İSTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SOCIAL SCIENCES

GENDER BASED WAGE DIFFERENTIALS IN THE TURKISH LABOR MARKET

M.A. Thesis by

Fatma Duygu GÜNER

Department : Economics

Programme : Economics

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TÜRKİYE İŞGÜCÜ PİYASASINDA CİNSİYETE DAYALI ÜCRET FARKLILIKLARI

YÜKSEK LİSANS TEZİ

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FOREWORD

During my studies at Istanbul Technical University, I found the chance to meet many distinguished academics. They changed my life beyond one can imagine; I have learned so much from them and will always be grateful for that. İpek İlkkaracan Ajas is one of them, to whom I particularly want to show my gratitude; she introduced me with gender studies and inspired this thesis. Moreover, I would like to express my deepest thankfulness to my advisor Mehtap Hisarcıklılar for her support, understanding and guidance during my research. This thesis could not been completed without her help. I am also thankful to TUBITAK, which provided financial support throughout my studies.

I wish that this work, which took a lot of time, effort and dedication, could inspire future research.

Haziran 2009 Fatma Duygu Güner

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ABBREVIATIONS

GDP	: Gross Domestic Product
GNP	: Gross National Product
FDI	: Foreign Direct Investment
HLFS	: Household Labor Force Survey
HIES	: Household Income and Expenditure Survey
ILO	: International Labor Office
ISI	: Import Substituting Industrialization
OLS	: Ordinary Least Squares
SEES	: State Owned Economic Enterprises
TURKSTAT	: Turkish Statistical Institute

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GENDER BASED WAGE DIFFERENTIALS IN THE TURKISH LABOR MARKET

SUMMARY

The purpose of this thesis is to examine the existence of gender wage gap and its possible sources in the Turkish labor market. The analysis covers the years 1988, 2005 and 2006 and therefore, enables an examination of changes in gender wage gap over time. In terms of the Turkish labor market, supply side of the wage setting process is examined extensively in the literature, however, the effects of labor demand structure on the wage setting remained often missing; labor market dynamics and industrial differences continued to be ambiguous. Thus, we employed an approach that aims to link changes in industry characteristics to fluctuations in the gender wage gap, instead of limiting the research with pre-determined industry dummy variables.

For this purpose, the degree of economic openness in a particular industry, in terms of export-import volumes, foreign direct investment inflows and industries' FDI density are included to our analysis. The methodology we employ can be classified in three sub-sections: i) modeling labor force participation for male and female workers separately in order to correct for selectivity bias in wage regressions, ii) estimating wage equations and examining the ability of openness variables in representing industry characteristics and iii) decomposing gender wage gap into explained and unexplained components and interrelating contribution of industries' degree of openness to unexplained gender wage gap by using rank correlation coefficients.

According to our results, female workers' hourly earnings significantly differs from that of their male counterparts'. Furthermore, even after controlling for productivity related characteristics, these differentials remain significant. Moreover, the gender wage gap has slightly increased during the period of interest; the female-male wage ratio, which was 0.952 in 1988, has reduced to 0.937 in 2005 and to 0.942 in 2006. In this period, the contribution of human capital endowments and other explanatory variables has also evolved; a convergence between male and female returns to experience, job tenure and security coverage is observed in the whole period. Returns to education have decreased dramatically for both genders. Furthermore, variations in the effects of industry of employment are also observed within this period.

In terms of the effects of openness on the wage gaps, we have found that increases in industry specific international trade to GNP ratios have differentiated effects on female and male wages which should result in a widening unexplained gender wage gap. However, these differences are not statistically significant and similarly, we could not find a significant relationship between international trade and unexplained

gender wage gap. Though, this may result due to small number of observations and thus, deserves a reexamination with wider data range in future.

On the other hand, FDI variables show a stronger effect on wages; increases in industry specific FDI to GNP ratios promotes wage increases, slightly favoring female workers, while higher FDI density suppresses wages with a more adverse effect on male wages. These results suggest that increases both in FDI inflows and industries' FDI densities have a lowering effect on unexplained gender wage gap and significant negative rank correlation coefficients justify these results.

According to the data, there are clear differences between the industries in terms of the wage gaps. For this reason we considered possible explanations of industries' differences in terms of gender wage gaps. It is worth noting that both micro and macro level data is rather limited, hence the application of complex methodologies in this setting is troublesome. Despite this data restriction, we found that openness variables could be used in wage gap analysis. Analyzing possible sources of wage gaps between male and female workforce will assist elimination of these differences and from this perspective this study aimed to provide a deeper understanding of wage gaps and to contribute to development of policies targeting gender wage equity.

Keywords: Turkey, Labor market analysis, Wage determinants, Gender wage gap, Oaxaca decomposition, International trade, Foreign direct investment

TÜRKİYE İŞGÜCÜ PİYASASINDA CİNSİYETE DAYALI ÜCRET FARKLILIKLARI

ÖZET

Bu tezin amacı Türkiye işgücü piyasasında cinsiyete dayalı ücret farklılıklarını ve ücretlerdeki farklılaşmanın olası nedenlerini araştırmaktır. Analizler 1988, 2005 ve 2006 yıllarını kapsamakta ve bu sayede cinsiyete dayalı ücret farklarında zaman içerisinde yaşanan değişimlerin incelenmesine olanak sağlamaktadır. Bugüne kadar pek çok araştırma Türkiye işgücü piyasasında emek arzı ve ücret ilişkisini incelemiştir ancak talep yapısı çoğu zaman ele alınmamış olmakla birlikte, işgücü piyasası dinamikleri ve sektörel farklılıklar bilinemezliğini korumuştur. Bu nedenle çalışmada analizleri sektörel kukla değişkenleri ile sınırlandırmak yerine sektör karakteristiklerindeki değişimleri cinsiyete dayalı ücret farklılıklarında yaşanan dalgalanmalarla ilişkilendirmeyi amaçlayan bir yaklaşım kullanılmıştır.

Bu amaçla belli bir sektörün dışa açıklık düzeyi, ihracat-ithalat hacimleri, doğrudan yabancı yatırım (DYY) girişleri ve DYY yoğunluğu gibi değişkenlerle analizlere eklenmiştir. Kullandığımız yöntem üç alt bölümde özetlenebilir: i) olası bir seçim sapmasını düzeltmek için işgücüne katılımın modellenmesi, ii) ücret fonksiyonlarının tahmin edilmesi ve dışa açıklık değişkenlerinin ne derece sektör özelliklerini yansıtabildiklerinin test edilmesi ve iii) kadın erkek ücret farklılıklarının bileşenlerine ayrıştırılması ve sektörel farklılıklardan kaynaklanan açıklanamayan ücret farklarının sıra korelasyon katsayıları kullanılarak bu sektörlerin dışa açıklık düzeyleriyle ilişkilendirilmesi.

Yapılan analizler kadın ücretlerinin erkek ücretlerinden oldukça farklılaştığını ortaya koymaktadır ve bu fark verimlilikle ilgili değişkenlerin kontrol edilmesinden sonra bile anlamlılığını korumaktadır. Bulgular kadın erkek ücret farklılıklarının çalışmanın kapsadığı dönem boyunca hafifçe arttığını göstermektedir; 1988 yılında 0. 952 olan ortalama saat başı kadın-erkek ücret oranı 2005 yılına gelindiğinde 0. 937 seviyesine gerilemiş, 2006 yılı içinse bu oran 0.942 düzeyinde seyretmiştir. Beşeri sermaye değişkenlerinin ve diğer açıklayıcı değişkenlerin bu farka katkısı da zaman içerisinde farklılık göstermektedir. Tecrübe, işte kalış süresi ve herhangi bir sosyal güvenlik kurumuna kayıtlılık gibi değişkenlerin ücretler üzerindeki etkisi kadınlar ve erkekler için birbirine yakınsarken, eğitim düzeyinin ücretler üzerindeki arttırıcı etkisi süreç içerisinde hızla azalmıştır. Ayrıca çalışılan işyerinin ana faaliyetine bağlı olarak da ücret fonksiyonları zaman içerisinde değişim göstermiştir.

Dışa açıklık bakımından ise sektörel uluslararası ticaret - gayri safi milli hâsıla (GSMH) oranında yaşanan artışların kadın erkek ücretleri üzerinde açıklanamayan ücret farkını arttırıcı yönde farklılaşan bir etkisinin olduğunu bulduk. Ancak bu farklılaşma istatistikî olarak anlamlı değildi ve benzer şekilde dış ticaret ve açıklanamayan ücret farkı arasında da anlamlı bir ilişki bulamadık. Öte yandan bu

gözlem sayısının azlığından kaynaklanıyor olabilir ve bu nedenle ileride daha geniş bir veri seti ile yeniden incelenmeyi hak etmektedir.

Diğer taraftan, DYY değişkenleri ücretler üzerinde daha güçlü bir etki gösteriyor; artan sektörel DYY yoğunluğu erkeklerde daha güçlü bir etkiyle ücretleri baskılarken, DYY - GSMH artışlarının genel ücret seviyesini iyileştirdiği ve kadın ücretlerini görece daha olumlu etkilediği gözlemlenmiştir. Bu sonuçlar DYY yoğunluğu ve DYY - GSMH oranında yaşanan artışların açıklanamayan ücret farklarını azaltan bir etkiye sahip olduğunu göstermekte, anlamlı negatif sıra korelasyon katsayısı da bu bulguları desteklemektedir.

Makro ve mikro veri kısıtlarının daha uygun metotların kullanılmasını engellemesine rağmen toplumsal cinsiyete dayalı ücretlerde gözlenen sektörel farklılıklarının olası nedenlerini bulmayı amaçladık ve dışa açıklık değişkenlerinin ücret farkı analizlerinde kullanılabileceğini gösterdik. Kadın erkek ücret farklarının muhtemel kaynaklarının incelenmesi bu farklılaşmanın ortadan kaldırılmasına yardımcı olacaktır ve bu açıdan bakıldığında bu çalışmanın hedefi ücret farklılıklarının daha iyi anlaşılmasını sağlamak ve ücret eşitliğini hedefleyen politikaların geliştirilmesine katkıda bulunmaktır.

