İSTANBUL BİLGİ UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
MA PROGRAM IN INTERNATIONAL POLITICAL ECONOMY

GENDER WAGE GAP IN THE TURKISH LABOR MARKET

MA Thesis by
BERNA DOĞAN

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Supervisor: Prof. Dr. Nurhan Yentürk

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TÜRK İŞGÜCÜ PİYASASINDA CİNSİYETE DAYALI ÜCRET FARKLILIKLARI

by

Berna Doğan

Submitted to the Institute of Social Sciences of İstanbul Bilgi University in partial fulfillment of the requirements for the degree of Master of Art in International Political Economy.

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

…….
Prof. Dr. Asaf Savaş Akat
Head of the Program

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts.

…….
Prof. Dr. Nurhan Yentürk
Supervisor

Dissertation Committee Members

Prof. Dr. Ertuğrul Ahmet Tonak (IBU, Economics)..……

Prof. Dr. Nurhan Yentürk (IBU, Economics)…….……

Assoc. Prof. İpek İlkkaracan Ajas (ITU, 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.

Berna Doğan

ABSTRACT

The aim of this study is to explore the causes and the extent of the gender wage gap in the Turkish labor market. For this purpose, standard wage regressions are estimated using micro data from an official survey for the year 2006. A number of variables in the dataset enable a comprehensive quantitative analysis including both human capital variables and job-related variables. Furthermore, in order to examine the wage gap in detail, Oaxaca decomposition method is employed. Decomposing the differential into two components enables to understand whether the gap is caused by the differences in human capital endowments or by the discrimination in the labor market. Using the abovementioned raw data we find a very slight wage gap in favor of women. But, the discrimination component of 46.5 per cent is substantially high.

Keywords: female labor force participation, gender wage gap, Oaxaca decomposition, discrimination

ÖZET

Bu çalışmanın amacı Türk işgücü piyasasında cinsiyete dayalı ücret farklılıklarının nedenlerini ve boyutlarını araştırmaktır. Bu amaçla, 2006 yılı için resmi anket sonuçlarından derlenen mikro veri kullanılarak standart ücret regresyonları tahmin edilmiştir. Veri setinde yer alan çok sayıda değişken, beşeri sermaye ve işe ilişkin veriler üzerinden kapsamlı bir nicel analizi mümkün kılmıştır. Bunun yanı sıra, ücret farkının daha detaylı olarak incelenmesi için Oaxaca ayrıştırma yöntemi kullanılmıştır. Ücret farkının iki bileşene ayrıştırılması, bu farkın beşeri sermaye donanımındaki farklardan mı yoksa işgücü piyasasındaki ayrımcılıktan mı kaynaklandığının anlaşılmasını sağlar. Yukarıda bahsedilen ham veriyi kullanarak, kadınlar lehine çok küçük bir ücret avantajı bulduk. Fakat bulduğumuz yüzde 46.5 oranındaki ayrımcılık bileşeni önemli ölçüde yüksektir.

Anahtar Kelimeler: kadınların işgücüne katılımı, cinsiyete dayalı ücret farklılıkları, Oaxaca ayrıştırma yöntemi, ayrımcılık

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Page #

1. INTRODUCTION

The gender wage gap is one of the most important indicators of the gender inequalities in the labor market. International Labor Organization (ILO) statistics verify that female wages are lower than that of male in every country. In the post-World War 2 period the ratio of female-to-male wages followed an increasing path. Yet neither the expanding antidiscrimination legislations nor the significant rise in female labor force participation led to closing the gap. A narrowed gender wage gap still persists in most labor markets.

In spite of the general improvement of the female wages, Turkey is one of the few countries with a deteriorating gender wage gap. In the post-1980 period, dramatic economic, social, and cultural changes profoundly affected the decisions of women related to labor force participation, and their wages. But in overall terms, both followed decreasing trends. According to the official statistics the difference between female and male wages is 0.21 in 2006 (TURKSTAT). This study attempts to understand the underlying reasons of this growing gender wage differentials in Turkey.

The paper starts with a historical overview of both labor force participation and wages of women. Most studies on this subject start the analysis from late 1970s and early 1980s which are considered as the beginning of the globalization. In our opinion, however, such a historical evaluation should be traced back to World War 2. Because, investigating the past of the

developed market economies, the strongest momentum to shift from traditional one-earner family to double-earner family model was experienced during the World War 2. Therefore, Section 2 of this study covers a period from the end of the War to today. In order to provide a comparative analysis, first worldwide trends, then Turkish case is examined.

In the third section, the literature on gender wage gap is reviewed. First, theoretical framework is discussed, and both economic and sociological approaches are briefly argued. In the second part of this section, the findings of empirical works on the topic are evaluated. Earlier empirical studies focus on human capital endowment differences between women and men as the source of wage differentials. The examination of education and experience within the context of family responsibilities were believed to provide an explanation for the difference between women's wages and men's wages. Nonetheless, subsequent usage of firm-level data enabled more comprehensive analyses. Inclusion of a wider set of variables such as occupation, industry, sector, firm size, collective bargaining coverage provided a better understanding of the underlying causes of gender wage gap. Therefore, a wide range of literature covered in this section. Finally, empirical studies with a focus on Turkish labor market are examined.

Fourth section of this study is the empirical part. In line with the recent empirical, studies, factors of the wage differentials between women and men are analyzed via wage regressions. Regressions include both individual- and firm-level data. So, the effects of individual differences in human capital endowments and labor market characteristics are explored. Besides estimating wage regressions, Oaxaca decomposition is used to distinguish the portions of the gender wage gap that is explained whether by returns to human capital endowments and gender discrimination against women.

2. AN OVERVIEW OF THE FEMALE LABOR FORCE PARTICIPATION AND WAGE TRENDS

This section provides an historical overview of female labor force participation and of female wages. The majority of historical evaluations of the issue start from late 1970s and early 1980s which are considered as the beginning of the globalization. In my opinion, however, such a historical evaluation should be traced back to World War 2. Because, the investigation of the past of the developed countries reveals that the strongest momentum to shift from traditional one-earner families to double-earner family model was experienced during the World War 2. Therefore, in this section the period starting by the end of World War 2 is analyzed in detail. First, worldwide trends are explored. In the second part of the section, the trends are examined for the case of Turkey.

2.1. Worldwide Trends

2.1.1. Female Labor Force Participation in the Post-War Period

Although, the years following the Second World War were prominently called 'the Golden Age', they were not 'that' golden when it is women in question. Demand for female labor sharply rose during the war, as men were mobilized for the armed forces. But, after the War, as men returned to the civilian labor force, women had to return their homes. Following the end of wartime emergency, there was a great desire to return back to normality, including 'traditional roles' of both men and women. Therefore, "social values changed [immediately] and the employment of

married women outside the home was once again frowned up" (Blau and Ferber 1992, p.106). For instance, in the USA, rate of women in the labor force declined to 31.5 per cent in 1947 while it was 35.8 per cent in 1945. (Blau and Ferber 1992, p.75, Table 4.1) This lower rate of participation lasted until the late 1950s.

The traditional roles attributed to both sexes –also known as *traditional sexual division of labor*[1]- profoundly affected the fundamentals of welfare states whose foundation coincided the same period in the developed world. The primary objective of the welfare states was to protect workers against the social risks of the system, but they did not bring a new discourse about female labor. Jessop (2000) notes that "Welfare policies are premised on rights attached to national citizenships and, in many cases, on stable 'traditional' family structures and the gender relations they authorize." (p.180). Due to this basic rationale behind the welfare states, *male breadwinner* and *family wage* had been the key concepts characterizing this period (Misra et al. 2007; Lewis 2001; 1997; Matthaei 2001; Sainsbury 1999; Orloff 1996; Çağatay and Özler 1995). Wages were held at a 'family wage' level which was high enough to define a man's job as working outside the home and maintaining a reasonable standard of living to his unemployed, hence dependent, spouse and children. Relying on this model, the need for a second wage-earner at home had been removed. Bleses condemns this disparity between women and men, and writes "While most

[1] The concept of 'sexual division of labor' has two meanings. First one is originally derived from the 'domestic division of labor' which refers to the distribution of the productive jobs and responsibilities of a home between male and female members. In traditional societies, during the early phases of industrialization, this distribution presumed men's task as working outside the home to provide monetary necessities of the family, while women were responsible for caregiving and doing the housework. This traditional sexual division of labor started to be questioned as women got more active participants of the labor market. Especially since 1970s, relying on Marxist theories, feminists have argued that women's housework is as productive as men's wage labor. And as a demonstration of critiques, the concepts 'gendered division of labor' or 'sexual division of labor' started to be used in the feminist literature. Second meaning of 'sexual division of labor' is the segregation in labor markets where women do only traditionally women's jobs. As these are mostly low-status and low-paying jobs, patriarchal hierarchy remains unchanged. In the text, the first usage of the term is referred. For a conceptual analysis, see 'Domestic Division of Labor' chapter in Pilcher and Whelehan 2004. For a detailed Marxist theoretical debate on sexual division of labor, see 'Feminizm and Marxizm' in Donovan 2009.

western European and North American welfare states of the 1950s can be categorized as 'patriarchal welfare states', the division of labor between sexes was most clearly institutionalized in the 'strong male breadwinner model' welfare state" (Bleses 2004, p. 23)[2].

It was by 1960s that women get out of their homes and appeared again in the labor market. Throughout this decade, economic conjuncture was particularly favorable for rising participation rates. Especially in the developed world, unprecedented rates of economic growth were accompanied by rapid growth of productivity and capital stock which required increasingly more labor. Hence, real wages steadily rose and unemployment rates substantially declined. These developments in the economy enabled increasing labor supply of women to be easily absorbed by the labor markets.

In spite of the increase in total number of working women, female labor force participation behavior showed significant differences in this period (Howes and Singh 1995). Traditional values were still the determinant factor of working decisions of women. For example, in the United States (US), while there was great diversity between the lives of women from different races and classes, most married women were still considered to be responsible for the 'homemaking' (Goldin 2006; Thistle 2006; Matthaei 2001). Unmarried women, apart from the racial or ethnic group they belong to, were much tended to be in the labor force. "Among married women, women of color were more likely to be in the labor force than white married women" (Thistle 2006, p.43). Not only in US but also in Germany, where female labor force participation

[2] There is a wide literature on gender relations and welfare states. Most of the existing studies criticize welfare states for promoting patriarchal social relations. Especially in the context of women's economic activity, welfare states are criticized for being *gendered* institutions. From this critical point of view, it is broadly acknowledged that social welfare policies are adversely correlated with labor force participation of women. For more information on both theoretical debates and different country examples, see Korpi 2000; Sainsbury 1999; Lewis 1997; Orloff 1996.

was relatively higher than other European countries, that was the case until the early 1970s (Bleses 2004, p.36).

Following the changes in the world economy in the first half of the 1970s, labor force participation of women entered a new era. The most significant changes took place in developed countries. In the US, labor force participation rate (LFPR) of women increased 10 percentage points throughout this decade, from 50 per cent in 1970 to 61 per cent in 1980. In Sweden, LFPR of women rose from 60 per cent to 75 per cent and it rose from 41 per cent to 51 per cent in Australia in the same decade (OECD Labor Market Statistics).[3] New patterns of international trade and investment played an important role in this drastic increase. In line with the new restructuring of the world economy, developed countries underwent a *deindustrialization* process which stands for the falling share of manufacturing in both employment and production. Deindustrialization in this sense started in the mid-1960s in countries such as Sweden, the United Kingdom and Belgium, and extended to virtually all developed countries by mid-1970s (Howes and Singh 1995). Service jobs, which replaced the industrial ones, provided wide employment opportunities to women, as they were considered as 'serving jobs', hence incompatible with men's masculine nature. These jobs favored women over men as long as they required less skill and less technological knowledge (Howes and Singh 1995). The specific role assigned to women, as a flexible –and often cheaper- labor in the process of competitive restructuring due to deindustrialization, increased the availability of flexible employment and part-time work (Orloff 2009; Özler 2000). Also, the erosion of corporatist labor relations due to the decline of welfare states (Standing 1999), equal opportunity and anti-discrimination legislation (Orloff 2009), and

[3] The increase in female labor force participation did take place in both developed and developing countries. But pre-1980 data is not available for almost all developing countries. Therefore, a comparison is hardly to be done.

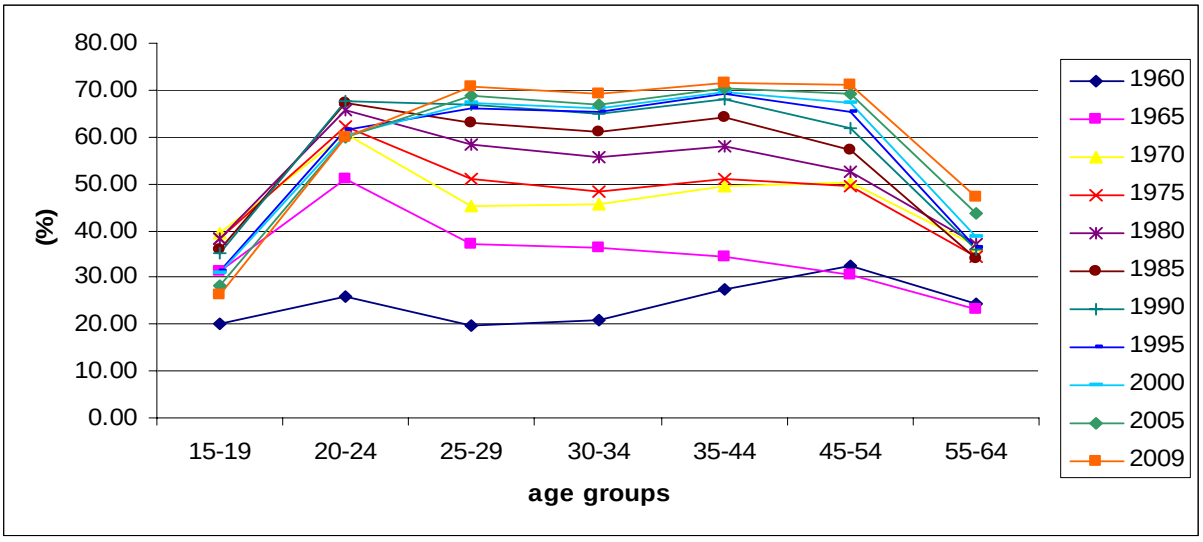
the relative improvement of female earnings (Howes and Singh 1995) contributed to the increasing number of working women in developed economies.[4]

In developing economies, on the other hand, increasing labor force participation of women is generally argued in relation to *feminization of labor*. With the notion of 'global feminization' Guy Standing refers to the reduction in average job quality that has accompanied by the growth in women's labor force participation (Standing 1989). He attributes the feminization of labor in developing countries to supply-side economic policies, particularly structural adjustment programs and macroeconomic stabilization policies urged by the International Monetary Fund (IMF) and the World Bank. These special programs amplified by the late 1970s and early 1980s, in the wake of debt crises. However, women had already become a part of the labor market due to rapid industrialization since 1960s in developing world. This increase in the number of working women in developing economies was the outcome of not only structural adjustment and stabilization policies, but also of trade liberalization and export promotion. "More significantly, a group of Asian and Latin American nations –the so-called NICs [Newly Industrializing Countries] were especially successful after WWII in establishing technical, scientific, and industrial infrastructures, in training their labor forces, in creating managerial and organizational capacities and in developing broad-based industrial bases" (Howes and Singh 1995, p.1904). By the early 1970s, these countries emerged as competitive trade powers in the world economy. Thus, they pose a serious threat to the industrial monopoly of developed countries. As the global trade had become more competitive, cost of labor turned out to be the most important component

[4] Since the main subject of this study is not labor force participation decisions of women, the reasons affecting these decisions and their results are not analyzed in detail. Rather, the periodic increases briefly mentioned while place of women in labor market is being examined only as a historical trend. For detailed discussion on the relation of economic globalization and female labor see Bussmann 2009; Richards and Gelleny 2007; Howes and Singh 1995; Standing 1989, 1999.

of production due to the combination of new production and labor-control technologies and competition between low-wage production zones. And at first it focused on women. Because, in most cases, "women [were] ready suppliers of low-wage labor in developing countries because of the social construction of women as secondary wage earners supplementing men's wages" (Fussell 2000, p. 60). Therefore, within the new international division of labor, women are heavily concentrated in low-income sectors producing manufactured exports. Lower wages of women boosted the demand for their labor in highly mobile, labor-intensive industries (Heintz 2002). Çağatay and Özler (1995) states that "between 1950 and 1980, most advanced industrialized countries experienced feminization along with most Eastern European, East Asian, Caribbean, Latin American, Middle Eastern and North African economies" (p.1884).

Figure 2.1 Decomposition of Female Labor Force by age, (1960-2009)



Source: OECD Labor Market Statistics

The increase in female labor force participation took place in all around the world. But, it was a slight rise, rather than a significant growth, in most developing countries. Moreover, in spite of an overall increase, decomposing working women by age groups reveals that the participation behavior of women did not profoundly differed from that of the Golden Age (Figure 2.1). In

other words, under the extensive effects of the feminist movement of 1960s, women began to get rid of the strict ties of their traditional roles, but this did not have a widespread influence before 1980s. Bleses (2004) puts it as follows:

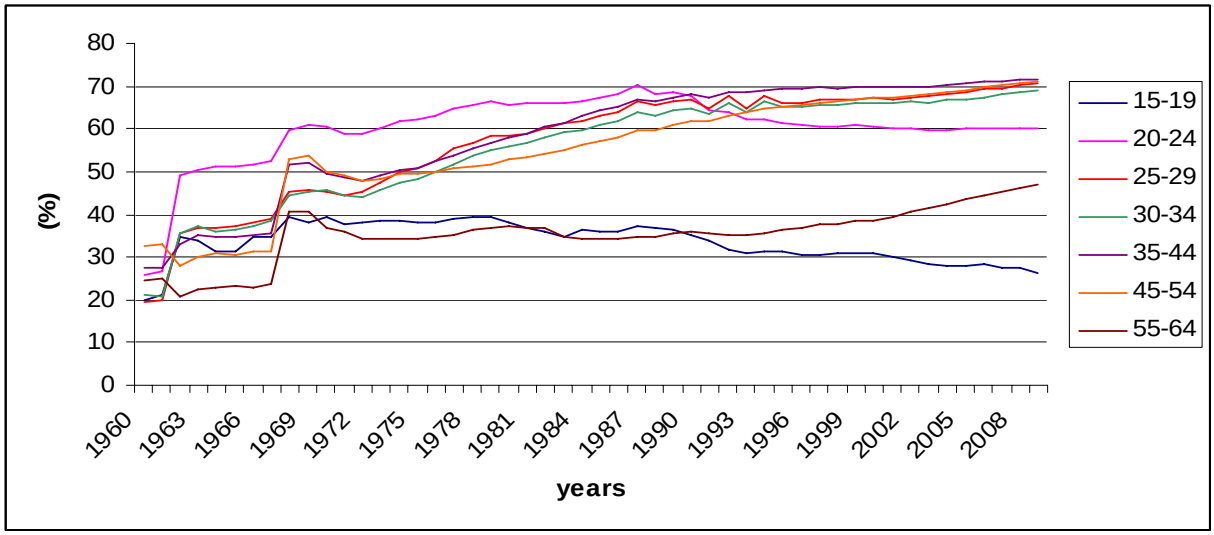
> "Until the late 1980s overall labor force participation among women increased only slowly, and perhaps even more importantly, the shape of the curve did not change substantially; that is, the rate of female labor force participation dropped at the age when women typically married and/or had children" (Bleses 2004, p.36).

Data for OECD-total, confirms this explanation of Bleses. Figure 2.1 shows the trends of labor force participation of women by cohorts for every five year since 1960. It is obvious that women join the labor force at the highest rate between the ages 20-24. This is followed by a decline in the subsequent years. The reason for the decrease was the withdrawal of women with young children from labor force (Olivetti 2006; Horton 1999; Blau and Ferber 1992). Lim (2002) puts it more explicitly as "most women entered the labor force in their twenties, left after a few years to bear and raise children and re-entered the labor force towards the end of their childbearing years" (p.204). Due to the fluctuations in female labor force participation, the line reaches a peak at ages 20-24, and after a decline it goes up again by ages 35-44, but this time to a lesser point. This *double-peaked* age patterns of participation were exhibited particularly in developed countries in the past (Olivetti 2006). Germany, Japan, Sweden and United States perfectly exemplify this 'double-peak' with the most significant volatilities in participation rates across cohorts (OECD Labor Market Statistics). In accord with Bleses's explanation, the sharp decline in the young women's participation rate in 1970s verifies the close relation between women's paid-work outside the home and their traditional roles. Matthei (2001) notes that "[The period from 1970s onward] represented a liberation for women from the rigid restrictions of the sexual division of

labor" (p. 472); however, it was too early in 1970s to have a widespread impact, at least in statistical terms.

