher productivity? Evidence from Slovenia” *Journal of International Economics* 73 (1): 69–98.

Ederington, Josh, Jenny Minier, and Kenneth R. Troske. 2009. “Where the Girl Are: Trade and Labor Market Segregation in Colombia” *IZA Discussion Paper No 4131.*

Gaddis, Isis, and Janneke Pieters. 2012. “Trade Liberalization and Female Labor Force Participation: Evidence from Brazil” *IZA Discussion Paper No 6809.*

Gaddis, Isis and Janneke Pieters. 2014. “The Gendered Labor Market Impacts of Trade Liberalization: Evidence from Brazil”

Girma, Sourafel, Avid Greenaway, and Richard Kneller. 2004. “Does Exporting Increase Productivity? A Microeconometric Analysis of Matched Firms” *Review of International Economics* 12 (5): 855–866.

Gray, Mark M., Miki Caul Kittilson, and Wayne Sandholtz. 2006. “Women and Globalization: A Study of 180 Countries, 1975-2000” *International Organization* 60 (2): 293-333.

Haouas, Ilham, Mahmoud Yagoubi, and Almas Heshmati (2005). “The Impacts of Trade Liberalization on Employment and Wages in Tunisian Industries” *Journal of International Development* 17 (4): 527-551.

Hinloopen, Jeroen, and Charles van Marrewijk. (2008). “Empirical relevance of the Hillman condition for revealed comparative advantage: 10 stylized facts”, *Applied Economics* 40(18), 2313-2328.

Iacovone, Leonardo, and Beata Javorcik. 2012. “Getting Ready: Preparation for Exporting” *CEPR Discussion Papers 8926*

ILO 1985 Women Workers in Multinational Enterprises in Developing Countries. Geneva: ILO.

Isgut, Alberto, and Ana M. Fernandes. 2007. “Learning-by-Exporting Effects: Are They for Real?” *MPRA Paper 3121*, Munich Personal RePEc Archive. http://dx.doi.org/10.2139/ssrn.982231

Lim, Joseph y. 2000. “The Effects of the East Asian Crisis on the Employment of Women and Men: The Philippine Case” *World Development* 28 (7): 1285-1306.

Maqsood, Fauzia and Samiullah. 2014. “Impact of Globalization on Female Labor Force Participation in the SAARC Region” *Pakistan Journal of Social Sciences* 34 (2): 523-533.

Meschi, Elena, Erol Taymaz, and Marco Vivarelli. 2011. “Trade, technology and skills: Evidence from Turkish microdata” *Labour Economics* 18 (1): 60-70.

Meyer, Lisa. 2006. “Trade Liberalization and Women’s Integration into National Labor Markets: A Cross-Country Analysis” *Social Indicators Research* 75 (1): 83-121.

Molina, Danielken, and Marc-Andreas Muendler. 2009. “Preparing to Export” *National Bureau of Economic Research* No. w18962.

Nordas, Hildegunn Kyvik. 2003. “The impact of trade liberalization on women’s job opportunities and earnings in developing countries” *World Trade Review* 2 (2): 221-231.

OECD (2011), *OECD Employment Outlook 2011*, OECD Publishing.

OECD (2014), *OECD Employment Outlook 2014*, OECD Publishing.

OECD (2018), *OECD Employment Outlook 2018*, OECD Publishing, Paris.

Okşak, Yüksel and Jülide Yalçınkaya Koyuncu. 2017. “Does globalization affect female labor force participation: Panel evidence” *Journal of Economics Bibliography* 4 (4): 381-387.

Özler, Şule. 2000. “Export Orientation and Female Share of Employment: Evidence from Turkey” *World Development* 28 (7): 1239-1248.

Özsarı, Mustafa. 2017. “Exporting and Employment Generation: A Study on Turkish Manufacturing” MS diss., Eskişehir Anadolu University.

Pearson, P. 1998. “Feminist visions of development: research analysis and policy” London: Routledge.

Pradhan, Jaya Prakash. 2006. “How Do Trade, Foreign Investment, and Technology Affect Employment Patterns in Organized Indian Manufacturing?” *Indian Journal of Labour Economics* 49 (2): 249-272.

Ranjan, Priya and Jibonayan Raychaudhuri. 2011. “Self-selection vs learning: evidence from Indian exporting firms” *Indian Growth and Development Review* 4 (1): 22-37.

Rosenbaum, Paul and Donald Rubin. 1983. “The Central Role of the Propensity Score in Observational Studies for Causal Effects” *Biometrica* 70 (1): 41–55.