Anahtar Kelimeler: Türkiye, İşgücü piyasası, Cinsiyete dayalı ücret farklılıkları, Oaxaca ayrıştırması, Uluslararası ticaret, Doğrudan yabancı yatırımlar

1. INTRODUCTION

The issue of persistent wage gap between female and male employees has been a highly debated issue in the economics literature. Especially in the second half of the 20th century, economists paid enormous effort to reason these wage gaps and country studies investigating gender wage gap often revealed that such a differential exists. Similarly, the purpose of this thesis is to examine the existence of gender wage gap and its possible sources in the Turkish labor market with a particular focus on the effect of openness. In Turkey context, there is a lack of studies which examine gender wage gap changes over time. Existing studies mostly use single year data with different methodology and data sources, which disables a possible comparison of their findings. Therefore, this study aims to fulfill this break by analyzing gender pay gap in 1988, 2005 and 2006.

The main issue in gender wage gap analysis is to understand why wage gap still exists and most importantly why it persists. Despite general acknowledgement of the gender wage gap, sources of this gap remain controversial. From women's lower human capital endowments to family obligations, many distinctive factors have been pointed out as the basis of this wage gap, but yet none of them were generally accepted. One cannot deny the socio-cultural foundations of gender wage gap, but they are often omitted in this sort of analysis as it is difficult to model cultural components. Since there is an enormous effort, particularly in the last decade, challenging that female stereotype in Turkey we will also omit the cultural dimensions of gender wage gap in our analysis.

Various studies examined supply side factors effecting gender wage gap using implementations of human capital theory. On the other hand, only a limited number of researches focused on both supply and demand characteristics in order to have a complete assessment of the wage gap. In terms of the Turkish labor market, supply side of wage setting process is examined extensively; however, the effects of labor

demand structure often remained missing. Consequently, effects of labor market dynamics and industrial differences continued to be ambiguous. Labor demand is typically a firm specific feature, but still to some extent similar for firms within a particular industry, as industry of operation effects firms in a multidimensional way. Thus, this study will further employ an approach which aims to link changes in industry characteristics to fluctuations in the gender wage gap, instead of limiting the research with pre-determined industry dummy variables.

For this purpose, the degree of economic openness in a particular industry, in terms of export-import volumes and foreign direct investment inflows, will be used in our analysis to represent the industry characteristics. We will use a combination of micro-level and macro-level data that overcomes some of the data limitations, such as small number of female employment and asymmetrical distribution of workers in industries. Above mentioned data limitations disables an investigation of industry specific wage gaps. Hence combining macro- and micro-level data is unavoidable in order to be able to study the interaction between wage gap and industry characteristics. This combination will provide a reasonable comparison of the gender wage gap and will enable a deeper examination. Furthermore, this approach will enable us to identify some additional variables affecting wage differences, which have been missing in the Turkish context so far.

In this study, Household Labor Force Surveys conducted by the Turkish Statistical Institute (TURKSTAT) in the years 1988, 2005 and 2006 will be used as the main source of micro-level data. Annual reports of Undersecretary of Treasury and TURKSTAT will provide the macro-level data required to model industry characteristics. Years of interest are chosen according to data availability. Despite data limitations, we have reason to believe that the chosen data years have significant characteristics that might help investigating the wage gap beyond the human capital approach. Within the time period we consider, 1988 highlights a turning point in the country's economy as it is the end of the export-led growth phase; after 1989 the degree of economy's openness increased dramatically through further liberalization of financial markets. Therefore, changes from 1980s to 2000s could be addressed to multiple dimensions of openness.

Analyzing possible sources of wage gap between male and female workforce from this perspective could assist elimination of these differences. The aim of this study is

to provide a deeper understanding of gender wage gap and to contribute to introduction of policies targeting gender wage equity. The thesis continues as follows: Section 2 presents the theoretical background of wage differentials and Section 3 provides a brief review of literature. While Section 4 presents country characteristics, Section 5 describes the dataset used in the analysis. The methodology employed is summarized in Section 6, and Section 7 shows the estimation results. Finally, Section 8 concludes.

2. THEORETICAL BACKGROUND

Existence of gender wage gap has been issued in economic literature for nearly a century beginning with the works of English feminist Millicent Fawcett in 1918 and, following her inspiration, by Ysidro Francis Edgeworth, Arthur Cecil Pigou, John Richard Hicks, Roy Forbes Harrod and many more (Beneria, 2003). However, the real debate on wage differences began in the mid 20th century with the works of Mincer, Becker and other neoclassical economists.

2.1 Human Capital Theory

Until late 1950s, many studies took income distribution as given. Only after Mincer (1958) this prevalent opinion was questioned, and the need to explore the factors effecting income distribution was stressed. The ways to implement this idea was to reject the basic assumption of homogeneous labor, to center the attention on the differentiation of the labor force and to bring fundamental social institutions (such as schooling and the family) into economic agenda (Bowles and Gintis, 1975). One of the main studies in this area was Mincer's (1958) work "Investment in Human Capital and Personal Income Distribution", which brought new insights to earlier versions of neoclassical economics. Human capital theory was able to reason differences in wages through differences in education, job tenure and experience, but this approach's free choice assumption in terms of investment in human capital was weak. Hence, human capital theory and its implementations have been exposed to intensive criticism (Bowles and Gintis, 1975; Polachek, 1981, Mortensen, 2003) and from this aspect, assisted the development of conflicting thoughts on the possible sources of wage differentials.

Moreover, the works of Mincer and other human capital theorists launched a transition in economics and eventually resulted in the evolution of New Household Economics, which was an important step that led to the inclusion of women in mainstream economics (Beneria, 2003). Additionally, the increased inclusion of women in economic, social and political life brought a gender dimension to wage

gap analysis, while earlier work was relatively more focused on racial wage differentials.

2.2 Labor Market Discrimination

Discrimination as a source of wage differentials was brought into the literature with Becker's "Economics of Discrimination". Becker defined paying a favored group (white, men etc.) more than the other (black, women etc.) as costly and identifies wage differentials as a short-run disequilibrium. Although, his definition of discrimination based on "tastes and preferences" was limited; it was able to justify the segregation in the workforce. However, Becker's definition was criticized later on since it failed to reason the existence of enduring wage differences (Swington, 1977; Darity, 1982).

Despite its simplicity, the approach "tastes and preferences" inspired many economists and hence added the reasoning of gender wage gaps. Some found the explanation in family obligations as the main interrupter of women's labor force participation (Mincer and Polachek 1974; Polachek 1981; Becker 1985) or pointed out worse work conditions of men as the source of their higher earnings (Filer 1985; Hersch 1991), while others relied on human capital theory and offer that women's lesser incentive to invest in human capital, for any reason, may cause employers to have less incentive to train females (Hersch 1991). However, despite their distinctive appearance, they all analyzed discrimination with the same old tools and shared an identical root either "utility maximization" or "minimizing perceived risk" (Shulman, 1996). While neoclassical economics focused mostly on market dynamics and at a point ignored, the role of gender discrimination and power relations on wage gap, discrimination approach referred discriminatory dynamics of labor market as the main source of wage inequalities (Madden, 1987) and therefore was able to give a meaning to the existing gaps between productivity and wage levels (Bergmann, 1971).

The concept "job segregation" has been seen as the principal source of gender differences in labor-market outcomes by many others (Bridges, 1982; Reskin, 1993, Petersen and Morgan, 1995). This argument was based on the idea that women tend to hold less advantageous work positions and to be employed within less favorable work structures than men, regardless of the productivity differentials (England,

1988). Furthermore, women's *crowding* in specific industries or occupations was resulted in increased female labor supply in particular industries/ occupations, high competition for existing jobs and therefore, low wages in a given industry or occupation (Terrell, 1992; Boraas and Rodgers, 2003; Solberg, 2005).

2.3 Labor Demand and Persisting Wage Gap

Various gender wage gap expressions are often interrelated and difficult to distinguish one from the other, both empirically and conceptually (le Grand, 1991), however, they are mainly focused on supply–side factors instead of examining the supply-demand interaction. The general tendency is to model labor demand at firm level and to explain wage disparities through firm specific wage policies, but the empirical debate could not be finalized due to the lack of matched panel data on individual workers and their employers.

Therefore, an alternative approach would be to widen the scope of research from firms to industries, since firms in a particular industry share common characteristics such as international competition, import quotas, tariffs, government subsidies, capital/ labor intensity of production etc. These common features will also shape the wage policies and hence, wage policies of various firms within a particular industry will have commonality to some extent[1]. Mortensen (2003, p.2) provides support for this argument:

> "There are systematic regularities in wage differentials supporting the alternative proposition that differences in pay policy exist across firms. This evidence suggests that different employers do pay similar workers differently. For example, the empirical literature on wage determination finds a positive association between wages paid and firm size. Large and persistent inter-industry wage differentials are also well documented."

Effects of industry characteristics on gender wage gap are not extensively debated in the literature, except international competition. As any other industry characteristic, if an industry is characterized with high international competition, then this should reflect on industry specific wage structure and therefore, industry specific wage gaps. On the other hand, the theory of job segregation, especially unequal industrial

[1] Industry specific wage structures are often examined (Kruger and Summers, 1988) and related to gender pay gaps (Blau , 1992; Fields and Wolf, 1995; Bayard et al., 2003).

distribution of female employment, could also be related to different work-position characteristics and hence, could be enlightening in search of a linkage between industry characteristics and industry specific wage gaps.

Becker (1957) was the first to use international competition together with wage differentials. He argued that increased competition will make discrimination a luxury consumption, a costly preference, which will sooner or later be terminated. Although Becker stimulated legion work in discrimination context, his analysis based on an analogy with international trade theory has received far less attention in the literature (Figart and Mutari, 2005). But still his definition of employers' discriminatory attitude as incompatible with increased competition became the mainstay of neoclassical approach. However, actual long-term dynamics of the labor market could not be reconciled with Becker's pure labor market discrimination explanation (Darity, 1982).