Along with traditional constraints, the unstable economic conjuncture of 1970s and early 1980s was another reason of the unsustainable increasing trend in female labor force participation. Blau and Ferber (1992) notes that "during much of the 1960s, rising real wages and relatively low unemployment rates also contributed to the increases in female labor force participation rates. However, during the 1970s and the early 1980s, a stagnating economy resulted in frequent bouts of high unemployment and little progress in real wages." (p.108). Such an unfavorable period led to impairment of the affirmative action policies, which were designed in 1960s in order to integrate women into the labor market as equal participants (Muttari 2001).

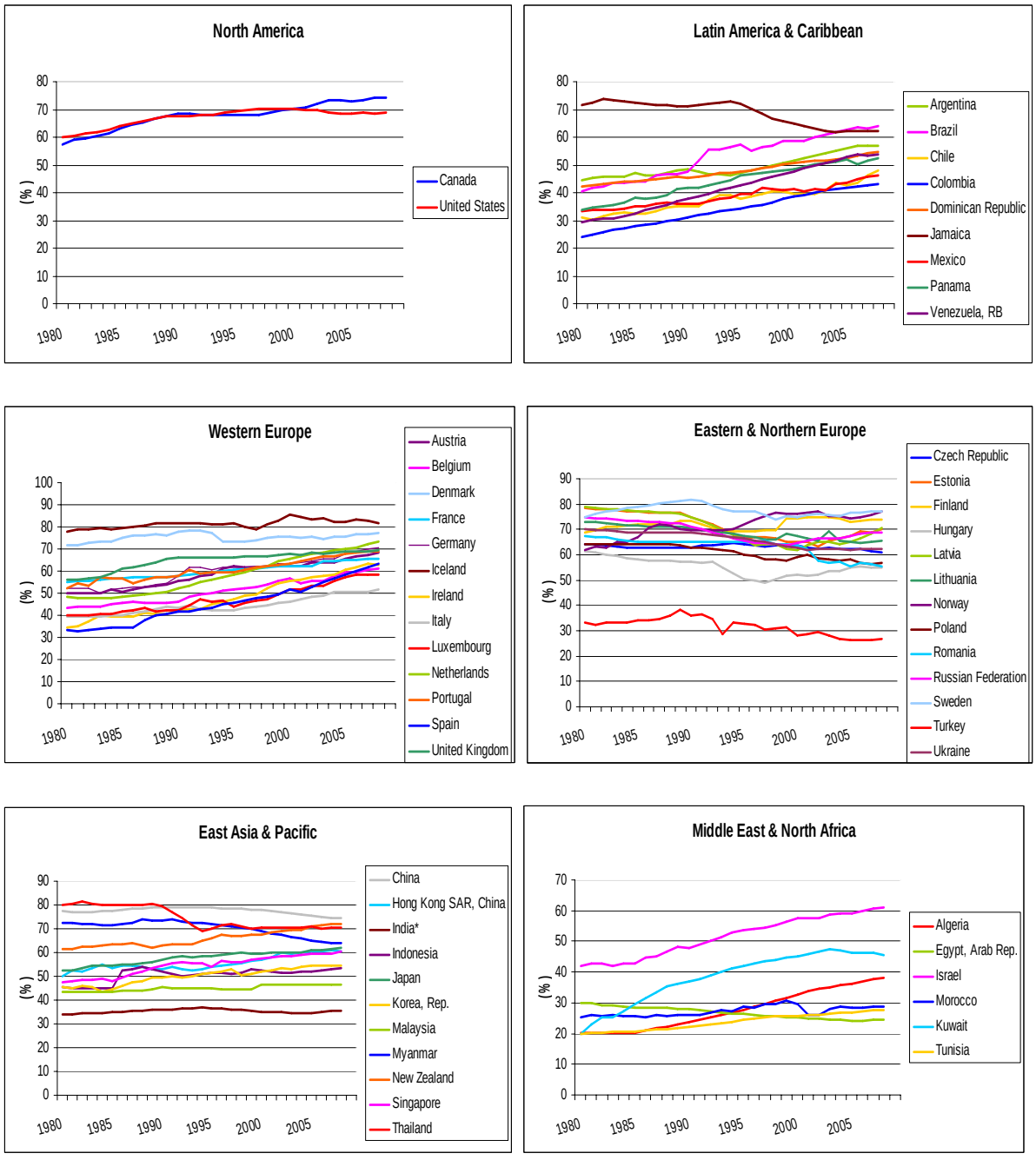
Figure 2.2 Trends Followed by Cohorts, (1960-2009)



Source: OECD Labor Market Statistics

Only by 1980s, the female LFPR gained a 'sustainable' increasing trend, both in cohorts and overall terms (Figures 2.2 and 2.4). The most important contributor was the profound consequences of 'new international division of labor' on the traditional sexual division of labor within countries. It means that from 1980s onwards, women's market work was primarily

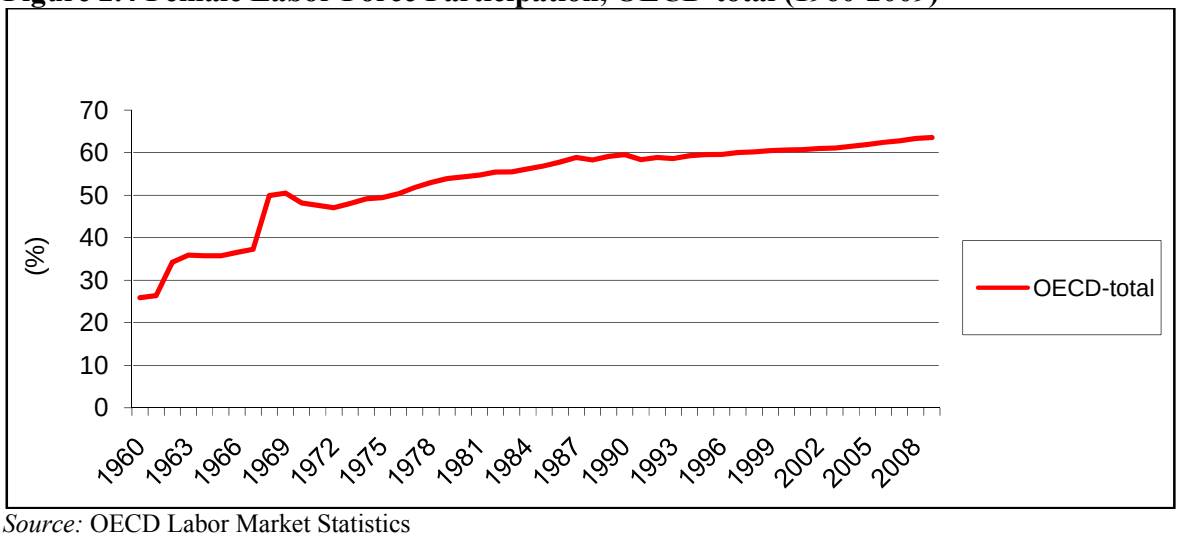
Figure 2.3 Female Labor Force Participation in Selected Countries (1980-2009)



* Countries are grouped according to World Bank classification. Only India is sorted in a different group. It is classified as a South Asian country in original groups.
Source: World Bank Gender Statistics.

determined by international division of labor, rather than each country's internal dynamics. In other words, women's employment was shaped according to the country's place in the world economy. Therefore, participation rates diversify substantially amongst country-specific cases. Figure 2.3 exhibits the patterns of labor force participation of women in selected countries by the year 1980.

Figure 2.4 Female Labor Force Participation, OECD-total (1960-2009)



Source: OECD Labor Market Statistics

Despite the country-specific differences, in general both labor supply and employment of women followed an increasing trend throughout 1980s. Labor force participation rate of women rose from 57.4 per cent in 1980 to 68.4 per cent in 1990 in Canada. It was 49.8 per cent and 53 per cent for the same years in Hong Kong, and was 47.7 per cent and 54.6 per cent in Singapore. LFPR of women was 47.5 per cent in 1990 in Brazil, while it was 40.6 per cent in 1980 (World Bank Statistics).[5] This rise in participation rates lasted in 1990s and 2000s, though at a slower pace (Figure 2.4).

[5] There were decreasing rates of female labor force participation, too. But they were mostly associated with the structural characteristics of the countries. So, they should be regarded as county-specific cases and should be excluded from the general trend estimations.

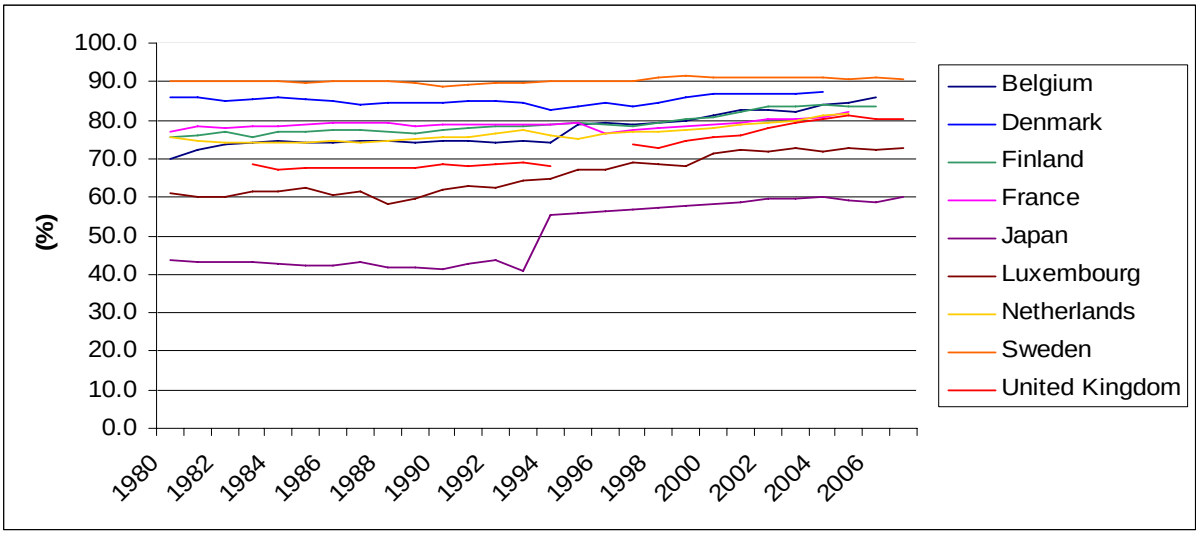
2.1.2. The Evolution of Female Wages

Rapid increase in women's labor force participation took place together with relative enhancement in women's earnings throughout 1980s. In the previous decades there was no remarkable improvement in female wages. This was, particularly, due to the social welfare states of postwar period. Family wage was, by definition, regarded as a 'men's right' (Section 2.1.1). Hence, the paid labor of married women was not a requisite component of the labor market. Moreover, young women's work before marriage was not a permanent tendency. Therefore, women were mostly considered to be *reserve labor*, as in the case of World War 2. Even when they work, women were regarded as supplementary to men's labor (Standing 1989). Matthaei (2001) notes that "Women's jobs lacked the potential upward mobility that came to characterize most white men's jobs, and even though some employed women were single mothers trying to support their families, women's jobs do not pay family wages" (p. 468). In developing countries, on the other hand, women mostly worked in the agricultural sector or do the traditionally women's jobs. Their wages were so low that could not compete with that of men. Therefore, before 1980s, women's wages stayed almost constant with reasonable differences to men's wages. By late 1970s, structural changes in female labor supply and demand, and also new employment areas entailed enhancement in female wages. Since then, there has been an improvement in the pay gap and in the ratio of female wages to male wages in general. But, unlike the participation rates, pay gap did not followed a steady path. This inconsistency in paths was due to fluctuations in pay gaps across both countries and decades.

In developed countries gender wage gap significantly narrowed in 1980s. Before late 1970s, wage differentials were almost constant or convergence was very slow. But throughout 1980s this convergence was more noticeable. Particularly in the US, narrowing of the gap was much more

significant than in other countries. The ratio of median annual earnings of women to that of men rose from 59.7 per cent in 1979 to 68.7 per cent in 1989. It means 9.0 percentage points increase. But in 1990s this convergence slowed down: It was 72.2 per cent in 1999- which accounts for only 3.5 percentage point increase. (Blau and Kahn 2006, p. 45) In other developed countries, changes in the earnings ratios were not as dramatic as in the USA. Female-to-male wages in manufacturing in France was 76.8 per cent in 1980. It was 78.8 per cent in 1990 and remained constant throughout the 1990s. In Netherlands it was 75.3 per cent for the whole 1980s and increased only 3 percentage points during 1990s. However, gender pay gap increased in Denmark throughout 1980s. Women's wages were 86 per cent of men's wages in 1980, while it was 84.6 per cent in 1990. (World Bank Gender Statistics)

Figure 2.5 Female-to-male Wages in Manufacturing in Developed Countries, (1980-2007)

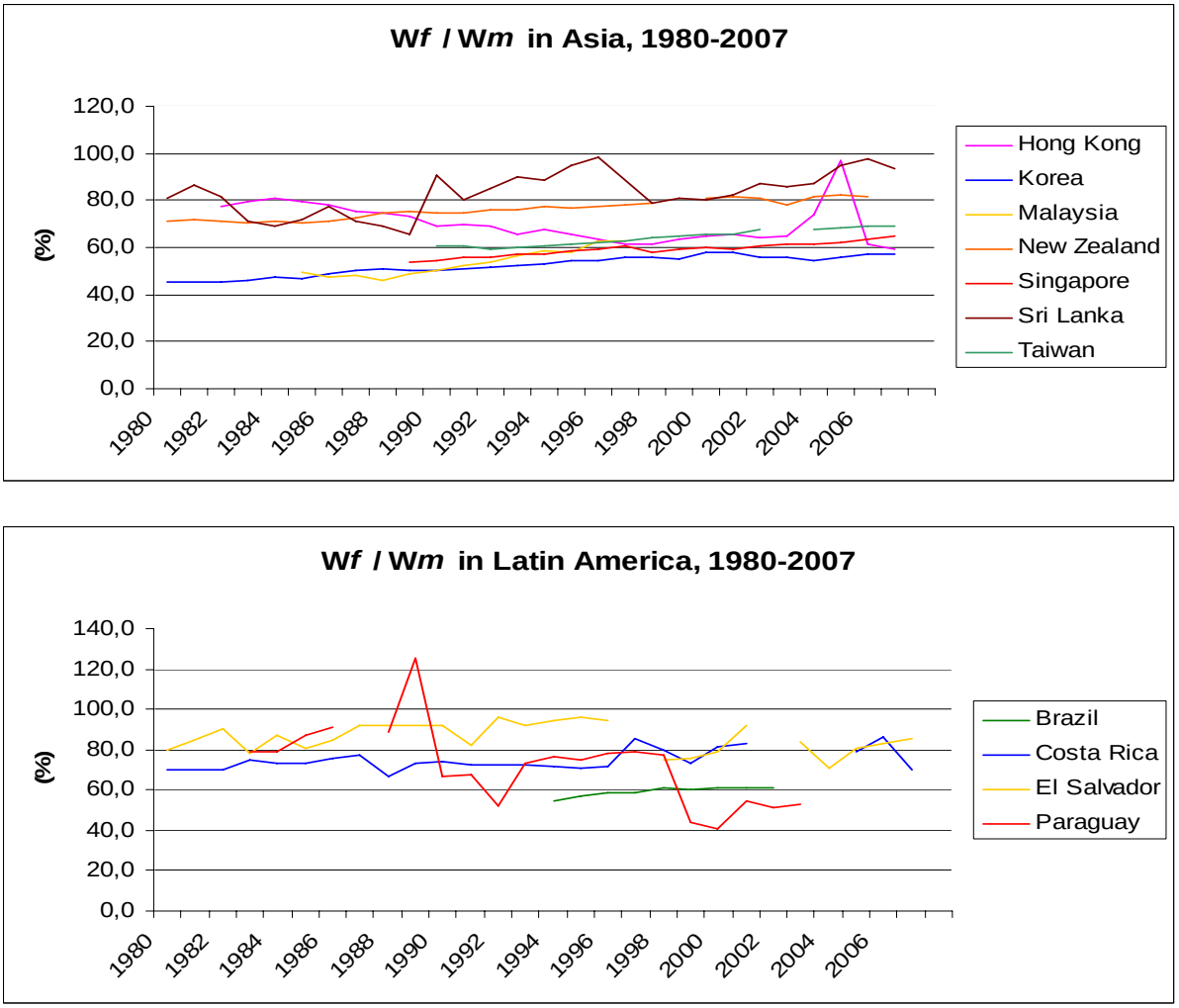


Source: ILO Labor Statistics

In developing countries, too, there were great diversities between country-specific cases. In Korea, the ratio of female-to-male wages in manufacturing increased by 11 per cent during 1980s, from 45 per cent in 1980 to 50.2 per cent in 1990. It rose to 57.2 per cent in 2000. In Malaysia it increased rapidly too, from 47.5 per cent in 1983 to 57.9 per cent in 1995, which

means a 22 per cent increase. In a sharp contrast, female-to-male earnings decreased steadily from 77.7 per cent in 1982 to 59.4 in 2007 in Hong Kong. (Figure 2.6)

Figure 2.6 Female-to-male Wages in Manufacturing in Developing Countries, (1980-2007)



Source: ILO Labor Statistics

Data points to significant variations in the paths gender wage gap followed in different countries. Therefore, it is not possible to claim a general trend. Yet, one can still argue a more stable path in developed countries. Because, although the female-to-male wage ratio dropped in some countries and in some periods, these were not dramatic or permanent decreases (Figure 2.5).

The relative enhancement of the wage gap in developed countries can be considered in association with wage structure, as well as development of strong social and economic institutions, particularly the wage-setting ones (Olivetti and Petrongolo 2008; Kumlin 2007; Blau and Kahn 2003; Korpi 2000). "These institutions take the form of collective bargaining conventions, minimum wage laws, and governmentally mandated extentions of the terms of collective bargaining to nonunion workers" (Blau and Kahn 2003, p. 111). In addition to wage-related policies, gender-specific policies, too, contributed to narrowing gender wage gaps in developed world. Gender-specific policies include "equal employment opportunity and antidiscrimination laws, as well as laws and policies governing parental leave and child care availability" (Blau and Kahn 2003, p. 110). By the mid-1980s, almost all OECD countries enacted antidiscrimination laws (Blau and Kahn 2003). Feminist movements of 1960s-70s, and antidiscrimination legislations jointly encouraged women to train and enter traditionally male-dominated jobs (Blau and Kahn 1997). "The entrance of women into men's jobs, along with the decline in men's real wages, led to a decreasing 'wage gap' between sexes" (Matthaei 2001, p.472). Furthermore, policies, which support mother's employment, increased the number of working mothers. In other words, labor market attachment of women increased (Olivetti 2006; Blau 1998). This had a positive impact on gender based wage differentials, since longer years in labor market meant an uninterrupted career and more experience. Within the context of such policies, Continental European women are exposed to the highest wage gaps, while women of Nordic countries report the least, and North American women report intermediate levels of wage gaps (Misra et al. 2007; Sigle-Rushton and Waldfogel 2006).

In developing world, gender wage gap was much more volatile since women's status and wages were closely related to the way of integration of countries into the world economy (Richards and

Gelleny 2007).[6] In most developing countries women's engagement with labor markets was through manufacturing industries. Women were mostly employed in free trade zones, such as the *maquiladoras* of Mexico where they were paid lower wages vis-à-vis men, and encountered job insecurity, occupational segregation, lack of advancement possibilities and a variety of oppressive working conditions (Ward and Pyle1995). Extensive employment in such jobs did not raise the bargaining power of women (Heintz 2002). Furthermore, unlike their counterparts in developed countries, women in developing world were not provided institutional rights such as antidiscrimination laws or equal employment-equal pay legislation. Therefore, women in countries which implemented strict export promotion and trade liberalization strategies lacked of an improvement in gender wage gap (Özler 2000). Even in some NICs, female-to-male wage differentials persisted over time (Figure 2.6).

Fussell (2000) explains the situation of women of industrializing countries as follows:

> "Women's employment in export-processing firms is a double-edged sword. These jobs offer women economic autonomy but pay insufficient wages to support oneself or one's dependents and little hope of advancement." (Fussell 2000, p. 62)

In some developing countries where women had the opportunity of higher education, longer years of experience, and were protected via laws, the ratio of female earnings to male's increased at some various rates (Ward and Pyle1995). But, as Figure 2.6 depicts, female-to-male wages in manufacturing followed an inconsistent, and sometimes a severely fluctuating, path.