Salaff, Janet, “Women, the Family, and the State: Hong Kong, Taiwan, Singapore – Newly Industrialized Countries in Asia,” In S. Sticher and J. Parpart (eds.) Women, Employment, and the Family in the International Division of Labor (Philadelphia; Temple University Press, 1990), 98-136.

Serti, Francesco and Chiare Tomasi. 2008. “Self-Selection and Post-Entry Effects of Exports: Evidence from Italian Manufacturing Firms” *Review of World Economics* 144 (4): 660–694.

Siddiqui, Rizwana. 2009. “Modeling Gender Effects of Pakistan’s Trade Liberalization” *Feminist Economics* 15 (3): 287-321.

T.C. Aile ve Sosyal Politikalar Bakanlığı. 2015. “Türkiye’de Kadınların İşgücüne Katılımı ve İstihdamı”

Terra, María Inés, Marisa Bucheli, and Carmen Estrades. 2008. “Trade Openness and Gender in Uruguay: a CGE Analysis”

Uraz, Arzu, Meltem Aran, Müşerref Hüsamoğlu, Dilek Okkalı Şanalmış, and Sinem Çapar. 2010. “Türkiye’de Kadınların İşgücüne Katılımında Son Dönemde Gözlenen Eğilimler” Türkiye Cumhuriyeti Devlet Planlama Teşkilatı ve Dünya Bankası Refah ve Sosyal Politika Analitik Çalışma Programı Çalışma Raporu 2.

Van Biesebrock, Johannes. 2005. “Exporting raises productivity in sub-Saharan African manufacturing firms” *Journal of International Economics* 67 (2): 373–391.

Wood, Adrian. 1991. “North-South Trade and Female Labour in Manufacturing: An Asymmetry” *The Journal of Development Studies* 27 (2): 168-189.

Zaki, Chahir. 2011. “On Trade, Employment and Gender: Evidence from Egypt” *In the 3rd ICITE regional conference on African perspectives on trade and labour market adjustment, employment and gender, labour market dynamics, Tunis.*

APPENDIX

NACE	Name of the sector	Wage	Technology intensity
10	Food products	Low	Low/Medium-Low
11	Beverages	High	Low/Medium-Low
12	Tobacco products	High	Low/Medium-Low
13	Textiles	Low	Low/Medium-Low
14	Wearing apparel	Low	Low/Medium-Low
15	Leather and related products	Low	Low/Medium-Low
16	Wood and products of wood and cork, except furniture; articles of straw and plaiting materials	Low	Low/Medium-Low
17	Paper and paper products	High	Low/Medium-Low
18	Printing and reproduction of recorded media	High	Low/Medium-Low
19	Coke and refined petroleum products	High	Low/Medium-Low
20	Chemicals and chemical products	High	Medium-High/High
21	Basic pharmaceutical products and pharmaceutical preparations	High	Medium-High/High
22	Rubber and plastic products	High	Low/Medium-Low
23	Other non-methallic mineral products	Low	Low/Medium-Low
24	Basic metals	High	Low/Medium-Low
25	Fabricated metal products, except machinery and equipment	High	Low/Medium-Low
26	Computer, electronic and optical products	High	Medium-High/High
27	Electrical equipment	High	Medium-High/High
28	Machinery and equipment n.e.c.	High	Medium-High/High
29	Motor vehicles, trailers and semi-trailers	High	Medium-High/High
30	Other transport equipment	High	Medium-High/High
31	Furniture	Low	Low/Medium-Low
32	Other manufacturing	Low	Low/Medium-Low
33	Repair and installation of machinery and equipment	Low	Low/Medium-Low

Table A.1. Wage and Technology Classifications of Manufacturing Industries, by NACE-2