Here, the non-neoclassical approach provided a distinct perception of competition-wage interaction. On the contrary to neoclassical approach's definition of wage gap as a discriminatory attitude of employees and association of its persistence with lack of competition, non-neoclassical approaches related wage differentials to competition itself, competition within as well as across industries and competition among workers (Berik et al., 2003). They defined discrimination as an instrument of wage suppression and claimed that employers induce discrimination intentionally (Paul and Sweezy, 2007). Mason's (1997) work provided a powerful support for this argument through showing linkages between discrimination and firm's profit maximizing behavior and therefore, wage discriminations' consistency with competition.

On the other hand, our knowledge on the effects of openness as a major source of international competition is still very limited. Widely accepted version of comparative advantage theory suggests relative loses for low skilled workers in industrialized countries as a response to trade expansion, but the theory, referring to trade volumes and changes in their composition, does not hypothesize possible shifts in wages. Even less is known on the effects of financial liberalization on labor market, especially on its effects on wages. In terms openness and gender wage differentials, it is difficult to make a generalization and elaborate a complete theory. Whether women will benefit from increased openness or not, the extent of change in

women's relative wages will be determined in a complex multidimensional process. Elasticity of women's labor supply, the prevailing forms of wage determination (Fontana, 2008), women's *crowding* in into limited set of occupations and industries (Berik, 2000) and the structural change the country experiences through openness are just a number of limited components of this interaction. Empirical country specific studies are of critical importance for those who are willing to understand possible effects of openness on gender wage gaps and hence, Sub-section 3.1 summarizes the empirical studies on this subject.

3. LITERATURE SURVEY

Through the establishment of both national and international statistical institutes, data gathering processes evolved and more micro - macro level reliable data sets are primed for the use of social scientists. Moreover, improvements in statistical tools and generation of specific methods for wage gap analysis enlarged the activity in this field of study. The focus of this study is to understand the interaction between openness and its contribution to persistent gender wage gaps, hence the in the following section we provide a brief literature review on this area of research.

3.1 Openness- Gender Wage Gap Linkages

There are considerable amount of studies investigating the effects of increased openness on gender wage gap. Some of these studies have found compatible results with the neoclassical approach while others have strengthened their counter argument. The literature on the openness-wage discrimination relationship through a gender perspective can be roughly summarized in four areas. The main difference in these four areas is the ways of measuring the openness in industries. Increased openness in the industries are modeled through export orientation (see e.g. Berik (2000), Hazarika and Otero (2002), Berik et al. (2003), Reilly and Dutta (2005)), through import tariffs and quotas (see e.g. Reilly and Dutta (2005), Jacob (2007)), through capital mobility increase (see e.g. Seguino (2000), Braunstein and Brenner (2007), Oostendorp (2004)), and through trade liberalization (see e.g. Oostendorp (2004)). It is worth noting that there is no consensus among these different perspectives in terms of the effect of openness on the wage discrimination. The following section summarizes some of these studies in order to provide a background for our analysis.

In the Taiwan context, Berik (2000) uses industry-level panel data to provide an explicit test for the effect of export orientation in Taiwan on (unadjusted) gender wage ratios. She finds that, after controlling for employment segregation by gender

and other industry characteristics, greater export orientation is associated with smaller wage differentials between men and women. However, the author also highlights that this result is due to the fact that export orientation has a larger adverse impact on men's wages than women's wages, suggesting the importance of examining absolute wage levels as well as relative wages.

Findings of Hazarika and Otero (2002), on the other hand, are in some ways compatible with the Becker's theory of "competition in product market is reducing discrimination in labor market". Authors find that female-male earnings ratio is significantly higher in the export-oriented *maquiladora* sector than in the rest of urban Mexico. On the contrary, data also reveals an 11 % decrease in female-wage ratio in *maquiladora* during 1987-1999, where the opposite holds for the *non-maquiladora* sectors with a 4% increase in female-male wage ratio. The authors represent this increase in *non-maquiladora* as the effect of reduced import tariffs in 1994 and associate changes in tariffs with increased competition. When sub-groups, namely sectors with a 100% tariff reduction and sectors with a lower amount of tariff reduction, in *non-maquiladora* sectors are examined, it is observed that these two sub-groups have experienced different transformations. While *non-maquiladora* sectors with 100% tariff reduction experience a 5% increase in female male wage ratio, others are subject to a 13% decrease and authors consider these differentiated results as a support for their previously mentioned implication. Authors' explanation is far from being satisfying, since the female-male wage ratio changed in opposite directions, although, both sub-groups had experienced a tariff reduction. On the other hand, Fussel's (2000) multivariate analysis on 1993 Labor Trajectories Survey data of 198 women workers shows that *maquiladoras* do not employ women at higher wages in comparison to other traditional forms of female employment in Mexico. Author also points out the change in status of being employed in *maquiladora*, which was a privilege in 80s and turned out to be a penalty in 90s due to intentional employment of particularly disadvantaged women whether depending on their age, education or family status.

Berik et al. (2003) investigate manufacturing sector of two highly open economies, Taiwan and Korea between 1980 -1999. In case of Taiwan, this period is associated with increasing import and export shares, on the other hand, Korea's export share slightly decreased for the same time period and its imports had a flat course. Their

degree of openness reflected in residual wage gap too, with a slowly narrowing gender wage gap in Korea and a widening one in Taiwan through much of this period. Authors' empirical results support this preliminary observation and by integrating micro level labor market data with macro characteristics of industries, they indicate a positive relationship between increased openness and residual wage gap.

Black and Brainerd (2002) test Becker's hypothesis of declining gender wage gap in long run and find supportive results for the theory. In order to observe the effect of globalization on gender discrimination between 1976 and 1993, authors divide their sample of U.S. manufacturing industries into two sub-groups; concentrated and competitive. Their results reveal that trade increases wage inequality for low skilled workers, but it also reduces firms' discriminatory behavior. Particularly, they report that residual gender wage gap increased in concentrated industries relative to competitive industries. However, it should be kept in mind that Black and Brainerd focused only on changes in import shares and therefore, limited the possible sources of this increase. Applying their methodology, Artecona and Cunningham (2002) study the impact of trade liberalization in Mexico and find that trade liberalization alone widened the residual gender wage gap, but attribute this result to the increasing premium for men's greater experience.

Reilly and Dutta (2005) on the contrary find little evidence on the wage differentiating effect of trade related variables such as tariff rates and trade ratios in Indian labor market through 1983-1999. Authors note that, both the unadjusted and the residual gender pay gap are on a standstill, while a declining trend for "treatment" components of wage gap exists.

Jacob (2007) is another researcher, who used reduction in import tariffs in order to explain changes in wage disparities. Taking 1991 Indian trade reforms as the reference point, she uses individual-level data and tariff data from pre- and post-reform periods and finds a reduction in wage differences for female workers relative to male workers in the more open manufacturing sector industries. Jacob restricts the sample with high castes in order to avoid a possible bias due to inclusion of all castes with distinctive structures. However, intuitively one can claim that higher casts will have relatively more bargaining power for both genders. To make clear, women in higher castes will have more bargaining power than women in lower castes, and the

bargaining power gap between men and women will be smaller in higher castes compared to lower ones. Therefore, this restriction the author made is likely to cause a more severe bias and it raises a question what if the results would reveal if lower castes would have been examined instead of higher ones.

Oostendorp (2004) study the impact of globalization on the occupational gender wage gap through a cross-country analysis covering more than 80 countries between 1983 and 1999. He finds that there is a significantly narrowing impact of trade on the occupational gender wage gap for low-skill occupations, both in poor and rich countries, and for high-skill occupations in rich countries.[2]

In the context of openness and wages, some other studies focus on the effect of wage differentials on countries' foreign trade volume and composition instead of investigating the effect of trade on wage differentials. To claim that increased trade will perpetuate low wages for females as long as this wage gap promotes increases in trade volume, will not be misleading, as the structure of markets are intended to maintain the beneficiary environments. Therefore, few studies in this course are revealed below.

Seguino (2000) shows that beginning from 1970s Asian economies with more severe gendered wage structures grow faster credited to increased exports. She also claims that low female wages have contributed to increased investment through providing foreign exchange to purchase capital and intermediate goods which raise productivity and growth rates. Compatible with Seguino's conclusion, Busse and Spielman (2005) find that countries with a larger wage gap have higher export shares of labor intensive goods. They examine interaction between gender inequality and trade flows with a focus on comparative advantage of countries in labor-intensive manufactured goods for 92 developed and developing countries including Turkey, but authors do not report specific outcome of each country.

There are also some empirical studies aimed to identify the effect of capital mobility on wages through a gender perspective. Since capital mobility is the phenomenon of openness, it is worth to overview these studies along with those investigating the effects of import –export composition.

[2] However, his usage of data from ILO October Inquiry raises doubts against his results, since each country's data in ILO October Inquiry is collected separately by the country of itself with substantially different sampling methods, questionnaire forms and variable classifications.

Seguino (2000) finds support for her hypothesis that divergent trends in the (unadjusted) gender wage ratio in Taiwan and Korea over the 1981-1992 periods are related to the differences in the nature of foreign direct investment flows in the two countries. The author finds wider female earnings gap in Taiwan and addresses this to women's relatively higher concentration in more mobile industries. She also concludes that in an environment where capital is more mobile, the reality or threat of moving to lower wage sites limits the ability of workers to secure higher wages. Environments with lesser capital mobility, on the other hand, encourage firms to maintain competitiveness by other strategies, such as technological upgrading and improvements in product quality.