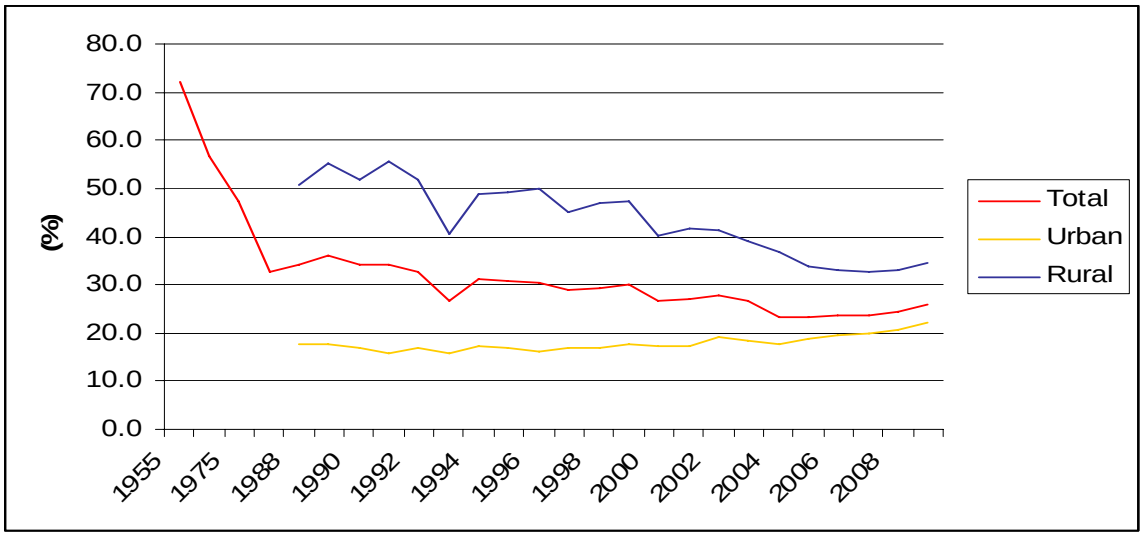
[6] Richards and Gelleny (2007) state that "The relationship between economic globalization and women's status differs by the type of globalization, type of status, and era." (p.871). They analyze the effects of type of economic globalization in three groups. These are financial globalization, trade globalization and structural adjustment policies. They find that in most cases portfolio investment has adverse effects on women's economic and social status. On the contrary, women are generally bettered-off by trade liberalization, since they are more likely to find non-agricultural employment opportunities.

2.2. Turkish Case

2.2.1. Female Labor Force Participation in the Post-War Period

The situation of Turkish women in labor market substantially differs from the worldwide trend. In the early years of postwar era, the LFPR of Turkish women followed a relatively stable path with respect to that of Western women. Although, Turkey had not gone to the War, men were called up for the armed forces due to the mobilization. So, Turkish labor market encountered a severe shortage of labor. But unlike Western countries, this shortage in the workforce was compensated with child labor rather than female labor. The share of child labor in total workforce rose from 8.80 per cent in 1937 to 18.86 per cent in 1943. The corresponding numbers for female labor were 18.89 per cent and 20.76 per cent (Makal 2001, p.135). Such a slight increase was followed by a slight decrease after the war years. This steady decline has continued until today. (Figure 2.7)

Figure 2.7 Labor Force Participation of Turkish Women, 1955-2009



Source: Derived from TURKSTAT, Household Labor Force Surveys; Values for the years 1955, 1965, 1975, and 1985 are from Ozbay 2010, Table 3, p.119.

Women's labor force behavior is universally affected from socio-cultural factors. But the low rates of female labor force participation even in wartime, reveals that socio-cultural factors have very strong impact on Turkish women's employment decisions. The years following the war particularly verify this idea.

In the early years of postwar era, female labor market was segregated with sharp distinctions. A majority of women were concentrated in agriculture and traditional sectors. In 1955, 94.8 per cent of women were employed in agriculture (Özbay 2010, p.118). Most working women were unpaid family workers. The rate of unpaid family workers in 1955 was 93.5 per cent in rural areas and 52.2 per cent in urban areas (Makal 2001, p.128). Paid-worker positions in agriculture were available only in certain regions such as Çukurova and some Western Anatolian cities where industrial agriculture had been developing (Arıkan 1988, p. 5). Women's share in industry, on the other hand, remained quite low in this period: It was 16.3 per cent in 1960 and 22.5 per cent in 1970 in manufacturing (Çağatay and Berik 1990, p.123). Urban women often preferred to work at service sector which was regarded as more prestigious. They were concentrated in education, public administration, and health services in public; and clerical, and sales jobs in private sector. (Ecevit 2010, p. 107) Women in industrial jobs were most likely to belong to low-income families in the cities.

Such clear-cut borders in the female labor market vanished since 1970s. Especially by 1980s, female employment was shaped by more complicated factors. This transition of the determinants of female employment was closely related to the characteristics of Turkish economy of which agriculture still comprised the major part. Agriculture accounted for more than 30 per cent of the GDP and 77 per cent of employment in the early 1960s (Kepenek and Yentürk 2007. p.377). As a result of the strong agrarian basis of the society, education and migration were the principal

factors of social mobility in the post-war Turkey (Özbay 2010). But the functioning of these factors substantially differed between sexes.

Education was kind of a privilege which was mostly utilized by men. Marriage was regarded as more important for the future status of a young girl. Hence, girls' education persisted at low levels in both rural and urban areas. Women's educational attainment was lower than that of men at all levels. Furthermore, there was a distinct gender-based discrimination in the labor market even between those with same education levels (Özbay 2010). [7]

Migration, on the other hand, was common among those living in small towns with better financial situations, rather than the rural poor (Özbay 2010). Especially until the early 1960s, in contrast with the general belief, the direction of internal migration was not rural-to-urban but urban-to-urban (Kepenek and Yentürk 2007). [8] Because, during these years, living in the cities *per se* was a source of 'social status' both for women and men. Nevertheless, with respect to integration into the urban labor market, they were affected almost in opposite ways. Women obtained a better status than rural women via migration. However, unlike men, this did not come about by shifting from agricultural to non-agricultural employment, but the removal of the need to women in labor force (Özbay 2010). For women in cities, 'withdrawing from the production' became a matter of prestige (Ecevit 2010; Özbay 2010).

[7] Women's education was profoundly affected by traditional values. General opinion of the society was that women, even if educated, could not exist outside the family on their own. Besides, the rising level of girls' education was believed to make it harder to find an appropriate marriage partner. Furthermore, the expenses related to education of girls were considered as a total loss since these expenses would not return to the family in the future. All these factors together contributed to low levels of female education (Ozbay 2010)

[8] Provinces and counties are considered as urban areas. From this point of view, it can be inferred that migration to big cities took place on a gradual basis. It means that the rural-to-urban migration initially headed towards small cities, and subsequently to big cities. (Kepenek and Yentürk 2007)

İlkkaracan (2010) evaluates the unwillingness of urban women to work with reference to import-substituting industrialization. According to this view, import-substitution strategy prompted migration since it was the first step of development in many developing countries. Women's arrival in the cities due to migration symbolized getting rid of the heavy conditions of unpaid agricultural employment. Therefore, becoming a full-time housewife was regarded as an increase in the welfare of women, rather than an inequality (İlkkaracan 2010).

From economic perspective, the limited non-agricultural employment of women was the outcome of import-substituting industrialization strategy which was adopted between 1950-1980. The growth model dependent on the 'domestic demand' enabled high wages and low levels of men's unemployment. This positive development in the labor market facilitated the sustainability of traditional 'one-earner family'. Furthermore, male-dominated labor markets entailed *male-dominated unionization* which resulted in men being taken as the reference point in collective wage bargaining. As a consequence, import-substituting industrialization, similar to the welfare states of the day, led to the low levels of urban women's participation in the labor force (İlkkaracan 2010).

Export-oriented industrialization of post-1980 period affected women's employment in the opposite way. Newly adopted growth model which was dependent on 'foreign demand' promoted such labor-intensive industries as textile, garment, and food which mostly relied on female labor. On the other hand, decreasing reel wages throughout the same period impeded the sustainability of male-breadwinner family model.

The transition of social and cultural factors also contributed to the change of labor force participation behavior of women. Especially the changing composition of migration should be

investigated within this context. The prominent reasons of the varying characteristics of migration were the decrease in agricultural employment due to mechanization in agriculture since the early 1950s, and also the decline of agriculture's share in total production as a result of the accelerated industrialization following the 1960 coup (Kongar 2002). Following these experiences, migration had become more than a luxury resulting from the search for higher living standards of bourgeoisie of small towns: It turned into a dramatic fact resulting from the pursuit of subsistence of rural poor.

Women's labor force participation changed severely in the aftermath of rural-to-urban migration, particularly since 1980s. İlkkaracan (2000) points out three distinct groups in which female labor force participation can be evaluated. In one group she places rural women who have relatively high rates of labor force participation. Most of these women work as unpaid family workers in the agricultural sector. In another group there are urban women from high-income, high-education families. Labor force participation has been high in this group too, and most of the women in this group work at career jobs. In the middle of these two ends, İlkkaracan places urban women of low-income, low-education families. These women are mostly first- or second-generation rural-to-urban migrants. From this perspective, women who had been previously accounted as unpaid family workers were excluded from labor market as a result of the shift of population from villages to metropolitan areas (DPT/WB 2009; Makal 2001). Those without education or other qualifications required for urban economic activities mostly had to spend their lives as 'housewives' (DPT/WB 2009; Yücesan-Özdemir and Özdemir 2008; İlkkaracan 2000; Arıkan 1988)[9]. Traditional family dynamics and cultural attitudes were also the crucial factors

[9] Bora (2010) considers 'breadwinner male' model as an outcome of migration and *modernization* as working outside the home is a norm for rural women.

behind the low rates of participation of first generation migrants (DPT/WB 2009; Yücesan-Özdemir and Özdemir 2008).

As a consequence of the gradual withdrawal of women from labor market, Turkey, along with most Middle Eastern countries, is pointed out as one of the few countries which did not experience the feminization trend (Figure 2.3). However, data shows that despite the significant decrease in overall LFPR of women, urban women's labor force participation has slightly increased in this period. Every 100 persons increase in the urban adult female population was corresponded by 16.7 persons increase in the non-agricultural employment in the pre-1980 period. In the post-1980 period this number increased to 19.7 persons (İlkkaracan 2010).

Worsening life conditions in the cities due to the unstable economic conditions played an important role in increasing labor supply of women. Rising education levels and urban women's pursuit of economic freedom, too, contributed to increasing levels of participation (DPT/WB 2009; Dayıoğlu and Kırdar 2010; Kepenek and Yentürk 2007). It is often stated that there is a positive correlation between women's education level and their labor force participation (Yücesan-Özdemir and Özdemir 2008; Toksöz 2007). This correlation is more noticeable especially in the cities (Dayıoğlu and Kırdar 2009). Toksöz (2007) notes that "education not only lays the ground for wage increases by raising productivity, but also gives social legitimacy to this participation by weakening patriarchal ways of thinking" (p.23) Table 2.1 shows women's labor force composition by education. The ratio of women with higher education is doubled in urban female labor market between 1990 and 2009.

Table 2.1 Female Labor Force Status by Education Level, (+15)

	Illiterate	Less than High School	High and Vocational School	Higher Education	Total
TOTAL					
1990	30.2	55.8	9.3	4.7	100.0
1995	21.5	59.7	12.0	6.8	100.0
2000	20.6	53.5	14.7	11.2	100.0
2005	13.4	51.5	18.6	16.5	100.0
2009	10.5	50.0	18.7	20.9	100.0
URBAN					
1990	10.1	47.4	27.1	15.4	100.0
1995	7.0	41.6	31.3	20.1	100.0
2000	4.3	37.9	31.4	26.4	100.0
2005	5.1	40.3	27.7	27.0	100.0
2009	3.4	38.4	26.4	31.8	100.0
RURAL					
1990	37.1	58.6	3.2	1.0	100.0
1995	27.9	67.7	3.5	0.9	100.0
2000	30.8	63.2	4.3	1.7	100.0
2005	24.0	66.0	6.8	3.1	100.0
2009	20.9	67.1	7.2	4.8	100.0

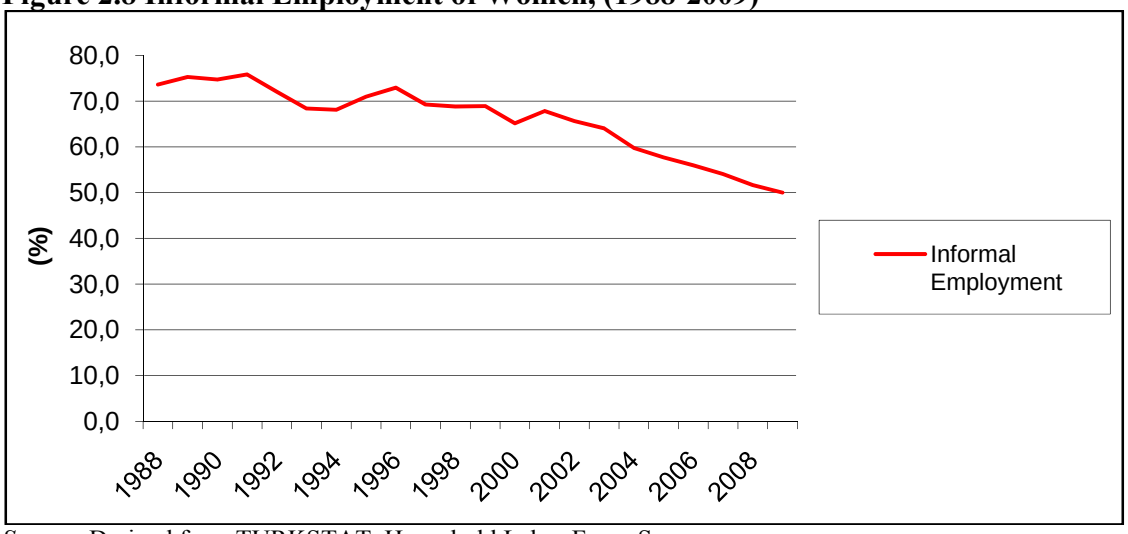
Source: Derived from TURKSTAT, Household Labor Force Survey.

Women in the third group of the classification of İlkkaracan (2010) constitute another group with increasing labor force participation. These women's entry into the formal labor market is limited with labor-intensive and low-paying jobs. As a result, informal sector has been a way-out for them [10] (DPT/WB 2009). In 1988, of 5,9 million women in labor force, 4,3 million were not registered under any social security institutions (TURKSTAT, Labor Statistics). This accounts to 73 per cent of Turkish female labor market. (Figure 2.8) Because of such a high share in employment, informal sector is one of the most important characteristics of contemporary Turkish labor market. So, a closer examination on informal employment is very important in understanding female labor force participation and wage trends.

[10] İlkkaracan (2000) notes that "It is this final group which is pointed out for forming the basis of the falling rates of female labor force participation."

Rapid informalization of female labor in 1980s is closely related to *limited employment opportunities*. Throughout 1980s, industry and service sector developed rapidly via government incentives. But, private sector's capacity to create employment was too limited. Therefore, unemployment rate increased dramatically. Buğra and Yakut-Çakar (2010) note that "Neither this increase in industrial employment nor the significant growth of employment in services (from 31.2 per cent to 49.8 per cent) could compensate the impact of de-ruralization" (p.523).

Figure 2.8 Informal Employment of Women, (1988-2009)



Source: Derived from TURKSTAT, Household Labor Force Surveys.

Flexibilization of production is another reason of informalization. With the introduction of flexible production techniques in manufacturing, production moved from large-scale to small-scale industries. The labor-intensive small-scale textile and garment *ateliers* in the outskirts of metropolises heavily rely on female workers as a source of cheap labor (Dedeoğlu 2004). Home-based works are also a common way of informal working. Home-based sewing and embroidery works are important for particularly urban married women who have little children, or who belong to conservative families which do not allow women to work outside home (Yücesan-Özdemir and Yücesan 2008; Çınar 1994). Homemaking is another common way of engaging in

paid-work for a number of urban married women of low socio-economic families. They work informally since most of the time they are considered as wage-earners supplementary to their husbands (Bora 2010)

Economic crises of the 1990s, too, contributed in informal female employment as they caused instability in growth and employment. Furthermore, in the aftermath of the 2001 crisis, "jobless growth" problem emerged (İlkkaracan 2010). These factors negatively affected not only women's employment but also men's employment. Increasing rates of male unemployment and decreasing reel wages together led to degradation of women's status to "reserve labor"[11] (İlkkaracan 2010; DPT/WB 2009). Particularly women who are from low-education and low-income families, and who are considered as secondary wage-earners are likely to withdraw from formal labor market. In 2009, 50 per cent of the women in the female labor market of Turkey are still employed in informal sector (Figure 2.8).

Majority of women working in informal jobs are unpaid or underpaid. Dedeoğlu (2004) underlines their role as helping to mediate the familial relations by working for free or for wages lower than the legal minimum wages. They encounter gender-based discrimination, unpaid overtime work, and sexual abuse and harassment. In home-based jobs, they are not covered by social security and they suffer from health problems due to working under inappropriate conditions. Furthermore, they are not accounted in labor force since they are not included in statistics (Yücesan-Özdemir and Özdemir 2008).

Table 2.2 shows the occupational and industrial distribution of women and men in Turkey. According to the table, one-third of women are agricultural workers. This is followed by

[11] DPT/WB (2009) asserts that female employment have increased since December 2007. This verifies the idea of women being 'reserve labor' whi join the labor force during economic downturns.

Table 2.2 Occupational and Industrial Distribution of Women and Men in Turkish Labor Market (2006)

Variable	Total (per cent)	Men (m_i) (per cent)	Women (f_i) (per cent)	Difference (m_i-f_i)
OCCUPATION				
Legislators, Senior Officials, and Managers	9.5	11.7	3.0	8.7
Professionals	6.9	5.9	9.6	-3.6
Technicians and Associate Professionals	6.3	5.8	7.7	-1.9
Clerks	6.3	5.2	9.6	-4.4
Service Workers, and Shop and Market Sales Workers	11.9	12.8	9.1	3.7
Skilled Agricultural and Fishery Workers	20.3	15.1	35.0	-19.9
Craft and Related Trade Workers	14.8	17.8	6.1	11.7
Plant and Machine Operators and Assemblers	10.8	13.1	4.2	8.9
Elementary Occupations	13.3	12.4	15.7	-3.2
Occupational Segregation Index				***33.0***
INDUSTRY				
Mining and Quarrying	1.9	2.4	0.4	2.0
Manufacturing	48.3	49.5	44.4	5.1
- Manufacture of Food Products, Beverages and Tobacco	4.5	4.7	3.6	1.1
- Manufacture of Textile and Textile Products	15.9	13.3	24.5	-11.2
- Manufacture of Leather and Leather Products	1.0	1.1	0.7	0.4
- Manufacture of Wood and Wood Products	0.6	0.7	0.2	0.5
- Manufacture of Pulp, Paper and Paper Products; Publishing and Printing	1.7	1.8	1.4	0.4
- Manufacture of coke, refined petroleum products and nuclear fuel	0.3	0.3	0.2	0.1
- Manufacture of Chemicals, Chemical Products and Man-made Fibers	1.9	2.0	1.8	0.2
- Manufacture aof Rubber and Plastic Products	1.9	2.1	1.1	1.0
- Manufacture of Other Non-metalic Mineral Products	3.4	3.9	1.7	2.2
- Manufacture of Basic Metals and Fabricated Metal Products	5.6	6.7	1.9	4.8
- Manufacture of Machinery and	3.7	4.3	1.7	2.6
Equipment n.e.c				
- Manufacture of Electrical and Optical Equipment	2.4	2.3	2.6	-0.3
- Manufacture of Transport Equipment	3.1	3.7	1.1	2.6
- Manufacturing n.e.c	2.5	2.6	1.9	0.7
Electricity, Gas, and Water Supply	1.4	1.7	0.5	1.2
Construction	6.1	7.1	2.6	4.5
Wholesale and retail trade; Repair of Motor Vehicles, motorcycles, and personal and household goods	15.4	14.8	17.7	-2.9
Hotels and Restaurants	4.2	4.3	3.9	0.4
Transport, Storage and Communication	7.9	8.2	6.8	1.4

Table 2.2 Continued				
Financial Intermediation	1.8	1.3	3.7	-2.4
Real Estate, Renting, and Business Activities	6.7	6.5	7.6	-1.1
Education	2.6	1.7	5.6	-3.9
Health and Social Work	2.1	1.0	5.4	-4.4
Other Community, Social and Personal Service Activities	1.6	1.6	1.4	0.2
Industrial Segregation Index				***14.8***

Source: Structure of Earnings Survey 2006, TURKSTAT.

elementary occupations with 15 per cent. Elementary occupations are the jobs which do not require any training or skills. Other one-third of women are allocated between professional, clerical, and service jobs.