NACE	Name of the sector	natural resource intensive and primary good exporter (%)	human capital intensive good exporter (%)	technology intensive good exporter (%)	labor intensive good exporter (%)
10	Food products	93.64	1.28	4.61	0.48
11	Beverages	87.35	1.85	10.80	0.00
12	Tobacco products	98.51	0.50	0.99	0.00
13	Textiles	2.82	2.38	6.72	88.08
14	Wearing apparel	0.88	0.94	1.49	96.68
15	Leather and related products	23.38	1.22	3.38	72.02
16	Wood and products of wood and cork, except furniture; articles of straw and plaiting materials	80.76	2.74	10.45	6.05
17	Paper and paper products	1.51	83.74	10.50	4.25
18	Printing and reproduction of recorded media	0.39	79.16	16.17	4.27
19	Coke and refined petroleum products	84.21	4.21	8.42	3.16
20	Chemicals and chemical products	6.15	57.13	35.21	1.52
21	Basic pharmaceutical products and pharmaceutical preparations	10.55	1.64	86.27	1.54
22	Rubber and plastic products	1.93	19.06	72.79	6.23
23	Other non-methallic mineral products	67.62	4.64	10.09	17.65
24	Basic metals	28.19	49.56	21.73	0.52
25	Fabricated metal products, except machinery and equipment	3.49	68.37	19.04	9.10
26	Computer, electronic and optical products	0.62	11.88	86.26	1.24
27	Electrical equipment	2.06	16.25	75.10	6.60
28	Machinery and equipment n.e.c.	1.02	11.56	85.89	1.53
29	Motor vehicles, trailers and semi-trailers	1.35	66.41	26.54	5.70
30	Other transport equipment	1.36	31.52	20.25	46.87
31	Furniture	5.73	7.15	3.12	83.99
32	Other manufacturing	0.47	64.35	18.18	16.99
33	Repair and installation of machinery and equipment	1.99	22.28	65.52	10.21

Table A.2. HM Classification of Manufacturing Industry, by NACE-2

NACE	Name of the sector	
		Low Technology
	15 Products and beverages	
	16 Tobacco products	
	17 Textiles	
	18 Wearing apparel; dressing and dyeing of fur	
	19 Tanning and dressing of leather; luggage, handbags, saddlery, harness and footwear	
	20 Wood and products of wood and cork, except furniture; articles of straw and plaiting materials	
	21 Paper and paper products	
	22 Publishing, printing and reproduction of recorded media	
	36 Furniture; manufacturing n.e.c.	
		Medium-Low Technology
	23 Coke, refined petroleum products and nuclear fuel	
	25 Rubber and plastic products	
	26 Other non-metallic mineral products	
	27 Basic metals	
	28 Fabricated metal products, except machinery and equipment	
	351 Building and repairing of ships and boats	
		Medium-High Technology
	2411 Basic chemicals, except fertilizers and nitrogen compounds	
	2412 Fertilizers and nitrogen compounds	
	2413 Plastics in primary forms and of synthetic rubber	
	2421 Pesticides and other agrochemical products	
	2422 Paints, varnishes and similar coatings, printing ink and mastics	
	2424 Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	
	2429 Other chemical products n.e.c.	
	2430 Man-made fibres	
	352 Railway and tramway locomotives and rolling stock	
	359 Transport equipment n.e.c.	
	29 Machinery and equipment n.e.c	
	31 Electrical machinery and apparatus n.e.c.	
	34 Motor vehicles, trailers and semi-trailers	
		High Technology
	2423 Pharmaceuticals, medicinal chemicals and botanical products	
	353 Aircraft and spacecraft	
	30 Office, accounting and computing machinery	
	32 Radio, television and communication equipment and apparatus	
	33 Medical, precision and optical instruments, watches and clocks	

Table A.3. ISIC Rev.3 Technology Classification

year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
number of firms	11.127	13.719	17.959	19.878	19.147	18.948	16.235	21.826	24.000	26.045	27.180	28.953	29.504	274.521

Table A.4. Summary Statistics

Panel A: Only Exporters vs. Non-Traders					
	PSM			**DID**	
	NFEt	***NFEt+1***	***NFEt+2***	***NFEt+1-NFEt-1***	***NFEt+2-NFEt-1***
ATT (Model 1-Starter)	0.263***	0.293***	0.299***	0.092***	0.099**
	(0.098)	(0.098)	(0.097)	(0.002)	(0.020)
ATT (Model 2-Sustainer)	0.286***	0.305***	0.301***	0.107***	0.109**
	(0.082)	(0.080)	(0.071)	(0.031)	(0.051)
Panel B: Two-way Traders vs. Only Importers					
	PSM			**DID**	
	NFEt	***NFEt+1***	***NFEt+2***	***NFEt+1-NFEt-1***	***NFEt+2-NFEt-1***
ATT (Model 3-Starter)	0.279***	0.303***	0.299***	0.115***	0.121**
	(0.086)	(0.082)	(0.060)	(0.035)	(0.060)
ATT (Model 4-Sustainer)	0.301***	0.309***	0.308***	0.117***	0.129***
	(0.060)	(0.050)	(0.052)	(0.032)	(0.044)

Notes:

i) NFE represents the number of female employees.

ii) Standard errors are shown in parenthesis

iii) Asterisks show statistical significance of average treatment effects (ATT) [***: (p < 1%); **: (p<5%); *: (p<10%)].

Table A.5. PSM and PSM-DID Estimations (Number of Female Employees)