Braunstein and Brenner (2007) explore the effects of foreign direct investments on wages in urban China in 1995 and 2002 and find that FDI to total investment ratio has significant positive effects for both gender's wages; this positive effect changing from 1995 to 2002. The grater gains of women compared to men in 1995 reversed in 2002 into lower female gains suggesting that FDI flows have changing effects on wages depending on the shift of FDI's targeted industries. Shu et al. (2007) on the other hand, find that after controlling for individual, occupation, industry, and work sector characteristics neither FDI per capita nor FDI growth rate can be associated with wage variations for Chinese data of 2000.

Oostendorp (2004) also examines the effect of FDI on occupational wage gap and finds a positive correlation between the two in low-skill occupations. This positive correlation exists in high-skill occupations only for richer countries. According to Oostendorp, women employed in high skilled occupations in poorer countries face a widening significant wage gap through increases in FDI flows.

Conflicting results of above studies above may exist due to differences in methodology and data used or can be grounded on unique structures of country of interest. There are only a few studies trying to reason trade-wage interaction and a generally acknowledged perspective could not be realized yet. Whether they justify Becker's prevision or not, these studies ensure that this debate will continue to attract researchers, and their work will contribute to a deeper understanding of openness by all means and its impact on the labor market.

3.2 Gender Wage Gap Studies for Turkey

For the last decade, there has been limited number of studies trying to measure and/ or explain gender pay gap in the Turkish labor market. Data limitations and unavailability are the main reasons of this narrow gender pay gap literature. Several surveys including wage data that are conducted by the Turkish Statistical Institute could not be used in gender based wage gap analysis because of exclusion of the gender category. There are only a few surveys including both human capital endowment and gender variables and studies using those as data sources are summarized below.[3]

Anker (1997) uses 1990 ILO data in a cross-country evaluation of gender wage gaps and quotes a female to male non-agricultural and manufacturing wage ratio of 84.5 and 81 per cent respectively for Turkey. In another cross-country study Oostendorp (2004) examines occupational gender wage gap in 71 countries between years 1983 and 1999. Within 64 countries, he cites Turkey as the 57th country with a high occupational wage gap, a 0.22 percent. This notably contradicts with the results of Anker (1997), where Turkey ranked as the 6th country as one of the lowest gender pay gap within 31 countries. However, Oostendorp neither provides a full examination of found wage gap nor gives any information about the year of the data gathered form ILO October Inquiry, since his focus was the impact of globalization on occupational wage gap.

In their study, Ponthieux and Meurs (2005) propose a decomposition of monthly wage gap in 10 EU countries, namely Austria, Denmark, France, Germany, Greece, Ireland, Italy, Portugal, Spain and United-Kingdom. Their findings indicate that Denmark has the lowest discrimination rate, 26.2% and Turkey ranks as the third country with the highest discrimination rate with 77%, following Portugal (117.4%) and Greece (88.8%). Following their methodology another study, using 2003 HIES, reports an average gender wage gap about 25.2% in favor of men(Cudeville and Gürbüzer 2007) and when the study is restricted to full-time salary workers, gender wage gap shrinks to 10.4 %. In their earning functions Cudeville and Gürbüzer use a wide range of dependent variables related to job, firm, activity sector and geographic

[3] Turkey Labor Market Study conducted by ILO in 2006, reports a female male wage ratio of 0.85 for 1988, 0.91 for 1989 and 0.79 for 1994 and 0.78 for 2002. 1988 and 1989 HLFS, 1994 Household Income Distribution Survey and 2002 Household Budget Survey are used as data sources (2006).

location as well as human capital. Since working hours are highly correlated with employment sector, work pattern etc, authors consider number of hours worked as a gendered outcome of labor market. Thus, instead of adjusting wages according to the working time, authors use log of weekly hours worked as another explanatory variable. Results indicate a 0.77 female-male wage ratio after controlled for selectivity bias and attribute 67.1 % of gender wage differential to discrimination and 32.9% to endowments.

Dayıoğlu and Kasnakoğlu (1997) use data form 1987 HIES and investigate labor force participation and wage differentials between men and women in urban Turkey. They examine earning differentials in two main components, namely human capital differences and labor market discrimination. They find a 47.5 female-male wage ratio, after adjusting due to hours worked this ratio is risen up to 60 percent. When they detailed this ratio according to education level, occupation and employment status, their findings become more interesting. For all education levels, occupations and employment statuses male wages are higher than female wages, without any exclusion. They find a wage ratio of approximately 60 % for all educational levels with the exception of primary school graduates, where this ratio is no more than 40%. The highest female-male wage ratio is in commerce and sales with 80% and the lowest in agriculture, where male wages are nearly three times more than female wages. Due to their employment status, self-employed category indicates the biggest difference (38%) and wage earners the smallest (96%). Authors attribute this relative equality to high degree of public employment, however data limitations does not enable a further investigation in line with public/ private employment. Dayıoğlu and Kasnakoğlu (1997) use 3 different models for wage decomposition. In Model 1, years of schooling and regional dummies are used as explanatory variables. In Model 2, level of education dummies are used instead of years of schooling variable. Finally, Model 3 is developed as an expanded version of Model 1 with the inclusion of occupation and employment status dummies. Model 3, with the highest explanatory power reveals a 37.5 percent country wide wage differential. Authors could clarify 36.2 percent of this gap by explanatory variables, but 63.7 percent remained unexplained.

Tansel (2005), taking 1994 HIES, estimates separate wage equations for public, private and state owned enterprises. Basic statistics author generated from the survey

show that public sector indicates a lower gender wage gap with a 99.7 female to male wage ratio, while private sector wage gap considerably higher with a female-male wage ratio of 76.15 percent. After Oaxaca decomposition of male-female wage differentials, Tansel reports a 10, 28 and 11 percent unexplained wage differential in public employment, state owned enterprises and private sector respectively. Author emphasizes that private sector employment data is limited with covered private sector employees, with people covered by social security system in terms of retirement and health benefits and highlights the possibility of a higher actual public sector gender wage gap.

In order to make a deeper examination of gender wage gap in Turkish labor market, İlkkaracan and Selim (2007) use Employment and Wage Structure Survey (1994), which provide employer–employee-matched data set. The data they used covers three industries; manufacturing, mining & quarrying, and electricity, gas & water and includes not only human capital variables but also firm characteristics. Authors run two different wage regressions 1) earning function by Mincer (1974) including experience, job tenure and dummy variables for schooling and region and 2) an expanded wage regression including firm and work specific variables, such as occupation, industry, firm size, coverage of the work place under a collective labor agreement and private sector dummies. First, both models are estimated with a male dummy, the statistically significant coefficient of male dummy in both models interpreted by the authors as an existing gendered discrimination. Afterward, authors estimate the expanded model separately for male and female workers and decompose the difference between average female-male log hourly wages following Oaxaca's methodology. Their findings signify that the unexplained part of gender wage gap is 43 percent when only human capital variables are considered and that after including all explanatory variables still 22 percent of wage gap remains unexplained. Authors emphasize that this reduction can be interpreted as that occupational and industrial segregation, which are gendered labor market outcomes themselves, are substantial sources of gender wage gap.

4. AN OVERVIEW OF TURKEY

4.1 Demographic Transition

Turkeys demographic transition could be summarized with two characteristics; dramatic increases in population followed by extremely high share of working age population and more importantly, rapid urbanization.

Figure 4.1 shows the share of working age population (15 – 64) in total population. As seen in the figure, for the last three decades the share of working age population has been increasing.

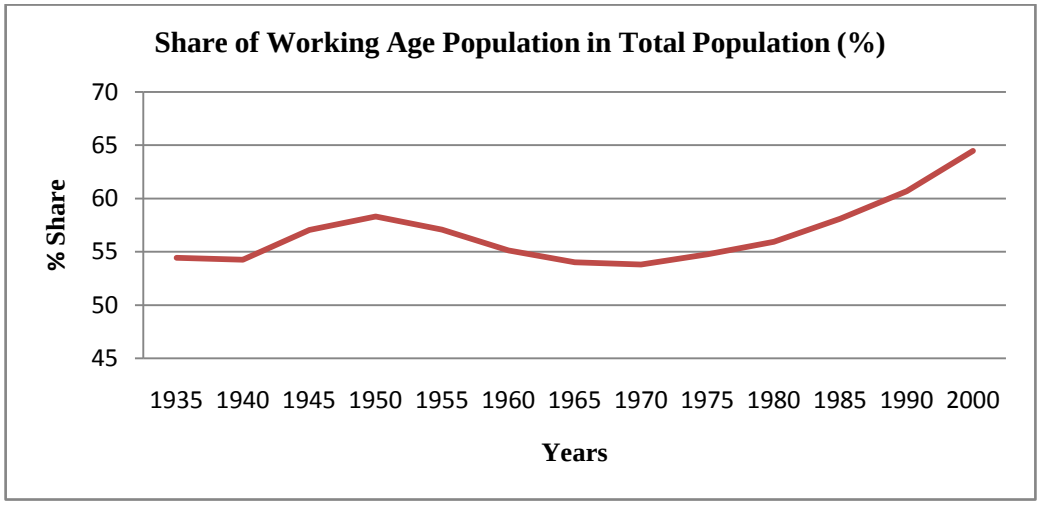

Figure 4.1 : Share of working age population in total population (1935- 2000).

Data Source: TURKSTAT Census (1935-2000)

Figure 4.2 below gives the opportunity to compare the period considered in this study, between 1988 and 2006, in terms of working age population. Not only in absolute numbers but also in terms of their share in the total population, working age population has been increasing. The share, which was 59.7 % in 1988, became 64.3% after eighteen years in 2006.