With respect to industrial distribution, manufacturing has the highest concentration of women. Almost half of women are employed in manufacturing. Within manufacturing, women are crowded into textile. Bearing in mind that official surveys could reflect only formal sector numbers, rate of women in textiles, or manufacturing in general, is predicted to be reasonably above than the given rate.

2.2.2. The Evolution of Female Wages

The instability in female labor force participation affected wage trends in a similar way. The female wage trend in Turkey, similar to LFPR, substantially diverged from the worldwide trend. Until 1980s, women's share in paid labor was very low. In the post-1980 period, as in the case of other countries, female wages were closely associated with the new international division of labor. Increasing proportion of women entering the labor force led to a general enhancement in their wages vis-à-vis men’s wages. In Turkey, however, it followed an exactly opposite path.

Female-to-male wages in manufacturing was 98.5 in 1982, and even 100.0 per cent in 1983 (World Bank Statistics). But it gradually diminished by 1980s.

Both internal and external dynamics affected this fall in wages. The period from 1981 to 1988 "was characterized by a severe suppression of wage incomes via hostile measures against organized labor." (Boratav et al. 2000, p.3). In the same time the economy was opened to international trade and export-oriented industries promoted female labor. Under the effects of such dynamics, the rate of female wages with respect to men's wages decreased substantially. It was 88.4 per cent in 1993, and in 2006, the annual gross female wage in manufacturing was 79.2 per cent of that of men. (Table 2.3)

Table 2.3 Female-to-male Wages in Manufacturing (per cent)

Years	$W_f / W_m * 100$	$(W_f - W_m) / W_m$
1983	100.0	0.00
1993	88.4	0.12
2006	79.2	0.21

Source: Derived from World Bank Gender Statistics, and 2006 Structure of Earnings Survey of TURKSTAT.

Table 2.4 shows the annual average gross earnings by sex, and industrial and occupational groups. According to the table, women earn 98 per cent of men on an annual basis. However, this rate substantially varies between occupational and industrial categories. Among occupational groups, women earn more than men only in the first group. Yet this is not a significant difference. In other groups, female-to-male wages range from 75.5 to 92.0 per cent. This range is much wider with respect to industrial categories: from 73.6 per cent in 'health and social works' to 129.6 per cent in 'transport, storage and communication'. Manufacturing has one of the lowest female-to-male wage ratios. In textile industry, women earn 92.5 of men.

Table 2.4 Annual Average Gross Earnings by Sex, (2006)

	Total	Men (W_m)	Women (W_f)	(W_f/W_m)*100
TOTAL	*14,252*	*14,316*	*14,036*	*98.0*
Occupation				
Legislators, Senior Officials, and Managers	35,914	35,728	36,564	102.3
Professionals	23,605	26,165	21,355	81.6
Technicians and Associate Professionals	17,885	18,633	16,158	86.7
Clerks	14,897	15,826	13,658	86.3
Service Workers, and Shop and Market Sales Workers	10,074	10,243	9,423	92.0
Skilled Agricultural and Fishery Workers	11,181	11,300	9,554	84.5
Craft and Related Trade Workers	11,095	11,523	8,695	75.5
Plant and Machine Operators and Assemblers	11,359	11,675	9,023	77.3
Elementary Occupations	9,294	9,544	8,209	86.0
Industry				
Mining and Quarrying	14,936	14,990	13,924	92.9
Manufacturing	13,327	13,942	11,039	79.2
Electricity, Gas, and Water Supply	26,140	26,591	21,128	79.5
Construction	9,205	9,081	10,337	113.8
Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles, and Personal and Household Goods	13,540	13,552	13,506	99.7
Hotels and Restaurants	10,170	9,963	10,934	109.7
Transport, Storage and Communication	20,510	19,375	25,105	129.6
Financial Intermediation	33,907	34,681	32,996	95.1
Real Estate, Renting, and Business Activities	13,455	12,758	15,427	120.9
Education	15,405	15,421	15,390	99.8
Health and Social Work	15,620	18,608	13,700	73.6
Other Community, Social and Personal Service Activities	13,546	13,567	13,465	99.2

Source: Structure of Earnings Survey 2006, TURKSTAT.

Current rate of female-to-male wages in Turkey is quite above the OECD average, which was 77.0 per cent in 2006.[12] But data reveals that it was better in the past and has been sharply declining within the past thirty years. Looking at the high female-to-male wage ratio, provided that education level of women is much higher in non-agricultural employment, indeed the wage differential is expected to be in favor of women (İlkkaracan 2010). The rate of women with an

[12] It should be noted that the high rate of female-to-male wage ratio is not a consequence of a satisfactorily high levels of women's wages, but the low levels of overall wages in the economy, and men's wages as well.

education level at least high school is 66.2 per cent as opposed to 48.7 of men (TURKSTAT). Relying on this high difference in education levels, the relative worsening in female wages is regarded as an indicator of a discrimination against women in the Turkish labor market, rather than of a deterioration in or inadequacy of women's productivity-related qualifications.

Discrimination against women appears on the 'institutional' level too. The declining female-to-male wage ratio is associated with the lack of developed social and economic institutions, especially the wage-setting ones. In Turkey, gendered unionization prevails as an outcome of the gendered labor market. This gender bias in collective labor favors men even in the wage determination process.

In recent years Turkey declared her commitments to ensure gender equality within the context of the process of alignment with the European Union (EU). The Labor Code no. 4857 is a product of this process. Article 5, under the heading *equal treatment*, states that "in the employment relation no discrimination can be made based on language, race, sex, political opinion, philosophical conviction, religion and sect". The fourth paragraph of the same article provides the gender equality of payment for equal employment. Moreover, the Minimum Wage Regulation no. 25540 states that "no gender difference can be considered in setting minimum wage".

Toksöz (2007) underlines that despite the fact that discrimination on the ground of gender is prohibited with the constitution; there is no definition of discrimination in the legislation. Furthermore, the term 'employment relation' confines the policy implementations only to those who are already employed. However, the majority of women are exposed to discrimination in the recruitment process. Thus, the legislation is inadequate also in its commitment for equal employment (Toksöz 2007).

Besides the wage related policies, gender-specific policies in Turkey are unsatisfactory too. Care and nursing leaves in cases of maternity are regulated in the Article 74 of same labor code. It is provided that female workers can not be employed for 8 weeks before and after delivery. This is longer than the 14 week-leave period of the EU. Regulation no. 25522, on the other hand, introduces the conditions of work of pregnant and nursing women, and nursing rooms and care centers in workplaces. According to this regulation, enterprises employing 100 to 150 females are obliged to have nursing rooms, and enterprises employing at least 150 female workers are obliged to have childcare centers. However, these regulations do not function well most of the time. Furthermore, they are criticized for being the reflectors of a gender bias in labor market regulations. Toksöz (2007) notes that;

> "Basing the availability of rooms and care centers only upon the number of female workers is a manifestation of traditional patriarchal mentality which regards childcare as an obligation relevant only to women." (Toksöz 2007, p.81)

The existence of gender-related legislation in Turkey can not provide equal pay for equal employment of women. What is worse is that female employment is discouraged since some policy applications are grounded on the number of women in workplaces. Therefore, the employment gap between women and men, along with the wage gap, remains a serious problem of Turkish labor market.

3. AN OVERVIEW OF GENDER WAGE GAP LITERATURE

Although, women have more actively joined the labor force and been well accepted since 1980s, there is still a gap between female and male wages. The persisting gender wage gap constitutes a wide theoretical literature in economics and sociology. Numerous empirical studies focus on the reasons and the extent of this gap. This section provides a brief overview of the gender wage gap literature.

3.1. Setting the Theoretical Framework

3.1.1. Supply-Side Explanations

The prominent supply-side explanation for gender wage gap is the *human capital theory*. The theory, briefly, suggests that if men and women are endowed with different levels of human capital, particularly education, then, different levels of wages are considered as acceptable. The special emphasis on education and training is in line with the works of earlier political economists.

In search for understanding the differences of national incomes, Adam Smith emphasized the effect of personal abilities on labor. In contrast with the contemporary theory, personal abilities *per se* were not conceptualized in Smith's theory. Instead, only education was highlighted as an important component of the fourth one of the factors of production, namely labor. Accordingly,

abilities acquired through "education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in… person" (Smith 1776/1981, p. 282) In accordance with the views of Smith, Alfred Marshall stated "We may define *personal wealth* so as to include all those energies, facilities, and habits which directly contribute to making people industrially efficient" (Marshall 1948 from Sweetland 1996, p. 344). Although the roots of the theory traces back to centuries ago, the term *human capital* was first discussed by Pigou in 1932. Its emergence as a field of inquiry took place in 1950s.

Modern neoclassical theory of labor is based on this human capital theory. Mincer (1958), unlike earlier works, claimed an explicit link between human capital and personal income. He criticized the earlier works for being unsatisfactory as "they shed no light on the economics of the distribution process" (Mincer 1958, p.283). The novelty of Mincer's work was its suggestion that the 'theory of rational choice' be explored for a better understanding of personal income distribution. Based on Friedman's theory of 'taste for risk', he examined the effect of individual choices –with special reference to education- on personal income distribution. He identified two types of training, and used the length of time spent at school to measure *formal training*, and the amount of time spent on the job to measure *experience*, or 'informal training' as Sweetland calls it (Sweetland 1996, p. 345). Mincer (1958) found that the differences in training led to differences in levels of earnings. With respect to female wages he noted that "earnings of female workers are less dispersed than earnings of male workers" (Mincer 1958, p.300). And he concluded that "even perfect equality of ability and opportunity implies neither income equality nor symmetry in the income distribution" (*ibid*, p.302).

Bringing Mincer's work further, Gary Becker used human capital theory in exploring labor market discrimination based on race, religion, sex, color, social class, personality, or other non-

pecuniary considerations. In his 1957 work, Becker claimed that increased competition would reduce or eliminate discrimination against women and minority groups in the long run (Becker 1957). From this point of view, human capital theory associates women's lower wages with gender based differences in labor-market characteristics such as training, experience, and other knowledge that can increase real income.

In human capital theory, workers are assumed to be rational actors who make investments in their productive capacities to maximize lifetime income. Main tool of this investment is training. Similar to Mincer's work, Becker identifies two kinds of training; *schooling* and *on-the-job training* (Becker 1962). The former is defined as the years spent at school. Personal incomes of college graduates are higher than high school graduates as the former group invested more in their human capital. The model, further, mathematically derives a money rate of return for direct and indirect costs of college attendance. Nonetheless, in a human capital model, the main factor that affects earnings is 'on-the-job training'. Within the context of on-the-job training, there is another distinction between general and specific training. *General training* is the process of learning general skills that are useful in many firms in addition to the firm providing it. *Specific training*, on the other hand, covers only skills on a certain job. Marginal productivity of workers increases via both kinds of on-the-job training but with a little difference: General training "increases the marginal productivity of trainees by exactly the same amount in firms providing the training as in other firms… [while] specific training has no effect on the productivity of trainees that would be useful in other firms" (Becker 1962, p.17). In other words, specific human capital is not transferable to other firms. Thus, it is mostly paid by the employer, while general training is paid by the employee. Because of the high turnover costs of employees with specific training, employers are less prone to fire them. However, since women are more likely to drop

out of the labor force during child bearing and raising years, employers have less incentive to invest in women, which is an important factor of gender wage gap.

Specific human capital, is underlined as another important source of gender based wage gap. Due to the interruption in lifetime labor force participation during childrearing years, women have fewer incentives to invest in specific human capital (Polachek 2004). With respect to human capital accumulation, Becker (1957) claims that women have a *taste for discrimination*. Women do not regard paid-work as their primary object, because most of them withdraw from the labor force for child raising. Since investing in human capital is closely related to one's life prospects, women *choose* to invest less in human capital. This low levels of training and experience leads to lower levels of earnings (Polachek 2004; Mincer and Polachek 1974).

Division of labor at home is another major reason of gender wage gap. The division of labor in the family results in very dissimilar work patterns between genders. The family is regarded as an economic unit which shares consumption and allocates production at home and in the market. Investment in physical and human capital of its members is coordinated in this unit. Because of the determination of the roles at home, women tend to invest more in non-market human capital. Thus, lack of market-oriented human capital leads to lower levels of female earnings (Mincer and Polachek 1974).

3.1.2. Demand-Side Explanations

In addition to the gender differences in human capital, and preferences, there are other factors influencing wages. Indeed, research revealed that after controlling for the human capital variables, there is still a reasonable ratio of unexplained wage gap. Structural constraints in the labor market play an important role in the gender wage gap. Thus, demand side theories argue

discrimination against women. In theoretical literature, 'statistical discrimination' and 'hiring discrimination' are the foremost argued demand-side explanations.

In contrast with Becker's taste for discrimination, *statistical discrimination theory* is based on prejudices of 'employers'. According to the theory, employers are able to calculate the performances of each job applicant via some kind of statistical tests (Aigner and Cain, 1977; Phelps 1972). Their decision of hiring, promoting, or wage setting are based on these average statistics. Profit-maximizing firms would reserve jobs with higher replacement costs for the group with greater productivity. Since employers anticipate that female employees in general are more likely to have an intermittent career, they are less likely to hire or promote or provide training for them. There may be female workers with lower propensity to quit than average women. But as employers are unable to obtain this information for individual workers, they would allocate women to jobs with low turnover costs (England 1992; Bielby and Baron 1986). Furthermore, firm-specific skills are also suggested to exacerbate the gravity of statistical discrimination, while general skills are more gender-neutral. As it is more costly to replace employees with high turnover cost, employers are less prone to invest in firm-specific skills for female workers. This causes a gender gap in human capital (Estévez- Abe 2005). This discrimination against women causes the unequal sexual division of labor in labor markets which is considered as one of the most important factors of gender wage gap.

Hiring discrimination theory is another demand-side explanation for gender-based wage differentials. This theory assumes that employers, customers, or coworkers favor a group of employees of one sex over the other. Therefore, it is also called 'taste discrimination' (Reskin and Bielby 2005). Proponents of this theory argue that discrimination affects women since the hiring process. Employers may be reluctant to employ women to a certain job, usually to a traditionally

men's job, unless they are ready to work at a lower wage than men (Marini 1989). Reskin et al. (1999) state that some employers can explicitly be unwilling to hire a person from a certain sex or race group as they have hostile feelings towards that group or they find it uncomfortable to work with those people. For instance, female-owned establishments are more likely to employ women than male-owned establishments (Reskin et al. 1999).

3.1.3. Occupational Segregation

Discrimination against women in the labor market is for the most part a result of several segregation processes. Therefore, almost all discrimination theories focus on the gender-based occupational segregation.

Crowding hypothesis explicitly provide a link between occupational segregation and lower earnings in 'female-dominated jobs'. According to this theory, employers discriminate against women by excluding them from occupations which are considered to be men's work. Hence, women are crowded into other occupations, typically referred as 'women's work'. The oversupply of women in a relatively small number of occupations, in turn reduces their wage (Sorensen 1990; Bergmann 1974).

Social closure is another argument put forward for women's lower wages. It is a strategy to raise social and legal barriers around desirable positions within the firm that, as a consequence, discourages other employees from entering. Relying on five well-known social and legal barriers –namely licensing, educational credentialing, certification, unionization, and representation by occupational association- closure causes an artificial scarcity of employees who, in fact, have the legal, technical, and socially recognized ability to perform these specific jobs. As a result of keeping supply of these employees low relative to demand, the rewards of a small number of

people who already hold these positions rise (Weeden 2002; Tilly 1998). In the case of gender-based segregation in labor market, women are excluded from typically men's jobs. This discrimination against women limits their access to high wages, promotions, and skill-enhancing jobs (Tomaskovic-Devey and Skaggs 2002). Social closure is expected to be influential during the 'on-the-job training' period which is considered to have a particular impact on women's promotion to higher positions. By the same token, social closure mechanisms are particularly common in managerial positions.

Kanter (1977) identifies two processes to describe the social closure in managerial positions. She refers to *homosexual reproduction* to describe the practices that exclude women from managerial postitions; and *homosocial reproduction* to characterize the processes by which certain managers and men are selected and differentiated according to their ability to display appropriate social credentials. Since it is quite difficult to objectively identify the necessary criteria for effective managerial performance, social credentials can become substitutes for job-related characteristics (Collinson and Hearn 2005). Elitist practices such as family background, university, religion, class connections, and gender for the most important part, become the determinant qualifications. The homosocial process "does not only shut women out; it also normalizes a certain kind of masculinity" (Magnusson 2010, p.8).

Allocative discrimination is a process that allocates women and men to different occupations and jobs. Petersen and Morgan (1995) identify allocative discrimination as a "process [that] may involve discrimination partly through differential access to occupations and establishments, that is, the matching process at the point of hire, and partly through subsequent promotions" (p.330). The point is that women are allocated particularly to low-paying jobs which lead to a gender gap between wages. Petersen and Morgan (1995) assert that the segregation of women into lower-

paying jobs is more important in explaining gender wage gap than the pay differences within the same job.

Unlike general theories, *varieties of capitalism (VoC) approach* puts a special emphasis on advanced market economies. It argues that occupational sex segregation still persists in most industrial countries and is more common in coordinated market economies (CMEs) vis-à-vis liberal market economies (LMEs) (Estévez- Abe 2006; Soskice 2005). This approach focuses on national labor market 'skill regimes' and 'social policy provisions' (Charles 2005; Estévez- Abe 2005). CMEs have several institutions that lock people into long-term jobs (as a part of employment security), while LMEs lack such institutions. Because of the long-term employment relations, the CMEs invest more heavily in firm- and industry-specific skills[13]. Therefore, CMEs are generally more gender segregating than LMEs because the former have more institutions that promote male investment in specific skills (Estévez- Abe 2006). *VoC* perspective considers occupational segregation between genders as the outcome of utility-optimizing decisions of both employers and employees. Employers engage in statistical discrimination because of the higher expected turnover costs of women. Women, on the other hand, favor investment in general skills to balance their career-related and domestic roles (Charles 2005).

3.2. Empirical Studies

3.2.1. Gender Wage Gap Across and Within Countries

In order to understand the extent and causes of the gender based wage differentials, earlier studies focused on standard human capital variables, namely education and experience. In an often cited

[13] Building on Becker's distinction between skills, Estévez- Abe (2006) identifies three types of skils; firm-specific, trade- or industry-specific, and general skills (p.149).

study O'neill and Polachek (1993) argue that gender wage gap substantially decreased in the US throughout the 1980s because of the relative improvement of women's educational attainment and job market attachment. Blau and Kahn (1997) confirm such a relation between gender pay gap and human capital characteristics of women from 1979 to 1988, yet, with a rising level of inequality in the labor market. They find that women's level of human capital explain almost one-third of the wage gap in 1988.

Since education is the most important input of the human capital, there is a considerable literature examining the return of education on wages. Educational attainment includes both the schooling prior to joining the labor force and on-the-job training. Schooling has two pillars in understanding wage differentials; total years of schooling and content of schooling. Although there is a well-documented relationship between schooling and earnings, years of schooling can not account for a sizeable portion of gender wage gap as women and men have similar years of schooling (Marini 1989; Oaxaca 1973). Rather, the content of schooling is regarded to be more important in explaining the wage gap. Barron et al. (1993) claims that sex differences in vocational preparation in high school have a profound impact on the earnings differentials because of its direct results in occupational choices. In contrast, Brown and Corcoran (1997) assert that coursework preferences at high school do explain little of the wage gap between women and men with a degree less than a college degree. For college graduates, however, they suggest a significant impact of college major. They find that 20 per cent of the gender wage gap among college graduates is explained by the differences in college major, after controlling for demographic characteristics and work experience.

Experience, on the other hand, has an ambiguous influence on female wages and gender wage gap. The return of work experience is deliberately highlighted by the advocates of human capital

theory since on-the-job training is closely related to experience. Relying on this strong correlation, experience is expected to increase earnings. By the same token, lower return of experience to female wages is presumed to be associated with the intermittent labor force participation of women due to traditional division of labor at home (Polachek 2004). Mincer and Polachek (1974) argue that women choose to invest less in on-the-job training than men do. Hence they have a lower return to work experience. O'neill and Polachek (1993) point out the increasing rates of labor force attachment as the reason behind the closing wage gap between women and men in the 1980s. They find that the increase in women's labor market experience contributed 28.5 per cent to the narrowing in the gender wage gap, and 46.7 per cent of the wage gap is explained by experience. In contrast, Myck and Paull (2001) argue that differences in experience levels explain a very little portion of the raw gender wage gap. Results of their study for UK show that "accounting for differences in experience levels, either as a simple total of all years of employment or broken down into full-time and part-time employment, explains little of the gender wage gap. Indeed, it is differences in the returns to experience which generate the gender wage differential" (p. 3). Harkness (1996) finds that adding experience variables to a standard wage equation explains an additional 6-7 per cent of the gender wage gap for full-time women and 25 per cent for part-time women.