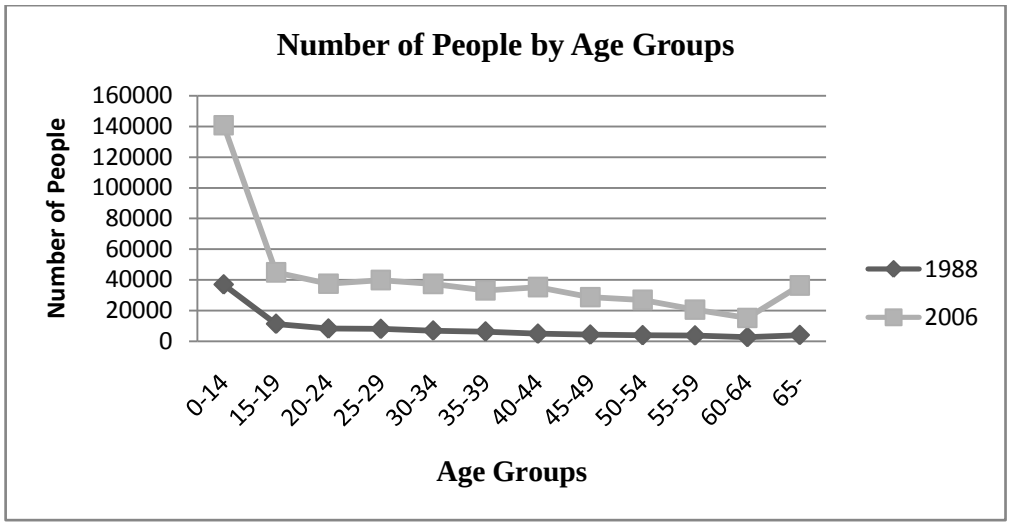

Figure 4.2 : Number of people by age groups (1988-2006).

Data Source: HLFS 1988, HLFS 2006

As it is a common pattern of many other developing countries, Turkey had been experiencing the "urbanization" phenomenon as well, especially after 1980s. When the changes in rural-urban shares are considered, this transformation becomes more apparent. Figure 4.3 illustrates changes in urbanization ratio in the last century. The urbanization ratio, which was slightly over 20 percent in 1927, almost tripled within 73 years and most of this change is experienced in the last two decades of this period. The urbanization rate, which was just 24.22% in 1927, had become 43.91% in 1980 and after only twenty years, in 2000 64.90% of population was living in urban areas.

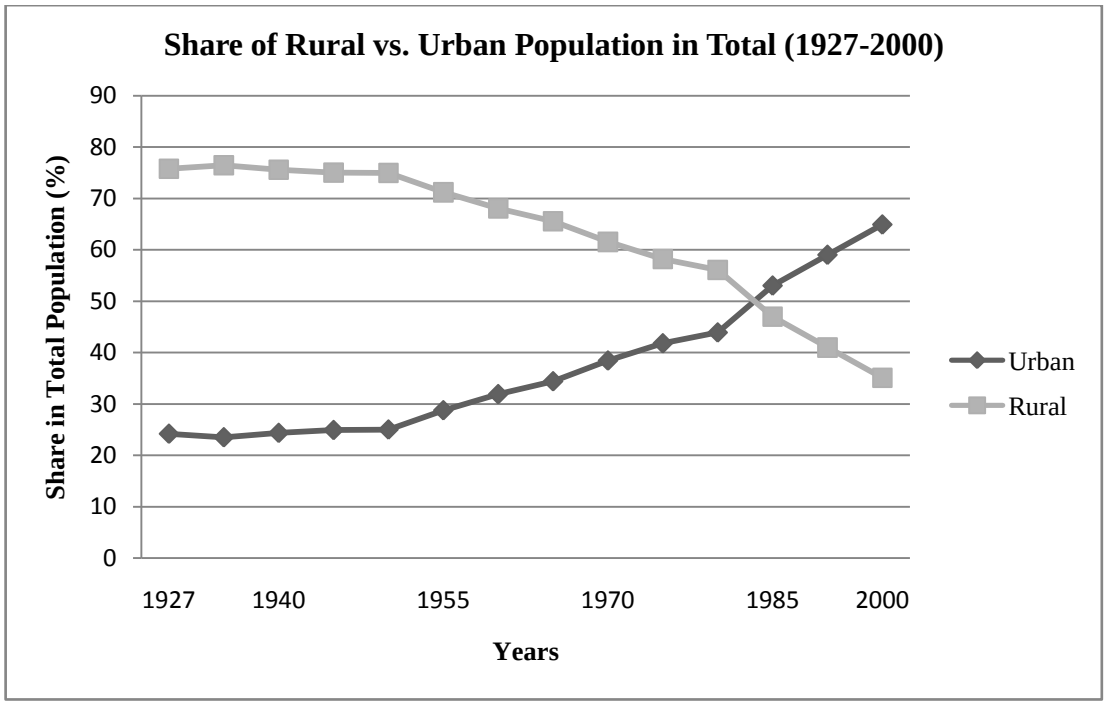

Figure 4.3 : Proportion of urban and rural population in total (%) (1927-2000).

Data Source: TURKSTAT Census Data (1927-2000)

Once 1988-2006 periods are examined, it became more apparent that demographic transition that Turkey has been experiencing is highlighting an increase in share of urban population for all age groups and especially for working age people. Moreover, the increase in share of working age population in urban areas goes beyond the increase in urbanization, as shown in Table 4.2, 5 percent and 4 percent respectively.

Table 4.1: Share of rural urban working age population

	1988	2006	Percentage Change
Urbanization ratio	0.62	0.66	0.04
Share of working age population	1988	2006	Percentage Change
Rural	0.37	0.32	(-) 0.05
Urban	0.63	0.68	0.05
Total	0.60	0.64	0.04

Data Source: HLFS 1988, HLFS 2006

Rural employment pattern is more likely to be based on agricultural production, whereas urban employment is leaning more on manufacturing and service. While industrialization mostly promoted urbanization through the creation of new urban

jobs, it failed to sustain adequate employment opportunities in long term, this phenomenon will be overviewed briefly in the next section.

4.2 Economic Transition

Economic Stability Measures adapted on January 24, 1980 is a landmark in Turkish economic history. Before explaining the structural change in Turkey Economy after 1980s, it is worth to state a short economic history of Republic of Turkey, particularly the account of economic crises, which always have been the source of change in countries' economic policy.

From the day it established, Republic of Turkey experienced several economic crises. Some of them were triggered by world economic crises such as Great Depression (1930) and Oil Crisis (1973) and lasted in long term stagnations. Others were caused by domestic factors along with policy defects.

In the first years of the republic, industrialization and the creation of a Turkish bourgeoisie were seen as the path to national economic development (Pamuk 2007), but the government was devoid of required fiscal and monetary policy tools[4], neither leading the economy through public expenditure was possible, nor the government had a control over money supply. Therefore, 1920s brought forth an initial liberal economy strategy which was relying on private-sector initiatives (Bayar, 1996). On the other hand, the economy was mainly leaning on agrarian production and the historical context was not providing adequate motivation for private sector to accumulate capital in terms of industrialization, since, trade, banking, foreign exchange speculations, import-export and usury were extremely profitable (Kazgan, 2005).

Following Great Depression, in 1930s this compulsory *laisser-faire* was replaced by a statist economic policy with superior controls over foreign trade and greater share

[4] Public revenue was only accounting as a 8-9% of total GNP (Pamuk, 2007), the Imperial Ottoman Bank, which had lost its privileges of issuing banknotes during the World War I, was still not operating as a central bank, domestic currency was experiencing great fluctuations caused by seasonality of export revenues. Addition to these all, in some ways Lausanne Treaty was worsening the situation with limiting Republic's ability to develop a national economic strategy (Bayar, 1999; Kazgan, 2005: Pamuk, 2007). First of all, it was immobilizing the development of a commercial policy till 1929 (It was declaring that Convention of July 5, 1890, regarding the publication of customs tariffs and the organization of an International Union for the publication of customs tariffs, should be in force again). Secondly and most importantly, the treaty was making the new Republic liable for the debts of Ottoman Empire.

of state in economic activity. As government became the main investor and leading producer, state-owned economic enterprises (SEES) gained power in primary industries such as iron-steel, textiles, chemicals and state banks (Sümerbank and Etibank) were established to finance SEES (Bayar, 1996). Import repressions through quotas and import duties created an environment full of opportunities for domestic producers. 1930s has been a milestone in economic history of Turkey. The structural change both in industry and agriculture, the establishment of central bank, the empowerment of state as an economic agent, the entry of labor law into force, 1st and 2nd industry plans[5] were distinctive features of this period. Although, the determined development phase of 1930s had been interrupted by World War II, institutions and infrastructure established in this period supported the change and development the economy experienced till 1980s (Kazgan, 2005).

Post World War II, the boom in world economy inspired a new direction, a new economic policy towards a more liberal economic system in Turkey. Although this new policy turned out satisfactory at the beginning, it could not be sustained after a few years. This improvised liberalization attempt brought enormous current account deficits and resulted in 1958 Currency Crisis (Kazgan, 2005). Haphazard government interventions replaced by a planned mixed economy in 1960s; the State Planning Organization was established and in order to empower infant industries of Turkey "import substituting industrialization" (ISI) policy was implemented. Under the governmental protection and availability of financial facilities, ISI maintained successfully till the end of 1970s. Similar to 1930s of *étatisme*, 1960s is a period in which Turkey economy overcame destructive effects of severe economic crises with dedicated governmental planning[6]. However, ISI did not extend to capital goods industries despite all the opportunity provided by the government and export orientation of manufacturing sector remained weak (Pamuk, 2007).

In 1978, following the Oil Crises, Turkey, like many other developing countries, was unable to honor her debts and balance of payments problems contributed

[5] The more comprehensive second five year industry plan, emphasizing the importance of energy sector and dispersion of industry in order to benefit backward areas, especially Eastern Anatolia, could never been implemented due to the World War II.

[6] Through first and second Five Year Development Plans (1963-1967; 1968-1972) , industries share in total GDP rose from 16.2 % to 22.6, moreover, third Five Year Development Plan resulted in 7% real GDP growth per year between 1973-1977 (Bayar, 1999). This achievement despite the economic stagnation following first Oil Crisis (1973) is particularly impressive.

substantially to a deep economic recession and a political and social crisis (Dibooğlu, 2003). In that context, government announced the launch of a new era in economic policy; a broad stabilization and liberalization program in January 1980. It was a shift in economies center of gravity from public to private, giving greater freedom to the market and obligating export promotion, devaluation of domestic currency, flexible exchange rate policy and import liberalization (Bayar, 1999). Figure 4.4 shows changes in export import trade volumes following 1980. Although the whole period experienced an increase in both export and import volumes, the real jump occurred in 2000s.