Occupation is another controversial issue with regards to wages. Plenty of research demonstrated that occupational segregation between women and men is an important factor of gender wage gap. Tam (1997), however, surprisingly demonstrates that occupational sex composition does not have a direct impact on wages. Using 1988 Current Population Survey he examined the *devaluation hypothesis* which assumes that general cultural tendencies devalue the work of women and this leads to gender pay gap as it lowers the earnings of women in predominantly

female occupations. Yet Tam (1997) finds that female occupations pay less largely due to the lower requirements in occupation-specific training. In other words, he claims that it is specific human capital, rather than the occupational segregation, that results in differences between wages. In contrast, Macpherson and Hirsch (1995) demonstrate that female-dominated jobs pay lower wages not only to women but also men. They use the Current Population Survey, too, and construct a longitudinal wage change model for the period 1973-1993. Their model shows that occupational characteristics and unmeasured worker skills constitute two-thirds or more of the effect of gender composition on wages. Aisenbrey and Brücker (2008) examine the relation between occupational segregation and gender wage gap on a very large population. They use individual level data from the German Life History Study to investigate occupational aspirations of individuals born between 1919 and 1971. They find that the reasonable proportion of the gender wage gap is due to the within-occupation gender stratification. Aisenbrey and Brücker (2008) point to the differences in evaluation of women's and men's assets and characteristics as the primary reason of the problem. Another study by Peterson and Morgan (1995) includes establishments into the analysis. They indicate the occupation-establishment segregation rather than the within-job wage discrimination as the main source of wage differences. Using industrial level data they find that occupational sex segregation *per se* accounts for almost 40 per cent of the wage gap, and using individual level data they find a wage penalty ranging from 1 per cent and 5 per cent at occupation-by-rank-establishment level. Occupation-establishment segregation, however, accounts for 89 per cent of the gender wage gap in the case of blue-collar and clerical employees.

Another variable on which wage regression analyses focus is collective bargaining –or unionization. In a number of cross-country studies Blau and Kahn (2003; 1997; 1996) show that

the more centralization in collective bargaining system leads to less wage gap. In the US and Canada, however, it is 'deunionization' contributing to the narrowing of the gender wage gap as it affects men more than women (Fortin and Lemieux, 1997; Dinardo et al., 1996; Doiron and Riddell 1994). Felgueroso et al. (2007) verify this result for Spain. Antonczyk et al. (2010), on the other hand, do not confirm such a direct correlation for West Germany. They assert that coverage by collective wage bargaining declined by 19.1 percentage points for female employees between the years 2001 and 2006. But the gender wage gap remained virtually constant during this period, even with some small gains for women at the bottom and at the top of the wage distribution. In another study for Germany, using firm-level data, Gartner and Stephan (2004) find that the gender wage gap is lower within firms than the overall wage differential. The presence of a works council or coverage by collective bargaining reduces the gender wage gap as distribution of wage residuals is more compressed within these firms. Elvira and Saporta (2001) underline the gendered structure of industries and assert that women in female-dominated industries do not benefit from union representation and collective bargaining as much as their counterparts in male-dominated and more gender-balanced industries.

Public-private wage differentials are also taken into account within the context of gender wage gap. It is particularly important in developing countries where public employment constitutes the majority of wage employment. It is important in developed countries, too, since public sector growth due to welfare states played a significant role in increasing labor force participation of women. Most studies find that the wage differentials between women and men are larger in the private sector (Zweimuller and Winter-Ebmer 1994; Rosenfeld and Kalleberg 1991). Gornick and Jacobs (1997) examine the effects of public employment on gender pay gap in seven industrialized countries. Using micro data from Luxembourg Income Studies (LIS) they find that

female-to-male earnings ratio is significantly higher in the public sector. Panizza and Qiang (2005) find an average gender gap of 10 per cent for the public sector and 16 per cent for the private sector in thirteen Latin American countries. Melly (2005) reports the results of a decomposition analysis for Germany between the years 1984 and 2001. Findings of his study indicate that male wages in the public sector are almost 7 per cent lower than in the private sector. Public sector employees, further, earn an unexplained public sector wage differential of 8.2 per cent. These results point to a lower gender pay gap in public sector. Lucifora and Meurs (2006) calculate the returns of the standard human capital variables for women in public sector in France, Great Briatin, and France between 15-18 per cent, which is much lesser for men (2-5 per cent). The high rate of returns of individual characteristics, too, confirms the idea that women face less discrimination in the public sector.

Labor market studies with a special emphasis on gender focus on family-related variables, too, which are closely associated with gender roles. A number of studies report that female wages, most of the time, are negatively influenced by marriage, and always negatively affected from having children. Wages of mothers are lower than not only relative to men but also relative to women without children. This difference in wages is called the *family gap* (Lundberg and Rose 2000; Waldfogel 1998). Corell et al. (2007) report that mothers earn 7.4 per cent less than non-mothers. Waldfogel (1997) finds a wage penalty of 6 per cent for mothers with one child and 13 per cent for mothers with two or more children between the years 1968 and 1988. Lundberg and Rose (2000) find no evidence in support of a wage decline for mothers who remain attached to the labor force during childrearing years. They report a 5 per cent penalty for women's first birth, but without controlling for experience. Budig and England (2001) calculated a wage penalty of 7 per cent per child of which one-third is explained by the interruption in experience and job

tenure. But almost 5 per cent of the child penalty remains unexplained even after controlling for experience.

Marital status and parenthood are considered as exacerbating the gender wage gap not because of the diminishing effects on female wages but also because of the increasing effects on male wages (Hersch and Stratton 2000; Loh 1996). Both marriage and fatherhood have positive effects on wages of men as they are regarded to be a symbol of conformity to hegemonic masculinity. Bardasi and Taylor (2008) report a 17 per cent marriage premium for men in Britain. Gray (1997) finds a larger marriage wage premium for men whose wives do not work. When children's effect on male wages is considered, the corresponding concept for 'motherhood wage penalty' is the *fatherhood wage premium* (Glauber 2008). Lundberg and Rose (2000) find that the first child causes, on average, a 5-per cent-decrease in mother's wage, while it is associated with a 9-per cent-increase in father's wage. Correll et al. (2007) assert that employers discriminate against women, particularly mothers, both in hiring and promoting processes. Among a group of job applicants, callback ratio for mothers was 3 per cent, while it was 6.5 per cent for non mothers. On the contrary, in the case of men, it increases by parenthood from 2.8 to 5 per cent. The cultural consideration of marriage and the concept of *male-breadwinner* are closely related to these attitudes towards mothers and fathers (Orloff 1996).

3.2.2. Gender Wage Gap in Turkey

In cross-country comparisons of gender wage gap, Turkey is often pointed out for being one of the few countries with a relatively low gap between male and female wages. Using International Labor Organization (ILO) data for the year 1990, Anker (1997) provides a cross-country evaluation of female-to-male wages in non-agricultural sectors and manufacturing. The ratio of

female wages to male wages in Turkey is 84.5 per cent in all non-agricultural sectors and 81.0 per cent in manufacturing, while corresponding numbers for world average are 76.7 per cent and 71.2 per cent.

In a more recent study Oostendrop (2004) examines the effects of globalization on gender wage gap within countries. He uses the data gathered from ILO October Inquiry between the years 1983 and 1999. He compares occupational gender wage gaps which is measured as "one minus the average ratio of the reported female and male wage for a given country and year across occupations" (p.12). Within 64 countries, Turkey is cited as the 7th country with the highest occupational gender wage gap, following Comoros, American Samoa, and Gibraltar, which are classified as 'economies with small populations', as well as the upper middle- and high- income countries such as Japan, Korea, and Brazil.

International comparisons give various results depending on the data, and the methodology used. Thus, studies on the Turkish labor market would supply more reliable information. However, in contrast with the large body of empirical international literature on gender wage gap, there are only a limited number of applied studies with a special emphasis on Turkey. This blank in the empirical literature is mostly because of the limited availability of appropriate wage data in Turkey.

An earlier version of a comprehensive study on the extent and causes of gender wage gap in Turkey is Dayıoğlu and Kasnakoğlu (1997). Using 1987 data from the Household Income and Expenditure Survey, they find a 60 per cent hours-adjusted female-to-male monthly earnings. They use three models to analyze the factors affecting wages. In Model 1 they use Mincer's

(1974) basic earnings function in which the log of earnings (Y) is regressed on schooling (S), experience (E), and experience squared (E^2):

$$ln\,Y = a_0 + a_1 S + a_2 E + a_3 E^2 + \eta\lambda + v_3\,. \quad (3.1)$$

In order to better understand the effects of different education levels on wages, a Model 2 is constructed by using a dummy variable (S_i) for literate people without a diploma, and primary, junior high, and high school, and university graduates, instead of the *schooling* variable. Finally Model 3 is developed as an expanded version of Model 1 with the inclusion of dummy variables for occupation (O), and employment status (T). The final version of the model takes the following form:

$$ln\,Y = a_0 + a_1 S + a_2 E + a_3 E^2 + \sum d_j\,O_j + \sum f_k\,T_k + \eta\lambda + v_3\,. \quad (3.2)$$

Estimating these models both for women and men, authors show that the return of schooling is higher to women than men. Return of schooling to a junior high school-graduate-woman is 8.3 per cent higher than a man with the same education level. This ratio is 45.7 per cent for high school and university graduates. It means that the return of schooling increases for women, as the level of education increases. Nonetheless, they find that men earn more than women at all education levels, and occupations and employment statuses as well. Almost 40.5 per cent of the variation in female earnings can be explained by basic human capital. When occupation and employment status are included, the explanatory power of the model rises to 47.3 per cent.

In the same study authors employ some form of Oaxaca Decomposition to understand the causes of wage gap between women and men. For instance, Model 3 revealed a 37.5 per cent wage gap in favor of men. Using the decomposition method, 36.2 per cent of this gap can be explained by

human capital differences. The remaining 63.8 per cent is due to discrimination in the labor market.

Dayıoğlu and Tunalı (2004) examine whether the gender wage gap is widened from 1988 and 1994. They use micro data from Household Labor Force Survey of 1988 and Household Income Distribution Survey of 1994. They estimate the following wage regression:

$$\bar{w}_{jt} = \hat{\beta}_{jt}\bar{x}_{jt} + \hat{\gamma}_{jt}\bar{\lambda}_{jt}. \quad (3.3)$$

where $\bar{x}_{jt}$ is a vector of relevant subsample means, and $\bar{\lambda}_{jt}$ is a vector of selection terms evaluated at the subsample means. They use education, experience, region, firm size variables; and derive proxy variables for sector, and industry.

They find a widening gender wage gap from 1988 to 1994 which is 2 per cent in 1988 and 16.6 per cent in 1994; both in favor of men. They underline the fact that women's educational attainment considerably improved in this period. So, the education gap between women and men has narrowed. They also provide evidence that women who join the labor force are turning to wage employment in increasing rates. It means that women's labor market attachment increased. However, they report that these two human capital variables work in favor of men in both years. In 1988 the difference was rather slight but the variables work significantly in favor of men in 1994 when women have higher levels of education and longer years of experience.

In line with the result of the wage regression, Oaxaca decompotition gives the result that the discrimination component of the wage gap rised from 12-18 per cent in 1988 to 24-27 per cent in 1994.

Tansel (2005) analyzes the wage differentials in the public and private sectors by using individual-level data from the 1994 Household Expenditure Survey. She distinguishes among non-participation, public administration work, state-owned enterprises (SOEs) work, covered private sector work, and other employment. She starts the analysis from a traditional human capital model and develops a wage equation in which log wages are explained by human capital characteristics, and locational factors indicating labor-market, and cost of living differences. The following equation is used:

$$ln\, W_j = \beta_{oj} + \beta_j X_j + U_j. \quad (3.4)$$

where W denotes wages, X is a vector of characteristics of workers. j stands for public administration, SOE, or covered private sector.

The results show that public administration wages are higher than private sector wages for women with the exception of university level education. At different levels of education, public administration and SOE wages are higher than private sector wages for both women and men. Similarly, at all levels of experience wages are higher in public administration than in private sector. The study finds a female-to-male wage ratio of 77 per cent in private sector in favor of men, while the ratio decreases almost to 84 per cent in state-owned enterprises.

Through conducting the Oaxaca decomposition for public administration, state-owned enterprises, and the private sector workers separately, she finds that In the case of public administration versus private sector differential, the unexplained differential for women is 0.315 (out of a 0.895 total wage differential); and in the case of state-owned enterprises versus private sector differential, it is 0.457 (out of a 0.751 total differential).

İlkkaracan and Selim (2007) also provide an analysis of gender gap in wages by using firm-level data from Employment and Wage Structure Survey for the year 1994. Using 2003 Household Labor Survey they calculate the crude wage gap for five sectors. They find that the female-to-male wage ratio is the worst in agriculture with 43 per cent. In non-agricultural sectors, the lowest ratio is calculated in manufacturing with a 70 per cent female-to-male wage ratio.

In order to better understand the factors causing gender wage gap, they first develop a basic human capital model-based regression equation in which the natural logarithm of monthly wages (W) is regressed on schooling (S_i), experience (E), experience squared (E^2), job tenure (J), gender (M), and region (R_s). Then, they expand the model by adding new variables, namely coverage of the workplace under a collective labor bargaining (C), and dummies for occupation (O_j), industry (I_k), firm-size (F_m and F_L), and private sector (P). The model is developed in the following form:

$$lnW = \beta_0 + \sum_{i=1}^{4} \beta_i S_i + \beta_5 E + \beta_6 E^2 + \beta_7 J + \beta_8 M + \sum_{s=9}^{14} \beta_s R_s$$

$$+ \beta_{15} C + \beta_{16} P + \beta_{17} F_m + \beta_{18} F_L + \sum_{j=19}^{27} \beta_j O_j + \sum_{k=28}^{38} \beta_k I_k + \text{u.} \qquad (3.5)$$

From the basic model, they find a statistically significant coefficient on the male dummy which is 0.16. Relying on this number they find that men earn 17.4 per cent more than women controlling for education, experience, job tenure, and regional factors. When other factors are taken into account the coefficient of the male dummy is reduced, but there is still a 10 per cent pay advantage of male workers continue to persist. They point to three figures for female-to-male wage ratio. First is the unadjusted, or the observable, ratio which is 70.6 per cent. The ratio

increases to 85.2 when controlled for human capital variables and to 91.2 when other variables are all considered.

Following the Oaxaca decomposition they find that the unexplained part of the gender wage gap is 43 per cent when controlled only for human capital variables. After including all variables, the explanatory power of the model increases, but there still remains a 22 per cent unexplained portion.

Another study by Cudeville and Gürbüzer (2007) investigates the gender wage gap in the Turkish labor market. Using the data obtained from the 2003 Household Budget Survey conducted by the Turkish Institute of Statistics, a wide range of variables are included in the model. The Mincerian human capital variables are incorporated in a vector (X) in the equation which is developed as follows:

$$ln\, W = \beta X' + u. \tag{3.6}$$

W denotes the monthly wage, and u is the error term. X is augmented with various explanatory variables related to working time, job, firm and activity sector, and geographic localization.

The results indicate that components of human capital have a positive and significant effect on wages for both sexes, but the returns to education and experience are higher for men at all levels. Part-time workers earn lower wages, especially if they are women. The gender wage gap is the highest in industry, following agriculture. It is also higher for not-unionized and not-insured workers with respect to unionized and insured workers.

In order to find out whether these gender differences in earnings are explained by human capital characteristics, or are unexplained which reflects the discrimination practices, the authors use

four decomposition methods, namely Oaxaca- Blinder both for women and men, Reimers decomposition, and Oaxaca-Ransom decomposition. Each of these methods refers to a peculiar vision of discrimination. The results indicate a 33.4 per cent gender wage gap (34.2 per cent without selectivity correction) in favor of men; of which the portion explained by human capital endowments ranges between 31.8 and 47.0 per cent; and discrimination component ranges between 65.7 and 50.5; with a 2.5 per cent selectivity correction.

The limited number of empirical studies focusing on Turkey use similar methods to analyze the extent and causes of the gender wage gap. Human capital variables are indicated as important components of wage levels, but with reasonably higher returns for men. Decomposing the wage gap, all studies report a considerable portion of this gap to be unexplained. Accordingly, all studies point to discrimination against women in the Turkish labor market. This result is consistent with the theories of feminist economics, political economy, and institutionalist literature, rather than the human capital theory.

4. ANALYSIS OF THE GENDER WAGE GAP IN TURKEY

This section provides an empirical analysis of gender wage differentials in the labor market of Turkey. The analysis focuses on the wage decomposition for the year 2006. The methodology used in this chapter serves to investigate how different variables affect the wages of both sexes and to what extent these observable characteristics explain the gender wage differentials.

4.1. Data

Statistics used in this analysis is based on the "Structure of Earnings Survey 2006" conducted by Turkish Statistical Institute (TURKSTAT). This is a newly introduced survey and conducted for the first time in 2007, taking November 2006 as the reference point. The survey differs from other earnings inquiries by TURKSTAT in its context of providing both firm- and employee-level data.

The survey covers a random sample of workplaces in all seven geographical regions of Turkey. Sectors of C-K and M-O of the International Standards of Economic Activities in the European Union (NACE Rev.1.1) are covered in the survey. Workplace sample is drawn from among those with 10 or more workers.[14] Employees from the workplaces are selected randomly according to

[14] İlkkaracan and Selim (2007) notes that "Given the sample's bias in favor of formal sector workplaces, the gender pay gap inequality that it exhibits may be expected to be lower than for the overall labor market" (p. 570).

the total number of workers in the workplaces. A total of 308,214 full-time workers from 18,232 workplaces are surveyed through their employers.

Firm-level data drawn from this survey provides information on industry, total number of workers, and whether the wage determination process of the firm is subject to a collective bargaining. Employee-level data includes information on characteristics of workers such as sex, age, occupation, level of education, number of years on the job, all wage and non-wage payments, and whether the employee is employed part-time or full-time.

Table 4.1 displays the basic characteristics of the workers in the sample. 78.1 per cent of the sample is male. Average hourly wage is 4.64 Turkish liras for women, and is 4.59 liras for men. This accounts for a 101.1 per cent female-to-male wage ratio which indicates a wage ratio slightly in favor of women. In line with this wage rate, the log difference gender wage gap is found –0.010.

Gender wage gap we find is quite different from the gap reported by studies mentioned in Section 3.2.2. This difference in findings is predicted to be due to the structure of our data set[15]. The Structure of Earnings Survey is conducted through workplaces, while most of other studies base on the Household Income Surveys or Household Expenditure Surveys. Studying with a dataset that is based on the information gathered via employers has a crucial handicap: It is strictly restricted to the formal employment relations. However, as asserted in section 2.2.1, informal employment is one of the most important problems of Turkish female labor market. Majority of low-educated women are employed without social security coverage, and they are mostly unpaid

[15] Table A.1 in Appendix A, provides a comparison of the current empirical literature in Turkey. The dataset used for analyses, and variables of the empirical models, and the findings relying on these models are briefly displayed in order to give an idea about the distinct findings.

or underpaid. Devoting the dataset only to formal sector workers leads the large female population working informally to be ignored. Another reason of the wage gap in favor of women is probably the allocation of women between occupations and industries. Our dataset compromises of a representative sample of 'professionals', 'technicians and associate professionals', and 'clerks'. These occupational groups, which employ mostly high-education women, constitute 60 per cent of our sample as opposed to 26.9 of the Turkish female labor market. Data for the year 2006 reveals that 35. 0 per cent of women are 'skilled agricultural and fishery workers' and almost half of women are employed in 'manufacturing' (Table 2.2). The corresponding numbers are 0.3 and 25.0 in our sample (Table 4.2). Given the fact that gender wage gap varies substantially across occupations and industries, the underrepresentation, and overrepresentation as well, of the critical occupations and industries is expected to lead to a biased gender wage gap in favor of women.

Table 4.1 Descriptive Statistics

Variable	Total	Men	Women
Average Hourly Wage[a]	4.60	4.59	4.64
ln of Average Hourly Wage	1.5258	1.5235	1.5339
Sex (per cent)	—	78.1	21.9
Education (per cent)			
Primary School and Below	26.3	29.7	14.1
Secondary School	14.1	15.6	8.8
High School	37.2	36.4	40.0
College / University	22.4	18.3	37.1
Experience (average number of years)	17.1	18.2	13.4
Experience^2 (experience^2 / 100)	3.9	4.3	2.7
Job Tenure (average number of years)	3.7	3.8	3.2
Collective Labor Agreement (per cent)	12.3	13.3	8.6
Firm Size (per cent)			
Small-size Firms	43.2	43.8	41.0
Medium-size Firms	22.9	22.9	23.1
Large-size Firms	33.9	33.3	35.9
Employment Type (per cent)			
Part-time	1.3	1.0	2.4
Full-time	98.7	99.0	97.6
Managerial Responsibility (per cent)	14.6	14.7	14.4

Note: [a] Geometric mean of hourly wage.

Table 4.1 shows that there is a remarkable gender disparity in human capital endowments. Women are strikingly more educated than men. The difference in educational attainment is particularly pronounced at lower levels of education in which almost half of men are crowded. However, women with higher levels of education constitute 77 per cent of our sample, while the corresponding number is 54.7 for men. This substantially high degree of educated women verifies the common belief in the strong positive correlation between women's labor force participation and education level.

With regard to experience, men are far superior to women. The number of average years of experience for men is 18.2, while it is 13.4 years for women. Men have longer years of job tenure, too. This gender differences in human capital endowments seem to be in line with the general social trends of Turkey. Women tend to have lower years of experience and tenure due to the traditional sexual division of labor at home which is still the predominant determinant factor of domestic relations.

Table 4.1 also shows the statistics on work-related variables. Accordingly, the vast majority of both women and men in our sample work in small-size firms. Part-time employment is not very common in Turkey in general. Yet it is still higher for women. Consistent with the expectations, rate of unionization is very low. Only 12.3 per cent of the total sample is covered by collective labor bargaining. It is even lower for women with 8.6 per cent coverage. With respect to managerial responsibility there is no difference between women and men. 14 per cent of both sexes in our sample hold positions with managerial responsibility.

Occupational and industrial distribution by sex is displayed in Table 4.2. The majority of women appear to be concentrated in 'clerical works' with 25 per cent, while the corresponding number is

Table 4.2 Occupational and Industrial Segregation by Sex

	Total (per cent)	Men (m_i) (per cent)	Women (f_i) (per cent)	Difference (m_i-f_i)
OCCUPATION				
Legislators, Senior Officials, and Managers	5.5	5.5	5.6	-0.1
Professionals	8.4	6.4	15.4	-9.0
Technicians and Associate Professionals	15.6	14.3	19.9	-5.6
Clerks	11.5	8.0	24.2	-16.2
Service Workers, and Shop and Market Sales Workers	12.5	12.9	11.0	1.9
Skilled Agricultural and Fishery Workers	0.4	0.4	0.3	0.1
Craft and Related Trade Workers	18.3	21.4	7.0	14.5
Plant and Machine Operators and Assemblers	11.7	14.0	3.5	10.4
Elementary Occupations	16.2	17.1	13.1	4.0
Occupational Segregation Index				***30.9***
INDUSTRY				
Mining and Quarrying	2.5	2.9	1.0	1.9
Manufacturing	34.3	36.9	25.2	11.7
- Manufacture of Food Products, Beverages and Tobacco	4.0	4.3	3.0	1.3
- Manufacture of Textile and Textile Products	5.1	4.0	9.1	-5.1
- Manufacture of Leather and Leather Products	0.43	0.5	0.2	0.3
- Manufacture of Wood and Wood Products	1.0	1.2	0.3	1.0
- Manufacture of Pulp, Paper and Paper Products; Publishing and Printing	1.9	2.0	1.7	0.3
- Manufacture of Coke, Refined Petroleum Products and Nuclear Fuel	0.1	0.1	0.1	0.1
- Manufacture of Chemicals, Chemical Products and Man-made Fibers	1.3	1.4	1.2	0.1
- Manufacture aof Rubber and Plastic Products	2.0	2.2	1.1	1.1
- Manufacture of Other Non-metalic Mineral Products	3.2	3.6	1.8	1.8
- Manufacture of Basic Metals and Fabricated Metal Products	4.7	5.6	1.4	4.2
- Manufacture of Machinery and Equipment n.e.c	2.9	3.4	1.0	2.4
- Manufacture of Electrical and Optical Equipment	2.0	2.0	2.0	0.0
- Manufacture of Transport Equipment	3.5	4.2	1.2	3.0
- Manufacturing n.e.c	2.2	2.5	1.2	1.3
Electricity, Gas, and Water Supply	2.7	3.2	1.3	1.9
Construction	7.5	8.5	3.8	4.7

Table 4.2 Continued				
Wholesale and retail trade; Repair of Motor Vehicles, motorcycles, and personal and household goods	18.0	17.2	20.9	-3.7
Hotels and Restaurants	7.2	7.4	6.5	0.9
Transport, Storage and Communication	7.5	7.8	6.5	1.3
Financial Intermediation	4.2	2.8	9.1	-6.3
Real Estate, Renting, and Business Activities	7.9	7.5	9.1	-1.6
Education	3.7	2.2	9.0	-6.8
Health and Social Work	2.1	1.2	5.1	-3.9
Other Community, Social and Personal Service Activities	2.5	2.5	2.6	-0.1
Industrial Segregation Index				***22.4***

less than one-tenth for men. 'Technicians and associate professionals' and 'professionals' are second and third occupational categories following 'clerks' in which women are concentrated the most. In 'craft and related trade workers' and 'elementary occupations' male workers dominate. The gender-based rate of concentration is almost the same in other categories.

As for industrial distribution, one-fourth of women in our sample are concentrated in 'manufacturing'. Within subcategories of manufacturing only in textiles women have a remarkable concentration; almost 10 per cent of all women are employed in textiles. Second industrial category in which female workers are crowded is 'wholesale and retail trade; repair of motor vehicles, motorcycles, and personal and household goods'. With respect to men, women appear to be heavily concentrated in 'financial intermediation', 'education', and 'health and social work'. Yet women have a more even distribution across the rest nine industries.

4.2. Methodology

The analysis of gender wage gap in this study consists of two steps. First, a regular wage regression is estimated, and then Oaxaca decomposition method is used. In the first step, we aim to examine whether the observable human capital endowments and work-related characteristics

reflect wage differences between women and men. In the second step, the intention is to explore whether the gender wage gap is explained by differences in human capital endowments or by differences in the values (price or remuneration) of characteristics of both sexes assigned in the labor market[16]. This latter part of the second step is mostly interpreted as the indicator of wage discrimination against women.

The wage regression used in this analysis is derived from the human capital model formed by Mincer (1974). We start the analysis with a standard human capital-based wage regression where wage is a function of education and experience. The model takes the following form:

$$ln\,W = \beta_0 + \beta_1 S + \beta_2 E + \beta_3 E^2 + \beta_4 J + \beta_5 G + u. \quad (4.1)$$

In this Model 1, *ln W*, the natural logarithm of wages, stands for hourly wages which is calculated through total annual wages and annual work hours. Total annual wages consists of annual wage payments, regular payments, irregular payments, and payments in-kind. Total work hours are calculated as annual work days divided by 7 and multiplied by weekly hours. *S* is the total years of education. *E* stands for experience (along with experience squared $-E^2$), and *J* stands for job tenure. *G* is a gender dummy for males which points to any gender wage differentials that are not attributable to differences in human capital endowments or any job-related characteristics. Information related to work experience is not available in our dataset. So, following Mincer (1974), we define a proxy for actual work experience which is calculated as age minus the number of years of schooling minus 6, the age of entry into school in Turkey. This variable measures the *potential experience* which is referred to as a reasonable indicator of 'actual experience' when the latter is not known.

[16] Cudeville and Gürbüzer (2007) identifies the first effect as the *endowment effect,* and the *remuneration effect* the latter one (p.13).

The coefficient on *S* shows the returns to total years of education. In order to see the returns to different levels of education, we derive a Model 2 (4.2) by including S_i to Model 1, as a dummy variable representing three different levels of educational attainment (İlkkaracan and Selim 2007):

$$ln\,W = \beta_0 + \sum_{i=1}^{3} \beta_i\, S_i \; + \beta_4 E + \; \beta_5 E^2 + \beta_6 J + \beta_7 G + u. \tag{4.2}$$

Besides the basic human capital variables, we augment the model by including a series of other variables. Unlike the individualistic variables of human capital model, these new variables are mostly related to job characteristics. With the addition of these variables the expanded model takes the following form:

$$ln\,W = \beta_0 + \sum_{i=1}^{3} \beta_i\, S_i \; + \beta_4 E + \; \beta_5 E^2 + \beta_6 J + \beta_7 G + \beta_8 C$$

$$+ \sum_{s=9}^{10} \beta_s\, F_s + \sum_{j=11}^{18} \beta_j\, O_j + \sum_{k=19}^{29} \beta_k\, I_k \; + \beta_{30} P + \beta_{31} M + \text{u}. \tag{4.3}$$

In this new regression *C* stands for coverage of the workplace under collective bargaining. F_s is a dummy variable for the firm-size. O_j stands for eight occupational categories; and I_k is a dummy for eleven industries. *P* represents part-time work and *M* is a dummy for holding managerial position.

First, we estimate Models 1 and 2 for the whole sample and, for women and men separately. The aim of estimating Model 1 is to examine the returns to total years of education. Model 2, estimated for the whole sample, provides the coefficient on the gender dummy. A statistically

significant positive coefficient indicates gender wage discrimination in favor of men which is the main focus of this study to find out. Our purpose in estimating Model 2 for women and men separately is to discover the returns to different levels of educational attainment. Furthermore, estimating these models separately serves also to underlie the reasons of wage differences between women and men. It helps to explore whether the female-to-male wage differentials are explained by productivity differences due to observable human capital endowments or by discriminatory attitude in the labor market against women.

Second, we estimate the Model 3 separately for women and men with the aim of examining if the coefficients on the variables differ from those in the basic model. The expanded model also entails coefficients on the occupation and industry dummies. So it provides information about to what extent human capital-related and work-related variables explain wage differentials. Moreover, as the model gives coefficients on the occupation and industry dummies, measuring the occupational and industrial distribution of women and men is remarkable in understanding the level of occupational and industrial gender-based segregation. With this aim, Duncan & Duncan segregation index (*SI*) is computed as follows;

$$SI = 0.5 \sum_{i=1}^{n} |m_i - f_i|, \tag{4.4}$$

In this equation, m_i and f_i represent the percentage of female and male workers in occupation and industry i, respectively.

In the second step of the analysis, we used Oaxaca-Blinder decomposition technique to examine the relative effects of human capital endowments and labor market discrimination on gender

wage differentials. Following Oaxaca (1973), the average wage gap between women and men is usually written as the following equation:

$$ln(\bar{W}_m / \bar{W}_f) = \underbrace{\hat{\beta}_m(\bar{X}_m - \bar{X}_f)}_{endowments} + \underbrace{\bar{X}'_f(\hat{\beta}_m - \hat{\beta}_f)}_{discrimination} \quad (4.5)$$

In the equation $\bar{W}$ stands for the geometric mean of wages derived by the earnings equation (4.2) and (4.3). $\bar{X}$ represents the average qualifications of women and men, and $\hat{\beta}$ is the estimated returns on these qualifications. The indices *f* and *m* denote the male and female variables respectively.

The first term on the right-hand side of equation (4.5) shows the part of wage differentials between women and men explained by observable human capital endowments and other non-productivity related variables. Hence, this part of the equation is called the *endowments component*. The second part, on the other hand, represents the returns on average qualifications. These returns are determined in the labor market and can not be explained by gender differences in human capital endowments or any other firm-level variables. Therefore, this second part of (4.5) is called the *discrimination component*.

I applied this decomposition method to both the simple and expanded models. The aim of this application is to explore how the inclusion of the non-productivity related variables (collective bargaining, firm size, occupation, industry, employment type and managerial responsibility) affects the unexplained part of the gender wage gap.

4.3. Findings[17]

Table 4.3 shows the results of wage regressions for Model 1 estimated for the whole sample, and for men and women separately. Model 1 explains 32.4 per cent of the change in female wages and 38.0 per cent of the change in male wages. Returns to human capital variables, namely education and experience, are higher for women than men. For women, return to education is 8.5 per cent, and return to experience is 3.0 per cent. The corresponding numbers are 8.0 and 2.3 per cent for men. The return to job tenure, however, is higher for men.

Table 4.3 Human Capital Based Wage Regressions (Model 1)

Variable	Total	Women	Men
Constant	0.23634	0.18240	0.29578
	(0.0118)	(0.0238)	(0.0128)
Education	0.08104	0.08516	0.08001
	(0.0007)	(0.0015)	(0.0007)
Experience	0.02412	0.03070	0.02390
	(0.0008)	(0.0016)	(0.0009)
Experience^2	-0.03616	-0.05886	-0.03457
	(0.0017)	(0.0043)	(0.0020)
Job Tenure	0.04618	0.03993	0.04730
	(0.0004)	(0.0010)	(0.0005)
Sex	0.0568	*dropped*	*dropped*
	(0.0050)		
Adjusted R^2	*0.367*	*0.324*	*0.380*
Number of Observations	*65,395*	*14,250*	*51,145*

Note: All coefficients are statistically significant at 0.05 significance level.

Model 2 shows the returns to different levels of education (Table 4.4). It is higher for women at lower levels of education. At college/university level men enjoy higher returns. In the first column of Table 4.4, the coefficient on the gender dummy shows the returns to being men by taking women as the base category. According to the basic model, of the two workers with same

[17] Stata analyses are given in Appendix B.

level of education, work experience, and tenure, the male worker enjoys approximately 7.4 per cent[18] higher returns than the female one.

Table 4.4 Human Capital Based Wage Regressions (Model 2)

Variable	Total	Women	Men
Constant	0.75697	0.75261	0.82601
	(0.0095)	(0.0198)	(0.0104)
Education			
Secondary School	0.07644	0.11407	0.06969
	(0.0067)	(0.0192)	(0.0071)
High School	0.28551	0.29705	0.27862
	(0.0058)	(0.0157)	(0.0063)
College/ University	0.80642	0.76310	0.82544
	(0.0067)	(0.0165)	(0.0074)
Experience	0.02337	0.03109	0.02258
	(0.0008)	(0.0016)	(0.0009)
Experience^2	-0.04133	-0.06787	-0.03857
	(0.0017)	(0.0042)	(0.0019)
Job Tenure	0.04768	0.04149	0.04889
	(0.0004)	(0.0010)	(0.0005)
Sex	0.07109	*dropped*	*dropped*
	(0.0049)		
Adjusted R^2	*0.388*	*0.337*	*0.404*
Number of Observations	*65,395*	*14,250*	*51,145*

Note: All coefficients are statistically significant at 0.05 significance level.

Table 4.5 shows the results for the expanded model. According to Model 3, there is a substantial difference between the male and female coefficients on most variables. Controlling for different levels of education, returns are found to be higher for women in all categories except college/university graduates. Distinction between returns is more significant at lower levels of education. At university level, returns are in favor of men. A man with a college degree earns higher than his female counterpart with 12 per cent higher rate of returns.

[18] Returns to dummy variables are interpreted by using the anti-log formula: $(e^{\beta} - 1) * 100$ (Gujarati 2009).

Table 4.5 Wage Regressions for Expanded Model (Model 3)

Variable	Total	Men	Women
Constant	0.98342*	1.03935*	1.12288*
	(0.0170)	(0.0185)	(0.0462)
Education			
Secondary School	0.04359*	0.03970*	0.06388*
	(0.0058)	(0.0061)	(0.0162)
High School	0.16120*	0.15225*	0.17246*
	(0.0053)	(0.0057)	(0.0146)
College/ University	0.51650*	0.53949*	0.45996*
	(0.0073)	(0.0083)	(0.0172)
Experience	0.02036*	0.01888*	0.02770*
	(0.0006)	(0.0007)	(0.0014)
Experience^2	-0.03442*	-0.03063*	-0.05614*
	(0.0015)	(0.0017)	(0.0036)
Job Tenure	0.02719*	0.02780*	0.02384*
	(0.0004)	(0.0004)	(0.0009)
Sex	0.06999*	*dropped*	*dropped*
	(0.0044)		
Collective Bargaining	0.27234*	0.27810*	0.22420*
	(0.0059)	(0.0065)	(0.0140)
Firm Size			
Medium Firms	0.21377*	0.20819*	0.23600*
	(0.0044)	(0.0049)	(0.0095)
Large Firms	0.41475*	0.42445*	0.38459*
	(0.0043)	(0.0049)	(0.0090)
Occupation			
Professionals	-0.07347*	-0.06549*	-0.08173*
	(0.0106)	(0.0123)	(0.0214)
Technicians and Associate Professionals	-0.20380*	-0.19885*	-0.20800*
	(0.0097)	(0.0110)	(0.0207)
Clerks	-0.29589*	-0.30205*	-0.28499*
	(0.0102)	(0.0120)	(0.0205)
Service Workers, and Shop and Market Sales Workers	-0.29150*	-0.30025*	-0.23836*
	(0.0106)	(0.0120)	(0.0229)
Skilled Agricultural and Fishery Workers	-0.29374*	-0.31171*	-0.16912*
	(0.0285)	(0.0310)	(0.0708)
Craft and Related Trade Workers	-0.29065*	-0.28140*	-0.32732*
	(0.0105)	(0.0116)	(0.0256)

Table 4.5 Continued			
Plant and Machine Operators and Assemblers	-0.30415*	-0.29369*	-0.33285*
	(0.0109)	(0.0121)	(0.0290)
Elementary Occupations	-0.34516*	-0.33629*	-0.36196*
	(0.0106)	(0.0119)	(0.0235)
Industry			
Manufacturing	-0.00861	0.01039	-0.17723*
	(0.0110)	(0.0115)	(0.0371)
Electricity, Gas, and Water Supply	0.31367*	0.32634*	0.15773*
	(0.0148)	(0.0154)	(0.0482)
Construction	-0.02123	0.00252	-0.22877*
	(0.0124)	(0.0129)	(0.0407)
Wholesale and retail trade; Repair of Motor Vehicles, motorcycles, and personal and household goods	-0.02908*	-0.00522	-0.21129*
	(0.0116)	(0.0122)	(0.0373)
Hotels and Restaurants	-0.09555*	-0.06754*	-0.27243*
	(0.0126)	(0.0134)	(0.0391)
Transport, Storage and Communication	0.02263	0.01905	-0.04137
	(0.0123)	(0.0131)	(0.0388)
Financial Intermediation	0.37208*	0.37410*	0.26091*
	(0.0138)	(0.0161)	(0.0382)
Real Estate, Renting, and Business Activities	-0.01874	-0.01208	-0.14379*
	(0.0124)	(0.0132)	(0.0383)
Education	-0.20121*	-0.22693*	-0.30725*
	(0.0145)	(0.0175)	(0.0386)
Health and Social Work	0.01869	0.04981	-0.13580*
	(0.0160)	(0.0205)	(0.0396)
Other Community, Social and Personal Service Activities	0.15838*	0.17952*	-0.01101
	(0.0150)	(0.0162)	(0.0425)
Employment Type	0.60861*	0.45664*	0.83179*
	(0.0152)	(0.0194)	(0.0242)
Managerial Responsibility	0.06235*	0.06366*	0.05383*
	(0.0061)	(0.0068)	(0.0133)
Adjusted R^2	*0.554*	*0.563*	*0.536*
Number of Observations	*65,395*	*51,145*	*14,250*

Notes: 1- Dependent variable is the natural logarithm of the average monthly wage payments, regular payments, irregular payments, and payments in kind.
2- The numbers in parentheses are standard errors.
3- The numbers with an * are statistically significant.

4- The omitted category is taken as ‘primary school graduates’ for education dummies; ‘small-size firms’ for firm size dummies; ‘legislators, senior officials, and managers’ for
occupation dummies; and ‘mining and quarrying’ for industry dummies.

significant at lower levels of education. At university level, returns are in favor of men. A man with a college degree earns higher than his female counterpart with 12 per cent higher rate of returns.

These findings of us are in line with the results of Dayıoğlu and Kasnakoğlu 1997, but are quite different from other prominent studies on Turkey (Section 3.2.2). This variation in results might be attributed to using a different dataset with different variables.

Return to experience is found to be higher for women. One more year of work increases female wages by 2.8 per cent as opposed to 1.9 per cent for men. The negative coefficient on E^2 indicates the decreasing rate of return as employees get older. This decreasing rate of return to experience is higher for women. We also find that the return to job tenure is virtually same for both sexes. This is quite an unexpected result. Because, job tenure is an indicator of continuous job attachment of women in the same workplace. Relying on the human capital theory, women’s longer years of tenure are expected to be rewarded. Our inverse finding might be considered due to our data. In our sample, the number of average years of job tenure is 3.2 for women and 3.8 for men. The only study on Turkey with job tenure as an independent variable, İlkkaracan and Selim (2007), use a sample with substantially different average years of tenure; 4.7 years for women and 7.2 for men.