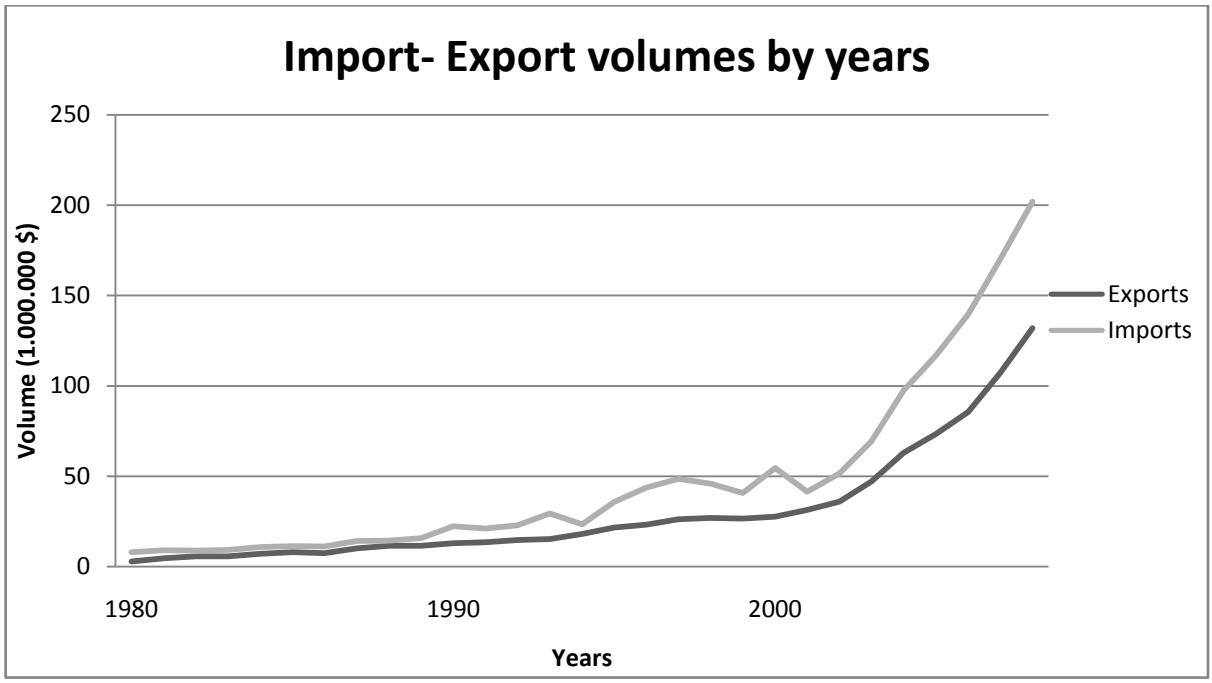

Figure 4.4 : Export- import volumes (1980-2008).

Data Source: TURKSTAT Statistical Indicators (2008)

In 1980s, Turkey experienced liberalization mostly in terms of commodity movements, and especially 1984-1988 labeled as the classical export-led (Boratav et. al. 1999) growth phase of Turkey economy. However, this phase reached its limit in 1988 and evolved in fully liberalization of capital accounts in 1989. This was an attempt to attract short term capital inflows and therefore finance deficit, but it caused greater vulnerability to external shocks (Pamuk, 2007) and ultimately made post 1980s Turkish economic history a never ending tale of financial crisis: 1991, 1994, 1998-2001 and finally, 2008 Crises. Figure 4.5 clarifies the volatility in FDI inflows, therefore enlightens its possible effects on country's economy.

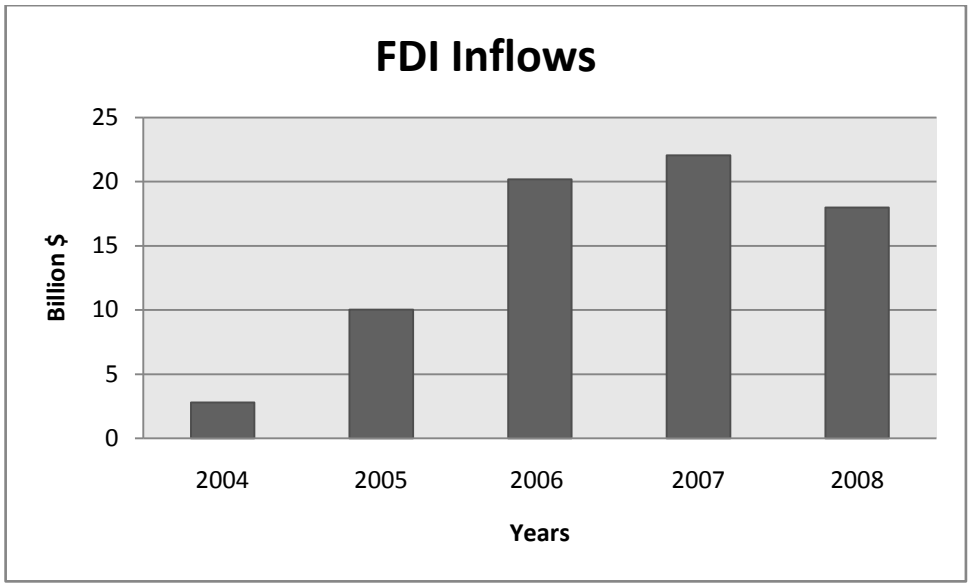

Figure 4.5 : FDI inflows (2004-2008).

Data Source: Undersecretary of Treasury 2008 Report

In terms of labor market outcomes, 1960s brought great achievements trough 1961 Constitution; obtained institutional rights, support for labor unions and higher wages in the absence of international competition (Pamuk, 2007). On the contrary, end of 1970s was characterized with decreasing real wages through high inflation and increasing unemployment (Bayar, 1999; Pamuk, 2007), but 1980s was even worse. Beginning in 1970s but deepening in 1980s liberalization generated strong impacts on income distribution (Boratav et. al., 1999) and the share of wages in national income decreased dramatically as indicated in Table 6.1, while interest incomes' share rose from 49 percent to 70 percent from 1980 to 1988 (Rodrik, 1990).

Table 4.2: Distributional indicators of Turkey economy (1973 = 100.0)

Years	Real per capita GNP	Real Wages
1973	100.0	100.0
1974	104.7	97.7
1975	110.1	105.4
1976	116.4	121.7
1977	118.5	124.2
1978	119.4	122.6
1979	116.5	101.5
1980	111.9	72.2
1981	112.9	64.8
1982	114.4	64.6
1983	116.2	67.3
1984	120.2	61.0
1985	124.9	54.8
1986	131.3	54.4
1987	131.8	55.1
1988	139.2	54.6

Source: Özmucur (1989), Table 2, as cited in Rodrik (1990).

Despite the preceding high inflation weakening of labor unions resulted in continuous decreases in real wages and the military rule also failed to cope with increasing unemployment (Rodrik, 1990). In 1980s, repressing real wages and therefore enabling a price competition through depreciation of Turkish Lira became the main policy tool for export promotion, instead of government promotion in terms of reduced investment costs (Yentürk, 2005). 1989 indicated increases in real wages driven by populist policies (Boratav et al. 1999), but this improvement remained temporary and once more in 1991 it reversed. The decrease in output levels following both 1994 and 2001 crises reflected in a deeper decline in wage share and this downwards trend persisted in subsequent periods (Onaran, 2006). Moreover, in terms of wages, Turkey experienced a widening polarization between high and low paid segments of urban workforce in post 1980s (Boratav et. al, 1999). Besides economic, social and political concerns, unemployment became a real treat for working age population of Turkey, beginning with 1978 Crisis, but gaining strength especially in 1990s (Kazgan, 2005).

4.3 Key Statistics of Labor Market: 1988-2006 Comparison

Turkey Labor market experienced major shifts in period 1988-2006. Parallel to improvements in educational attainment, more educated people entered the labor force, the employment pattern evolved for both genders, while agricultural employment shrinks, other sectors embedded these workers and a change in the industrial distribution of employment occurred. Average wage levels and security coverage also changed in these eighteen years.

4.3.1 Education

Figure 4.6 and Figure 4.7 illustrates changes in female and male educational attainment respectively. In 2006 the share of secondary school or higher graduates increased both for males and females, yet still higher proportions are owned by those who are primary school graduates. Illiterates' share decreased significantly for both genders, while the share of literate but none graduates remained same for females.

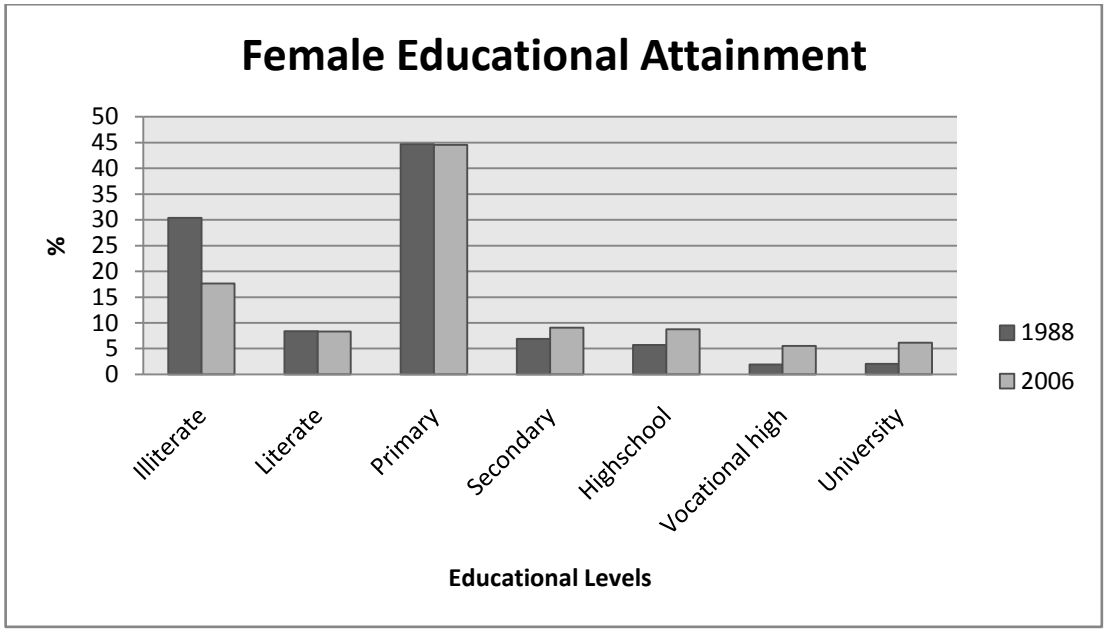

Figure 4.6 : Female educational attainment.