There is a remarkable difference between the returns to collective bargaining. A female worker whose workplace is covered under a collective bargaining earns 25.1 per cent more than her counterpart without such coverage, as opposed to 32.1 per cent for men. We also find significant

returns to firm size both for women and men. Women working in medium-size firms have higher return than men. A woman working in a medium-size firm earns 26.6 per cent more than a woman working in a small-scale firm. The corresponding number is 23.1 per cent for men. In large-size firms men enjoy substantially higher returns with 52.9 per cent with respect to 46.9 per cent for women.

With regards to occupational categories, men have higher returns than women in most occupations. Yet amongst 'clerks', 'service workers' and 'skilled agricultural and fishery workers' women earn more than men. The highest returns are enjoyed by both sexes in 'professional' occupations. The lowest returns are found in 'elementary occupations' for both women and men.

As for industrial categories 'education' has the lowest returns for both sexes. Similarly, both sexes enjoy the highest returns in 'financial intermediation'. Taken 'mining&quarrying' as the omitted category, female wage regression has a statistically significant and negative coefficient on manufacturing. This indicates that working in manufacturing industry leads to substantially lower levels of female wages.

The occupational and industrial segregation is calculated by Duncan&Duncan segregation index (Equation 4.4 in Section 4.2). The occupational segregation index, which equals to 30.9, implies that almost one-third of female and male workers would have to trade places horizontally across occupations to have a perfectly equal distribution. Similarly, the Duncan&Duncan industrial segregation index of 22.4 implies that more than one-fourth of all female and male workers have to trade places across industrial categories in order to have an equal industrial distribution (Table 4.2).

Table 4.6 shows the results of the Oaxaca decomposition analysis with respect to basic model (Model 2). We find a gender wage gap of -0.010. According to this model 'education' is the most important contributor of the gender wage gap. Its total effect is 0.149 in favor of women. The major portion of this positive effect is due to higher levels of educational attainment of women in the labor market. 'Experience' and 'tenure' have negative effects on gender wage gap. Using the human capital theory-based simple model, we find that 53.2 per cent of the wage differential between men and women is due to the differences in human capital endowments, namely education levels, experience and job tenure. 46.8 per cent of the wage gap cannot be explained by the differences in returns to these observable variables. This unexplained portion is attributed to gender based discrimination in the labor market.

Table 4.6 Oaxaca Decomposition with Basic Model

Characteristics	Difference in Human Capital $B_m*(X_m-X_f)$	Discrimination $X_f*(B_m-B_f)$	Total Difference
Education	-0.161	0.012	-0.149
Experience	0.048	-0.035	0.012
Job Tenure	0.029	0.024	0.053
Sub-total	-0.084	0.001	-0.083
Constant Difference		0.073	0.073
Total	**-0.084**	**0.074**	**-0.010**
	(53.2 per cent)	**(46.8 per cent)**	

Inclusion of new independent variables is expected to increase the explanatory power of the model. However, an interesting result of our model is that the unexplained portion does not shrink even when the job-level variables are included in the model. Table 4.7 shows the Oaxaca decomposition analysis using the expanded model. A 46.5 per cent of unexplained portion of the wage gap still persists.

Table 4.7 Oaxaca Decomposition with Expanded Model

Characteristics	Difference in Human Capital, Occupational and Industrial Affiliation $B_m*(X_m-X_f)$	Discrimination $X_f*(B_m-B_f)$	Total Difference
Education	-0.105	0.020	-0.085
Experience	0.042	-0.050	-0.007
Job Tenure	0.017	0.013	0.030
Industry	-0.003	0.162	0.160
Occupation	-0.025	0.001	-0.024
Firm Size	-0.011	0.008	-0.003
Collective Bargaining	0.013	0.005	0.018
Part-time Work	-0.006	-0.009	-0.015
Managerial Resp.	0.001	0.001	0.002
Sub-total	-0.077	0.151	0.074
Constant Difference		-0.084	-0.084
Total	**-0.077**	**0.067**	**-0.010**
	(53.5 per cent)	**(46.5 per cent)**	

The negative constant in the expanded model shows that women have an advantage when they join the labor market. All other negative numbers in the decomposition analysis contribute to the wage gap in favor of women. The most important contributor of the gender wage gap in the expanded model is 'industry'. It has a reasonable effect against women which can be attributed to the heavily concentration of women in certain industries –mostly in female-dominated industries. Discrimination due to industrial allocation of women can be seen in the second column of Table 4.7. Almost all of the total effect of industry is due to discrimination in the labor market. Occupation, on the other hand, has a positive contribution, which can be predicted due to the concentration of women in the sample in high-paid occupations. 60 per cent of women in our sample are professionals, technicians and associate professionals, and also clerks which require higher education and higher skills. Consistent with this prediction, 0.025 of the total effect of occupation is due to differences in human capital endowments.

Total effect of ‘education’ is substantially decreased in the expanded model-based decomposition. Yet it still has a reasonable contribution in favor of women. This is followed by job tenure and collective bargaining. Employment type, experience, firm-size, and managerial position follow in declining order of importance.

5. CONCLUSION

The purpose of this study was to analyze the gender wage gap in the labor market of Turkey. Unlike the vast majority of empirical studies in the literature, we failed to find a significant gender wage gap. Using both individual level and work-related data for 2006, we found a wage gap that is 1 per cent in favor of women.

Education *per se* explains most of the gender wage gap in the basic model. Women in the labor market have substantially higher levels of education. Further, in contrast with the findings of former studies, education is found to have higher returns for women at most educational levels. Therefore, it is the most important contributor of the wage gap due to both the higher human capital endowment of women and higher returns assigned in the labor market. Other human capital variables, namely experience and tenure, affect wage gap in favor of men. But their contribution is less than that of education.

According to the results of the decomposition analysis with respect to the expanded model, the total effect of education decreases when other job-related variables included into the model. Industry has the largest effect in favor of men. This is partly because of the uneven allocation of women into lower-paying industries which are not covered by collective wage bargaining such as manufacturing, and wholesale and trade. Contrary to industry, occupation has a positive

contribution in gender wage gap. This can be attributed to the overrepresentation of women in our sample in high-paying jobs.

As for the relative importance of other variables job tenure seem to be the leading factor. It has a negative effect on gender wage gap. This is in line with the commonly emphasized argument on the role of traditional division of labor at home. Intermittent work life of women due to child bearing leads to their lower wages.

In contrast with job tenure, experience has a positive effect in gender wage gap. The relatively higher returns of experience for women indicate that if women are able to accumulate experience, they would be able to enjoy higher wages. Yet, even controlling for all other variables affecting wage determination, we still find a 46.5 per cent of an 'unexplained' portion. However, the positive effect of human capital endowments is so high that it could compensate the negative effect of discrimination. So we find a 1 per cent wage gap in favor of women. We believe that this result does not reflect the real situation of Turkish women perfectly: It is probably biased in favor of women due to several reasons mentioned in Section 4.1. Yet, we still believe that there is an improvement in the wage gap in recent years. This is why our findings are quite different than those of the other studies on Turkey which mostly use the data for 1994.

Due to the unavailability of the data related to region and public-private sector, we could not include these variables into the analysis. Using the available data, our results point to the importance of human capital variables, education in particular, for women in Turkish labor market. So, women's education is very important to have a more egalitarian wage structure between Turkish women and men. Besides education, gender-specific policies should be improved to enable women to accumulate experience and job tenure on a continuous basis.

Furthermore, despite the fact that female-to-male wage rates are almost equal in overall level, it substantially varies across occupational and industrial categories. Therefore, women should be provided equal treatment starting from the recruitment process. Once they are given the opportunity to accumulate human capital, and enter traditionally male's occupations or industries, they would be able to enjoy more equal pay levels.

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APPENDIX A

Table A.1 Comparison of the Turkish Empirical Literature on Gender Wage Gap

Study	Data	Variables	Findings
Dayıoğlu and Kasnakoğlu (1997)	Household Income and Expenditure Survey 1987 (TURKSTAT)	Educational Attainment, Experience, Experience^2, Geographic region, Occupation, Employment Status	37.5 per cent gender wage gap in favor of men; of which 36.2 per cent is explained by differences in human capital endowments, and 63.8 is the unexplained portion.
Dayıoğlu and Tunalı (2004)	Household Labor Force Survey 1988 and Household Income Distribution Survey 1994 (TURKSTAT)	Experience, Experience^2, Educational Attainment, Employed in big firm (> 10 workers), Retirement fund, SSK fund, Industry, Geographic region, Propensity to engage in wage work	2 per cent gender wage gap in favor of men in 1988; of which 12-18 per cent is attributable to discrimination, and 16.6 per cent gender wage gap in favor of men in 1994; of which 24-27 per cent is attributable to discrimination.
Tansel (2005)	1994 Household Expenditure Survey (TURKSTAT)	Educational Attainment, Experience, Experience^2, Urban, Geographic region, Unearned income of the individual, Unearned income of household, Amount of land owned, Presence of other public administration workers, other SOE workers, and other covered private sector workers in the household	In the case of public administration versus private sector differential, the unexplained differential for women is 0.315 (out of a 0.895 total wage differential); and in the case of state-owned enterprises versus private sector differential, it is 0.457 (out of a 0.751 total differential).
İlkkaracan and Selim (2007)	Employment and Wage Structure Survey 1994 (TURKSTAT)	Educational attainment, Experience, Experience^2, Job tenure, Geographic region, Collective	34.8 per cent gender wage gap; of which 57 per cent is explained by differences in human capital endowments, and 43 is the discrimination portion using the

		bargaining coverage, Public/Private sector, Firm size, Occupation, Industry,	basic model. When the expanded model is used, the discrimination portion is decreases to 22 per cent.
Cudeville and Gürbüzer (2007)	Household Budget Survey 2003 (TURKSTAT)	Experience, Experience^2 , Job tenure, Job tenure^2, Educational attainment, Number of children, Weekly worked hours, Part-time work, Public/Private sector, Permanent contract, Fixed-term contract, Occupation, Industry, Firm size, Unionization, Coverage by social insurance, Geographic region, Village	33.4 per cent gender wage gap (34.2 per cent without selectivity correction) in favor of men; of which the portion explained by human capital endowments ranges between 31.8 and 47.0 per cent; and discrimination component ranges between 65.7 and 50.5; with a 2.5 per cent selectivity correction.
Our Study	Structure of Earnings Survey 2006 (TURKSTAT)	Educational attainment, Experience, Experience^2 , Job tenure, Gender, Collective bargaining coverage, Firm size, Occupation, Industry, Part-time work, Holding a managerial position	1 per cent gender wage gap in favor of women; of which 53.5 per cent is explained by differences in human capital endowments, and 46.5 per cent is the unexplained portion.

APPENDIX B

```
-------------------------------------------------------------------------------
       log:  C:\Documents and Settings\xp\Desktop\WAGEGAP.smcl
  log type:  smcl
 opened on:  23 Apr 2011, 00:39:03


. set mem 20M

Current memory allocation

                    current                                 memory usage
    settable          value     description                 (1M = 1024k)
    ------------------------------------------------------------------
    set maxvar         5000     max. variables allowed           1.909M
    set memory           20M    max. data space                 20.000M
    set matsize          400    max. RHS vars in models          1.254M
                                                               ----------
                                                                23.163M

. edit
(21 vars, 65535 obs pasted into editor)

. gen wage=  ( s22 + y_duzenli + s24 + s25) / ( ( s20 / 7 ) * s11 )

. gen ln_wage= ln(wage)

. replace educ=15 if educ==5
(14802 real changes made)

. replace educ=11 if educ==4
(7874 real changes made)

. replace educ=11 if educ==3
(16450 real changes made)

. replace educ=8 if educ==2
(9212 real changes made)

. replace educ=5 if educ==1
(17197 real changes made)

. gen exp= age- educ- 6

. gen expsq= exp^2 / 100


. means wage if exp > -1

    Variable |    Type        Obs        Mean       [95% Conf. Interval]
-------------+------------------------------------------------------------
        wage | Arithmetic   65395     5.99595        5.945646   6.046254
             |  Geometric   65395    4.598639        4.576306   4.621081
             |   Harmonic   65395    3.939469        3.925985   3.953045
-------------------------------------------------------------------------------

. means wage if exp > -1 & sex==0

    Variable |    Type        Obs        Mean       [95% Conf. Interval]
-------------+------------------------------------------------------------
        wage | Arithmetic   14250    5.949624        5.853528   6.045721
```

```
             |  Geometric   14250    4.636073        4.588659   4.683978
             |   Harmonic   14250    3.979574        3.950395   4.009189
-------------------------------------------------------------------------------

. means wage if exp > -1 & sex==1

    Variable |    Type        Obs        Mean       [95% Conf. Interval]
-------------+-------------------------------------------------------------
        wage | Arithmetic   51145    6.008857        5.950374   6.067341
             |  Geometric   51145    4.588263        4.562975    4.61369
             |   Harmonic   51145    3.928438        3.913259   3.943735
-------------------------------------------------------------------------------

. xi: reg ln_wage educ exp expsq tenure i.sex if exp > -1
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   65395
-------------+------------------------------           F(  5, 65389) = 7580.69
       Model |  9681.05651     5   1936.2113           Prob > F      =  0.0000
    Residual |  16701.2364 65389  .255413547           R-squared     =  0.3670
-------------+------------------------------           Adj R-squared =  0.3669
       Total |  26382.2929 65394  .403435987           Root MSE      =  .50538

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        educ |   .0810448   .0006604   122.72   0.000     .0797505    .0823392
         exp |   .0241183   .0007632    31.60   0.000     .0226223    .0256142
       expsq |  -.0361585    .001741   -20.77   0.000    -.0395707   -.0327462
      tenure |   .0461818   .0004242   108.87   0.000     .0453504    .0470132
     _Isex_1 |    .056792   .0049537    11.46   0.000     .0470828    .0665012
       _cons |   .2363357   .0117622    20.09   0.000     .2132819    .2593895
------------------------------------------------------------------------------

. xi: reg ln_wage educ exp expsq tenure i.sex if exp > -1 & sex==0
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   14250
-------------+------------------------------           F(  4, 14245) = 1709.18
       Model |  1811.16677     4  452.791694           Prob > F      =  0.0000
    Residual |  3773.75193 14245   .26491765           R-squared     =  0.3243
-------------+------------------------------           Adj R-squared =  0.3241
       Total |   5584.9187 14249  .391951625           Root MSE      =   .5147

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        educ |   .0851585   .0015154    56.19   0.000      .082188    .0881289
         exp |   .0306958   .0016405    18.71   0.000     .0274801    .0339114
       expsq |  -.0588555   .0042522   -13.84   0.000    -.0671905   -.0505206
      tenure |   .0399265   .0010373    38.49   0.000     .0378932    .0419598
     _Isex_1 |  (dropped)
       _cons |   .1824031   .0238243     7.66   0.000     .1357044    .2291019
------------------------------------------------------------------------------

. xi: reg ln_wage educ exp expsq tenure i.sex if exp > -1 & sex==1
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   51145
-------------+------------------------------           F(  4, 51140) = 7835.27
       Model |  7902.10913     4  1975.52728           Prob > F      =  0.0000
    Residual |  12894.0674 51140  .252132723           R-squared     =  0.3800
-------------+------------------------------           Adj R-squared =  0.3799
       Total |  20796.1766 51144  .406620064           Root MSE      =  .50213

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        educ |   .0800119   .0007338   109.03   0.000     .0785735    .0814502
```

```
         exp |   .0239032   .0008801    27.16   0.000     .0221781    .0256282
       expsq |  -.0345697   .0019543   -17.69   0.000    -.0384003   -.0307392
      tenure |   .0472996   .0004642   101.90   0.000     .0463898    .0482094
     _Isex_1 |  (dropped)
       _cons |   .2957849   .0128051    23.10   0.000     .2706867     .320883
------------------------------------------------------------------------------


. xi: reg ln_wage i.educ exp expsq tenure i.sex if exp> -1
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   65395
-------------+------------------------------           F(  7, 65387) = 5917.11
       Model |  10231.0768     7  1461.58241           Prob > F      =  0.0000
    Residual |  16151.2161 65387   .24700959           R-squared     =  0.3878
-------------+------------------------------           Adj R-squared =  0.3877
       Total |  26382.2929 65394  .403435987           Root MSE      =    .497

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |    .076435   .0066963    11.41   0.000     .0633103    .0895597
   _Ieduc_11 |   .2855147     .00579    49.31   0.000     .2741663    .2968632
   _Ieduc_15 |   .8064246    .006655   121.18   0.000     .7933809    .8194684
         exp |   .0233701   .0007508    31.13   0.000     .0218986    .0248415
       expsq |  -.0413342   .0017157   -24.09   0.000     -.044697   -.0379715
      tenure |   .0476764   .0004184   113.94   0.000     .0468563    .0484965
     _Isex_1 |   .0710884   .0048826    14.56   0.000     .0615185    .0806583
       _cons |   .7569733   .0094665    79.96   0.000     .7384189    .7755276
------------------------------------------------------------------------------

. xi: reg ln_wage i.educ exp expsq tenure i.sex if exp > -1 & sex==0
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   14250
-------------+------------------------------           F(  6, 14243) = 1209.15
       Model |  1884.74174     6  314.123623           Prob > F      =  0.0000
    Residual |  3700.17696 14243  .259789157           R-squared     =  0.3375
-------------+------------------------------           Adj R-squared =  0.3372
       Total |   5584.9187 14249  .391951625           Root MSE      =   .5097

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |   .1140706   .0192225     5.93   0.000      .076392    .1517492
   _Ieduc_11 |   .2970524   .0156811    18.94   0.000     .2663153    .3277895
   _Ieduc_15 |    .763103   .0164745    46.32   0.000     .7308108    .7953952
         exp |   .0310946    .001625    19.14   0.000     .0279095    .0342798
       expsq |  -.0678721   .0042449   -15.99   0.000    -.0761927   -.0595514
      tenure |   .0414905   .0010315    40.22   0.000     .0394685    .0435124
     _Isex_1 |  (dropped)
       _cons |   .7526051   .0198373    37.94   0.000     .7137214    .7914888
------------------------------------------------------------------------------

. xi: reg ln_wage i.educ exp expsq tenure i.sex if exp > -1 & sex==1
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)

      Source |       SS       df       MS              Number of obs =   51145
-------------+------------------------------           F(  6, 51138) = 5767.14
       Model |  8392.80906     6  1398.80151           Prob > F      =  0.0000
    Residual |  12403.3675 51138  .242546981           R-squared     =  0.4036
-------------+------------------------------           Adj R-squared =  0.4035
       Total |  20796.1766 51144  .406620064           Root MSE      =  .49249

------------------------------------------------------------------------------
```

```
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |   .0696932   .0071152     9.79   0.000     .0557474    .0836391
   _Ieduc_11 |   .2786231   .0062596    44.51   0.000     .2663542    .2908919
   _Ieduc_15 |   .8254415    .007419   111.26   0.000     .8109002    .8399829
         exp |   .0225833   .0008638    26.15   0.000     .0208903    .0242763
       expsq |  -.0385699   .0019191   -20.10   0.000    -.0423313   -.0348085
      tenure |   .0488894   .0004567   107.05   0.000     .0479942    .0497845
     _Isex_1 |  (dropped)
       _cons |   .8260126   .0103739    79.62   0.000     .8056798    .8463455
------------------------------------------------------------------------------


. xi: reg ln_wage educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag if
exp > -1
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   65395
-------------+------------------------------           F( 29, 65365) = 2693.75
       Model |  14363.6562    29  495.298491           Prob > F      =  0.0000
    Residual |  12018.6367 65365  .183869604           R-squared     =  0.5444
-------------+------------------------------           Adj R-squared =  0.5442
       Total |  26382.2929 65394  .403435987           Root MSE      =   .4288

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        educ |   .0465861   .0007193    64.77   0.000     .0451763    .0479959
         exp |   .0202177   .0006567    30.79   0.000     .0189306    .0215047
       expsq |  -.0306747   .0014892   -20.60   0.000    -.0335934   -.0277559
      tenure |   .0262799   .0003991    65.84   0.000     .0254976    .0270622
     _Isex_1 |   .0645978   .0044045    14.67   0.000     .0559651    .0732306
  _Iindust_2 |  -.0252589   .0111149    -2.27   0.023    -.0470441   -.0034737
  _Iindust_3 |   .2989299   .0149085    20.05   0.000     .2697093    .3281505
  _Iindust_4 |  -.0331759   .0124995    -2.65   0.008    -.0576748   -.0086769
  _Iindust_5 |  -.0526796   .0116954    -4.50   0.000    -.0756026   -.0297567
  _Iindust_6 |  -.1112467   .0127097    -8.75   0.000    -.1361577   -.0863358
  _Iindust_7 |   .0061176   .0124674     0.49   0.624    -.0183186    .0305538
  _Iindust_8 |   .3942239   .0139247    28.31   0.000     .3669315    .4215162
  _Iindust_9 |  -.0393994    .012474    -3.16   0.002    -.0638484   -.0149504
 _Iindust_10 |  -.2033585    .014631   -13.90   0.000    -.2320352   -.1746817
 _Iindust_11 |   .0009889   .0161537     0.06   0.951    -.0306724    .0326502
 _Iindust_12 |   .1436555   .0151455     9.49   0.000     .1139703    .1733407
  _Ifrsize_2 |   .2139928   .0044154    48.46   0.000     .2053386     .222647
  _Ifrsize_3 |   .4169202   .0043367    96.14   0.000     .4084202    .4254201
_Icollbarg_1 |   .2666801   .0059816    44.58   0.000     .2549562    .2784039
_Iparttime_1 |   .6101489    .015319    39.83   0.000     .5801236    .6401741
   _Ioccup_2 |  -.0250924   .0106165    -2.36   0.018    -.0459007    -.004284
   _Ioccup_3 |  -.2338949   .0097649   -23.95   0.000    -.2530341   -.2147557
   _Ioccup_4 |  -.3386357   .0102085   -33.17   0.000    -.3586443    -.318627
   _Ioccup_5 |   -.346618   .0106322   -32.60   0.000    -.3674571   -.3257788
   _Ioccup_6 |  -.3221186    .028751   -11.20   0.000    -.3784705   -.2657666
   _Ioccup_7 |  -.3298202   .0105421   -31.29   0.000    -.3504827   -.3091576
   _Ioccup_8 |  -.3456318   .0109906   -31.45   0.000    -.3671733   -.3240903
   _Ioccup_9 |  -.3840017   .0106889   -35.93   0.000    -.4049521   -.3630514
   _Imanag_1 |   .0737637   .0061467    12.00   0.000     .0617161    .0858112
       _cons |   .7438656   .0189183    39.32   0.000     .7067856    .7809455
------------------------------------------------------------------------------

. xi: reg ln_wage educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag if
exp > -1 & sex
> ==0
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
```

```
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   14250
-------------+------------------------------           F( 28, 14221) =  578.56
       Model |  2974.08736    28  106.217406           Prob > F      =  0.0000
    Residual |  2610.83135 14221  .183589856           R-squared     =  0.5325
-------------+------------------------------           Adj R-squared =  0.5316
       Total |   5584.9187 14249  .391951625           Root MSE      =  .42847

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        educ |   .0500472   .0016778    29.83   0.000     .0467585    .0533359
         exp |   .0269374   .0013924    19.35   0.000     .0242081    .0296667
       expsq |   -.050352   .0035805   -14.06   0.000    -.0573703   -.0433338
      tenure |    .023055   .0009331    24.71   0.000     .0212261     .024884
     _Isex_1 |  (dropped)
  _Iindust_2 |  -.1944778   .0372436    -5.22   0.000    -.2674801   -.1214755
  _Iindust_3 |   .1365965   .0483546     2.82   0.005     .0418151    .2313779
  _Iindust_4 |  -.2458241   .0408534    -6.02   0.000    -.3259021   -.1657461
  _Iindust_5 |  -.2395712   .0374124    -6.40   0.000    -.3129044    -.166238
  _Iindust_6 |  -.2854468   .0393214    -7.26   0.000    -.3625218   -.2083718
  _Iindust_7 |  -.0632919   .0389699    -1.62   0.104    -.1396779    .0130942
  _Iindust_8 |   .2598914   .0383693     6.77   0.000     .1846825    .3351004
  _Iindust_9 |  -.1655355   .0384583    -4.30   0.000    -.2409188   -.0901522
 _Iindust_10 |  -.3219854   .0387448    -8.31   0.000    -.3979304   -.2460404
 _Iindust_11 |  -.1575373   .0397154    -3.97   0.000    -.2353846   -.0796899
 _Iindust_12 |    -.02971   .0426733    -0.70   0.486    -.1133553    .0539352
  _Ifrsize_2 |   .2358594   .0095272    24.76   0.000     .2171848     .254534
  _Ifrsize_3 |   .3893138   .0090596    42.97   0.000     .3715558    .4070718
_Icollbarg_1 |   .2195871   .0140934    15.58   0.000     .1919621     .247212
_Iparttime_1 |   .8314847   .0242661    34.27   0.000     .7839199    .8790495
   _Ioccup_2 |  -.0575518   .0213636    -2.69   0.007    -.0994273   -.0156763
   _Ioccup_3 |  -.2177983   .0207462   -10.50   0.000    -.2584636    -.177133
   _Ioccup_4 |  -.3045545    .020522   -14.84   0.000    -.3447803   -.2643286
   _Ioccup_5 |  -.2567946   .0229598   -11.18   0.000    -.3017988   -.2117903
   _Ioccup_6 |  -.1467982   .0710791    -2.07   0.039    -.2861226   -.0074739
   _Ioccup_7 |  -.3274598   .0256528   -12.77   0.000    -.3777426    -.277177
   _Ioccup_8 |  -.3303492   .0290895   -11.36   0.000    -.3873684   -.2733299
   _Ioccup_9 |  -.3528863   .0236144   -14.94   0.000    -.3991735    -.306599
   _Imanag_1 |   .0594512   .0134014     4.44   0.000     .0331828    .0857196
       _cons |   .8162588   .0497328    16.41   0.000      .718776    .9137416
------------------------------------------------------------------------------

. xi: reg ln_wage educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag if
exp > -1 & sex
> ==1
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   51145
-------------+------------------------------           F( 28, 51116) = 2246.77
       Model |  11473.5588    28  409.769957           Prob > F      =  0.0000
    Residual |  9322.61778 51116  .182381598           R-squared     =  0.5517
-------------+------------------------------           Adj R-squared =  0.5515
       Total |  20796.1766 51144  .406620064           Root MSE      =  .42706

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
        educ |   .0453212   .0007976    56.82   0.000     .0437579    .0468846
         exp |   .0190466   .0007589    25.10   0.000     .0175591     .020534
       expsq |  -.0276289   .0016757   -16.49   0.000    -.0309133   -.0243445
      tenure |    .026778    .000441    60.72   0.000     .0259136    .0276424
      _Isex_1 |  (dropped)
   _Iindust_2 |  -.0045302   .0116232    -0.39   0.697    -.0273118    .0182514
   _Iindust_3 |   .3143696   .0156302    20.11   0.000     .2837342    .3450051
   _Iindust_4 |  -.0081305   .0131035    -0.62   0.535    -.0338134    .0175524
   _Iindust_5 |  -.0257332    .012386    -2.08   0.038    -.0500099   -.0014565
   _Iindust_6 |  -.0835298   .0135489    -6.17   0.000    -.1100858   -.0569738
   _Iindust_7 |   .0043522   .0132203     0.33   0.742    -.0215598    .0302641
   _Iindust_8 |   .4019189   .0162983    24.66   0.000     .3699741    .4338638
   _Iindust_9 |  -.0323314   .0133575    -2.42   0.016    -.0585123   -.0061505
  _Iindust_10 |  -.2230833   .0177745   -12.55   0.000    -.2579215   -.1882451
  _Iindust_11 |   .0337287   .0207391     1.63   0.104    -.0069201    .0743774
  _Iindust_12 |   .1668587   .0164553    10.14   0.000     .1346061    .1991113
   _Ifrsize_2 |   .2091508   .0049696    42.09   0.000     .1994104    .2188912
   _Ifrsize_3 |   .4257665   .0049291    86.38   0.000     .4161055    .4354276
_Icollbarg_1 |   .2724158   .0066081    41.22   0.000     .2594638    .2853679
_Iparttime_1 |    .459664   .0197067    23.33   0.000     .4210387    .4982892
    _Ioccup_2 |  -.0057556    .012363    -0.47   0.642    -.0299871     .018476
    _Ioccup_3 |   -.239953   .0110525   -21.71   0.000    -.2616161   -.2182899
    _Ioccup_4 |  -.3574448   .0120173   -29.74   0.000    -.3809987   -.3338908
    _Ioccup_5 |   -.372891   .0119593   -31.18   0.000    -.3963313   -.3494507
    _Ioccup_6 |  -.3603192   .0313625   -11.49   0.000    -.4217901   -.2988482
    _Ioccup_7 |  -.3384871   .0116959   -28.94   0.000    -.3614112    -.315563
    _Ioccup_8 |  -.3538168   .0121227   -29.19   0.000    -.3775775   -.3300561
    _Ioccup_9 |  -.3937469   .0119891   -32.84   0.000    -.4172457   -.3702481
    _Imanag_1 |   .0769793   .0069012    11.15   0.000     .0634529    .0905056
        _cons |   .8164482   .0207134    39.42   0.000     .7758497    .8570467
------------------------------------------------------------------------------

. xi: reg ln_wage i.educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag
if exp> -1
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   65395
-------------+------------------------------           F( 31, 65363) = 2619.71
       Model |  14617.4075    31  471.529273           Prob > F      =  0.0000
    Residual |  11764.8854 65363  .179993046           R-squared     =  0.5541
-------------+------------------------------           Adj R-squared =  0.5538
       Total |  26382.2929 65394  .403435987           Root MSE      =  .42426

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |   .0435929   .0057527     7.58   0.000     .0323175    .0548682
   _Ieduc_11 |   .1611985    .005316    30.32   0.000     .1507791    .1716179
   _Ieduc_15 |   .5164961   .0073444    70.33   0.000     .5021011    .5308912
         exp |   .0203588   .0006497    31.34   0.000     .0190854    .0216323
       expsq |  -.0344184   .0014769   -23.30   0.000    -.0373131   -.0315237
      tenure |   .0271935   .0003957    68.73   0.000      .026418    .0279691
      _Isex_1 |   .0699897   .0043611    16.05   0.000     .0614419    .0785374
  _Iindust_2 |  -.0086081   .0110062    -0.78   0.434    -.0301802     .012964
  _Iindust_3 |   .3136743   .0147559    21.26   0.000     .2847528    .3425958
  _Iindust_4 |  -.0212327   .0123713    -1.72   0.086    -.0454805    .0030151
  _Iindust_5 |  -.0290811   .0115892    -2.51   0.012    -.0517959   -.0063662
  _Iindust_6 |  -.0955522   .0125821    -7.59   0.000    -.1202132   -.0708913
  _Iindust_7 |   .0226254   .0123433     1.83   0.067    -.0015675    .0468183
  _Iindust_8 |    .372084   .0137905    26.98   0.000     .3450547    .3991134
  _Iindust_9 |  -.0187356   .0123541    -1.52   0.129    -.0429496    .0054783
```

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 _Iindust_10 |  -.2012076   .0144761   -13.90   0.000    -.2295807   -.1728345
 _Iindust_11 |   .0186918   .0159895     1.17   0.242    -.0126476    .0500313
 _Iindust_12 |   .1583809   .0149903    10.57   0.000         .129    .1877619
  _Ifrsize_2 |   .2137692    .004369    48.93   0.000      .205206    .2223323
  _Ifrsize_3 |   .4147513   .0042924    96.63   0.000     .4063382    .4231643
_Icollbarg_1 |   .2723438    .005921    46.00   0.000     .2607386    .2839491
_Iparttime_1 |   .6086108   .0151582    40.15   0.000     .5789007    .6383209
   _Ioccup_2 |  -.0734731   .0105852    -6.94   0.000      -.09422   -.0527261
   _Ioccup_3 |  -.2038003   .0096965   -21.02   0.000    -.2228055   -.1847951
   _Ioccup_4 |  -.2958928   .0101679   -29.10   0.000    -.3158219   -.2759637
   _Ioccup_5 |  -.2915029   .0106217   -27.44   0.000    -.3123215   -.2706844
   _Ioccup_6 |  -.2937388   .0284564   -10.32   0.000    -.3495133   -.2379643
   _Ioccup_7 |  -.2906476   .0104826   -27.73   0.000    -.3111934   -.2701018
   _Ioccup_8 |  -.3041547   .0109304   -27.83   0.000    -.3255783   -.2827311
   _Ioccup_9 |  -.3451602   .0106279   -32.48   0.000    -.3659909   -.3243296
   _Imanag_1 |   .0623506   .0060892    10.24   0.000     .0504157    .0742855
       _cons |   .9834248   .0170238    57.77   0.000     .9500581    1.016791
------------------------------------------------------------------------------

. xi: reg ln_wage i.educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag
if exp> -1 & se
> x==0
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   14250
-------------+------------------------------           F( 30, 14219) =  550.20
       Model |  3000.31969    30  100.010656           Prob > F      =  0.0000
    Residual |  2584.59901 14219  .181770801           R-squared     =  0.5372
-------------+------------------------------           Adj R-squared =  0.5362
       Total |   5584.9187 14249  .391951625           Root MSE      =  .42635

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     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |   .0638836   .0161962     3.94   0.000     .0321369    .0956303
   _Ieduc_11 |   .1724579   .0146244    11.79   0.000     .1437921    .2011236
   _Ieduc_15 |   .4599565   .0172341    26.69   0.000     .4261755    .4937375
         exp |   .0276993   .0013873    19.97   0.000       .02498    .0304186
       expsq |   -.056135   .0035951   -15.61   0.000    -.0631819   -.0490882
      tenure |   .0238372   .0009307    25.61   0.000     .0220128    .0256615
      _Isex_1 |  (dropped)
  _Iindust_2 |  -.1772349   .0370869    -4.78   0.000    -.2499301   -.1045396
  _Iindust_3 |   .1577302   .0481514     3.28   0.001      .063347    .2521133
  _Iindust_4 |  -.2287722   .0406762    -5.62   0.000    -.3085028   -.1490415
  _Iindust_5 |  -.2112881   .0373069    -5.66   0.000    -.2844146   -.1381617
  _Iindust_6 |  -.2724325   .0391442    -6.96   0.000    -.3491603   -.1957048
  _Iindust_7 |  -.0413664   .0388223    -1.07   0.287    -.1174632    .0347304
  _Iindust_8 |   .2609061   .0381799     6.83   0.000     .1860684    .3357438
  _Iindust_9 |  -.1437945   .0383114    -3.75   0.000    -.2188899   -.0686991
 _Iindust_10 |  -.3072463   .0385761    -7.96   0.000    -.3828606    -.231632
 _Iindust_11 |  -.1358031   .0395682    -3.43   0.001     -.213362   -.0582443
 _Iindust_12 |  -.0110143   .0424913    -0.26   0.795    -.0943029    .0722743
  _Ifrsize_2 |   .2359954     .00948    24.89   0.000     .2174135    .2545774
  _Ifrsize_3 |   .3845924   .0090232    42.62   0.000     .3669057    .4022791
_Icollbarg_1 |   .2242038   .0140289    15.98   0.000     .1967053    .2517023
_Iparttime_1 |   .8317861   .0241571    34.43   0.000     .7844351    .8791371
   _Ioccup_2 |  -.0817319    .021353    -3.83   0.000    -.1235866   -.0398771
   _Ioccup_3 |  -.2080047   .0206609   -10.07   0.000    -.2485029   -.1675066
   _Ioccup_4 |  -.2849913   .0204908   -13.91   0.000    -.3251559   -.2448268
   _Ioccup_5 |  -.2383627   .0228974   -10.41   0.000    -.2832446   -.1934807
   _Ioccup_6 |  -.1691213   .0707542    -2.39   0.017    -.3078088   -.0304337
   _Ioccup_7 |  -.3273199   .0255707   -12.80   0.000    -.3774417    -.277198
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   _Ioccup_8 |  -.3328494   .0289729   -11.49   0.000    -.3896401   -.2760588
   _Ioccup_9 |  -.3619645   .0235361   -15.38   0.000    -.4080983   -.3158307
   _Imanag_1 |   .0538279   .0133432     4.03   0.000     .0276734    .0799823
       _cons |   1.122879    .046191    24.31   0.000     1.032339    1.213419
------------------------------------------------------------------------------

. xi: reg ln_wage i.educ exp expsq tenure i.sex  i.indust i.frsize i.collbarg i.parttime i.occup i.manag
if exp> -1 & se
> x==1
i.educ            _Ieduc_5-15         (naturally coded; _Ieduc_5 omitted)
i.sex             _Isex_0-1           (naturally coded; _Isex_0 omitted)
i.indust          _Iindust_1-12       (naturally coded; _Iindust_1 omitted)
i.frsize          _Ifrsize_1-3        (naturally coded; _Ifrsize_1 omitted)
i.collbarg        _Icollbarg_0-1      (naturally coded; _Icollbarg_0 omitted)
i.parttime        _Iparttime_0-1      (naturally coded; _Iparttime_0 omitted)
i.occup           _Ioccup_1-9         (naturally coded; _Ioccup_1 omitted)
i.manag           _Imanag_0-1         (naturally coded; _Imanag_0 omitted)

      Source |       SS       df       MS              Number of obs =   51145
-------------+------------------------------           F( 30, 51114) = 2199.35
       Model |  11718.2543    30  390.608478           Prob > F      =  0.0000
    Residual |  9077.92223 51114  .177601484           R-squared     =  0.5635
-------------+------------------------------           Adj R-squared =  0.5632
       Total |  20796.1766 51144  .406620064           Root MSE      =  .42143

------------------------------------------------------------------------------
     ln_wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    _Ieduc_8 |   .0397024   .0061332     6.47   0.000     .0276814    .0517235
   _Ieduc_11 |   .1522461   .0057289    26.58   0.000     .1410175    .1634747
   _Ieduc_15 |   .5394861   .0083337    64.74   0.000     .5231519    .5558203
         exp |    .018877   .0007489    25.21   0.000     .0174091    .0203449
       expsq |  -.0306332   .0016559   -18.50   0.000    -.0338788   -.0273876
      tenure |   .0278027   .0004361    63.75   0.000     .0269478    .0286575
     _Isex_1 |  (dropped)
  _Iindust_2 |   .0103901   .0114771     0.91   0.365    -.0121051    .0328854
  _Iindust_3 |   .3263358   .0154275    21.15   0.000     .2960978    .3565738
  _Iindust_4 |   .0025157   .0129343     0.19   0.846    -.0228357    .0278671
  _Iindust_5 |   -.005215   .0122355    -0.43   0.670    -.0291966    .0187667
  _Iindust_6 |  -.0675431   .0133776    -5.05   0.000    -.0937632   -.0413229
  _Iindust_7 |   .0190471    .013052     1.46   0.144     -.006535    .0446291
  _Iindust_8 |   .3740956   .0161015    23.23   0.000     .3425365    .4056547
  _Iindust_9 |  -.0120808   .0131926    -0.92   0.360    -.0379384    .0137769
 _Iindust_10 |   -.226934   .0175403   -12.94   0.000    -.2613132   -.1925548
 _Iindust_11 |   .0498066   .0204711     2.43   0.015      .009683    .0899301
 _Iindust_12 |   .1795199   .0162423    11.05   0.000     .1476849     .211355
  _Ifrsize_2 |   .2081942   .0049046    42.45   0.000     .1985811    .2178073
  _Ifrsize_3 |   .4244541   .0048666    87.22   0.000     .4149155    .4339927
_Icollbarg_1 |   .2781043   .0065237    42.63   0.000     .2653178    .2908909
_Iparttime_1 |   .4566383   .0194478    23.48   0.000     .4185204    .4947562
   _Ioccup_2 |  -.0654889   .0123084    -5.32   0.000    -.0896136   -.0413643
   _Ioccup_3 |  -.1988497   .0109656   -18.13   0.000    -.2203423   -.1773571
   _Ioccup_4 |  -.3020546    .011955   -25.27   0.000    -.3254865   -.2786228
   _Ioccup_5 |  -.3002487   .0119631   -25.10   0.000    -.3236965   -.2768008
   _Ioccup_6 |  -.3117086   .0309766   -10.06   0.000     -.372423   -.2509943
   _Ioccup_7 |  -.2813977   .0116438   -24.17   0.000    -.3042196   -.2585759
   _Ioccup_8 |  -.2936922    .012072   -24.33   0.000    -.3173534   -.2700309
   _Ioccup_9 |  -.3362915   .0119324   -28.18   0.000    -.3596791   -.3129039
   _Imanag_1 |    .063658   .0068196     9.33   0.000     .0502915    .0770246
       _cons |   1.039351   .0185056    56.16   0.000     1.003079    1.075622
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. log close
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  log type:  smcl
 closed on:  23 Apr 2011, 01:51:20
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ABOUT THE AUTHOR

Berna Doğan was born in Izmit in 1984. She attended Gebze Anatolian High School between the years 1995-2002. In 2007, she received her bachelor's degree in Economics from Yıldız Technical University. She studied on a comprehensive analysis of Karl Polanyi's "*The Great Transformation"* as a partial fulfillment of the requirements for the bachelor's degree. As of September 2011, she is a doctoral student and a teaching assistant at Deparment of Economics at University of Massachusetts Amherst.