Data Source: HLFS 1988, HLFS 2006

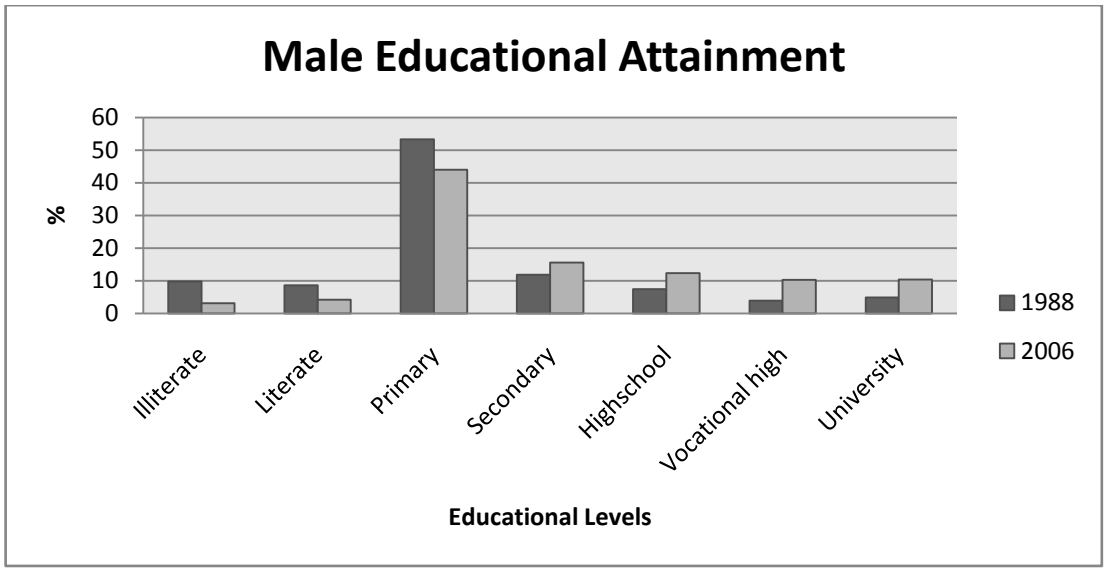

Figure 4.7 : Male educational attainment.

Data Source: HLFS 1988, HLFS 2006

4.3.2 Employment Status

Between 1988 and 2006 the composition of labor market changed significantly. Both gender experienced an increased employment opportunity as a regular employee, the share of unpaid family workers decreased in female employment but still remained at a quite very high level, at 40 percent.

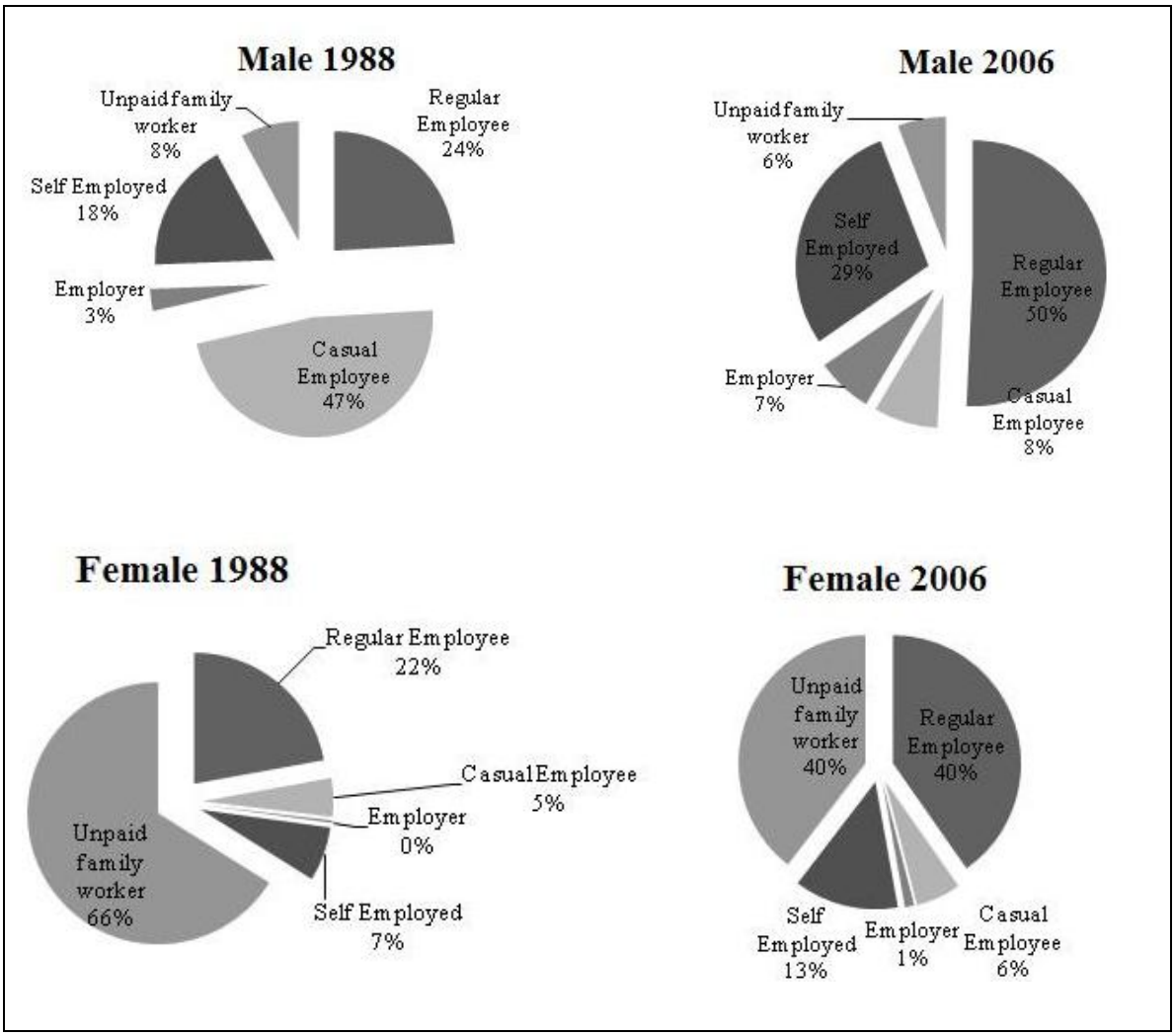

Figure 4.8 : Changes in employment status (1988-2006).

Data Source: HLFS 1988, HLFS 2006

4.3.3 Industry of Employment

Triggered by industrial development a movement from agrarian employment to industrial employment occurred during the period of interest. Especially female employment has gone through dramatic changes. Share of females employed in agriculture decreased strikingly from 71 percent to 48 percent, as seen in Table 4.3. Manufacturing, trade and service's share in total employment increased parallel to economic transition the country has been through.

Table 4.3: Industrial distribution of employment

	1988		2006	
	Female	Male	Female	Male
Agriculture	0.71	0.28	0.48	0.19
Mining	0.00	0.02	0.00	0.01
Manufacturing	0.11	0.19	0.15	0.20
Electric Gas	0.00	0.00	0.00	0.01
Construction	0.00	0.09	0.01	0.08
Trade	0.03	0.16	0.12	0.25
Transport	0.01	0.06	0.01	0.07
Finance	0.02	0.03	0.04	0.04
Services	0.11	0.17	0.19	0.16
Total	1.00	1.00	1.00	1.00

Data source: HLFS 1988, HLFS 2006

4.3.4 Wages

In 1988, female-wage ratio was 0.55 in total and it differed substantially between different employment statuses. Table 4.4 summarizes the female-male wage ratio for various employment types.

Table 4.4: Average female-male wage ratio by employment status

Employment Status	1988	2006[7]
Regular Wage Earners	0.86	0.92
Casual Wage Earners	0.63	0.62
Employer	0.80	-
Self Employed	0.47	-
Total	0.55	0.91
Controlled F-M Wage Ratio	0.91	0.93

Data Source: HLFS 1988, HLFS 2006

In 2006 the average male female wage ratio is 0.91 and after controlling for hours worked and elimination of outliers, through trimming data 5% at the top and bottom tails, this ratio increases to 0.93.

4.3.5 Social Security

Both males and females experienced an informalization in that period. The share of males' registered to a social security institution decreased slightly from 61.48 in 1988 to 61.07 in 2006, while women had experienced a greater decrease from 60.76 in 1988 to 54.85 in 2006.

[7] Income data for self-employed and employers are not available in TUIK 2006 Labor Force Survey.

5. DATA

5.1 Micro Level Individual Data

In the context of wage analysis Turkish Statistical Institute (TURKSTAT) began to conduct a sophisticated survey since 2006, called “Structure of Earnings Survey”. Compared to alternatives, this new methodology will bring further opportunities to social scientists in terms of empirical research since it will provide a wider sample and also a wider range of available variables including establishment characteristics as well as observable worker characteristics. Data limitations has been an important issue in gender based analysis in Turkey and this is a promising development for future research. On the other hand, for the time being, there are only two sources of attainable earnings data, which has a gender dimension and covers all branches of economic activity, namely HIES and HLFS. Due to the sample size advantages, HLFS is used as the main source of micro level data in this study. Although, HLFS has been conducted for many years, the variations in scope, data gathering process and variable definitions disabled the exploration of changes in wages in a time line and limited the study with years 1988, 2005 and 2006.

In the analysis of labor force participation, the sample is restricted with those aged between 15 and 64. In 2005 and 2006 sample, income data is only available for those who work as regular or casual wage earners and since the labor force participation and employment pattern of these two groups are quite very different from each other, to combine these two in a wage function would be flawed. Due to the limited number of casual wage earners, the analysis are only based on regular wage earners in order to avoid a possible bias in estimations, in the same manner, part time workers and students are also excluded. On the other hand, HLFS only provides the information on total income in last month, without any distinction between salaries, overtime pays and incomes obtained from additional jobs. Therefore, those who have an additional job or overworked are not included in the sample.

The variable, "hours worked per week" is problematic in both data sets. Even after the exclusion of part time workers, minimum number of hours worked per week was 15 and its maximum value was 99 in 2006, 4 and 97 in 2005 and 2 and 99 in 1988 and in both years they were skewed to the left. Therefore, the distribution of weekly hours worked trimmed by 0.01% at bottom tail and 0.05 % at the top tail for each data set. Afterwards, hours worked per month are imputed by multiplying normal hours of work per week by 4 and hourly wages are calculated by dividing monthly earning by hours worked per month.

The average characteristics of our sample are tabulated below in Table 5.1.

Table 5.1: Average sample characteristics (1988, 2005, 2006)

	1988		2005		2006	
Average	Female	Male	Female	Male	Female	Male
Job Tenure	6.72	8.28	5.65	7.81	5.53	7.38
Years of Schooling	8.96	6.97	10.16	8.74	10.28	8.82
Experience	12.87	18.32	13.7	19.17	13.84	19.08
Monthly Earnings	175.34	199.94	582.22	642.43	658.94	716.43
Weekly Hours	42.66	45.61	48.62	51.47	49.03	52.09
Sample Size	1763	8170	10786	39094	11922	40896

Data Source: HLFS 1988, HLFS, 2005, HLFS 2006

Men always hold higher levels of job tenure, while women's' educational attainment is above male average in 1988, 2005 and 2006. Women have 30 percent less experience compared to men, as women's average monthly earnings account for 90 percent of men's wages. In terms of average hours worked per week both groups appear to be similar, and it slightly increased during this period.

5.2 Macro Level Industry Specific Data

In comparative analysis of 2005 and 2006, industry specific import, export volumes and amount of gross national product (GNP) are used in the model as explanatory variables, which are derived from statistical yearbook of Turkish Statistical Institute (TURKSTAT). Table 5.2 demonstrates each industry's import to GNP and export to GNP ratios in 2004 and 2005.

Table 5.2: Import to GNP and export to GNP ratios

	Import/ GNP		Export/ GNP	
	2004	2005	2004	2005
Agriculture	0.078	0.094	0.082	0.076
Mining	0.179	0.157	3.038	3.157
Manufacturing	0.972	0.916	1.315	1.254
Utilities	0.006	0.009	0.002	0.002
Construction	0.000	0.000	0.000	0.000
Trade	0.004	0.004	0.053	0.046
Transportation	0.000	0.000	0.000	0.000
Financial	0.000	0.000	0.000	0.000
Services	0.000	0.000	0.000	0.000

Data Source: TURKSTAT Statistical Indicators (2008)

Furthermore, the amount of international capital inflows (FDI), the industrial distribution of foreign enterprises and their relative amount of capital are putted into analysis of 2005 and 2006.

Trade, FDI volumes and FDI density variables are included into analysis with their one year lagged values. FDI density covers the number of foreign owned companies in a particular industry and is cross- weighted by the total number of firms with foreign capital and their capital intensity. Weighting procedure is made within industry as well as between industries and therefore, captures the competition level in the specific industry. Table 5.3 summarizes changes in FDI inflows as their ratio to industry GNP from 2004 to 2005. Data on FDI are provided from annual FDI reports of Undersecretary of Treasury.

Table 5.3: FDI to GNP ratio and FDI density

	FDI/ GNP		FDI Density [8]	
	2004	2005	2004	2005
Agriculture	0.000	0.000	0.011	0.010
Mining	0.022	0.008	0.012	0.013
Manufacturing	0.004	0.011	0.085	0.081
Utilities	0.007	0.000	0.016	0.003
Construction	0.002	0.005	0.044	0.065
Trade	0.002	0.002	0.344	0.225
Transportation	0.016	0.063	0.070	0.066
Financial	0.003	0.127	0.111	0.146
Services	0.002	0.004	0.034	0.055

Data Source: Undersecretary of Treasury Annual FDI Report (2009)

[8] Values of FDI density are based on author's calculations and the calculation process is detailed in Appendices.

For 1988 analysis we could not use this variable set as FDI data is only available after 2003. Moreover, the recording method of international trade had changed in 1989, pre-1989 data and post-1989 data are not compatible with each other. Therefore, we will limit openness analysis with 2005 and 2006.

6. METHODOLOGY

The initial aim of this study was to explore the evolution of gender wage gap in time and to identify possible sources of these changes, specifically; to examine whether or not gender wage gap is affected by changes in degree of openness. After decomposing the mean wage gap into explained and unexplained components for each year, the unexplained part would be regressed on explanatory variables controlling for openness. However, wage information is only available for some particular years and this limitation disables a time series analysis of the gender wage gap. Moreover, the asymmetrical distribution of regular employees within industries is preventing an estimation of industry specific wage regressions due to the small sample sizes of particular industries such as agriculture, forestry, fishing, mining and quarrying. The data limitations are strictly reducing the number of methodological alternatives. Our study utilizes an adequate approach which still provides valuable insights in the context of gender wage gap - openness interaction.

The methodology we employed could be classified in three sub-sections: i) modeling labor force participation for male and female workers separately in order to correct for selectivity bias in our wage estimations, ii) modeling wage equations and testing for the ability of openness variables to represent industry characteristic and iii) decomposing wage gap into its components and to interrelate contribution of industries' degree of openness with the unexplained wage gap by using rank correlation coefficients.

6.1 Modeling Labor Force Participation

Prior to wage gap analysis, we will estimate labor force participation models for each year in order to refine wage equations by Heckman's (1979) correction for sample selection bias, which is further extended by Lee (1983). These estimates will be done for each gender separately. Due to relatively limited sample size and characteristics of the 1988 data, 1988 model will be differentiated from 2005 and 2006 models.

For 1988, individuals are grouped according to the following categories in terms of their employment status:

- not working (j=0)
- working with an earning (j=1)
- becoming an unpaid family worker (j=2)

The option working with an earning covers the employment statuses of regular/casual wage earners, employers and those who are self employed.

On the other hand, in the labor force participation model for 2005 and 2006 there are six alternatives for an individual:

- not working (j=0)
- working as a regular wage earner (j=1)
- working as a casual wage earner (j=2)
- being an employer (j=3)
- being a self employed (j=4)
- being an unpaid family worker (j=5)

The employment options defined above are categorical variables with more than 2 alternatives. Therefore a multinomial probit model or a multinomial logit model has to be selected. One important distinction between these models is the assumption of Independence of Irrelevant Alternatives (IIA) in multinomial logit models. For a multinomial logit model, the IIA assumption states that the ratio of probabilities for an individual to be in one of the two categories should not change when there are other employment opportunities (Gujarati, 1999; Kennedy, 2006). Therefore, first a multinomial logit model will be estimated and validity of the IIA assumption will be tested for[9]. If the IIA assumption holds the analysis will continue with multinomial logit model, if not a multinomial probit model will be preferred[10].

After the specification of multinomial probability model and computation of outcome probabilities, Lee's (1983) Inverse Mills Ratio will be computed using the following expression:

[9] Here an application of Hausman Specification Test will be used, for details see Hausman and McFadden (1984).

[10] These two modeling approaches are expected to give similar results, but it is computationally more difficult and time taking to estimate a multinomial probit model due to the high number of integrals in its likelihood function.

$$\lambda_{ij} = -\frac{\phi(Z_{ij})}{\Phi(Z_{ij})} \quad \textbf{(6.1)}$$

Above notation represents the selection term for individual *i* in category j, where ϕ and Φ symbolizes standard normal density and standard normal distribution functions respectively. After the computation of inverse Mills ratio, the analysis will continue with wage estimations including this ratio as one of the explanatory variables.

6.2 Wage Formulation

Wage regression equation, which will be used in our analysis, is a semi logarithmic earning function, consistent but not limited with Mincer's (1974) wage equation:

$$lnW = \beta_0 + \sum_{e=1}^{4} \alpha_e EDU_e + \beta_1 EXP + \beta_2 EXP^2 + \beta_3 JT + \sum_{r=1}^{7} \gamma_r REGION_r + \beta_4 MARRIED + \beta_5 URBAN + \beta_6 SEC + \sum_{o=1}^{3} \delta_o OCC_o + \sum_{i=1}^{9} \varrho_i IND + \beta_7 \lambda + u \quad (\mathbf{6.2})$$

In equation 6.2, *lnW* represents the natural logarithm of hourly earnings, *EDU* is a set of dummy variables for highest level of diploma attained, *EXP* and EXP^2 are experience and experience square respectively, *JT* stands for job tenure, λ is inverse Mills ratio and *u* is the disturbance term with zero mean and normal distribution. The equation also includes dummy variables for marital status (*MARRIED*), location (*URBAN*) and region (*REGION*) of the residence, registry to any social security system (*SEC*) and occupation (*OCC*). Moreover, equation 6.2 includes an additional variable set (*IND*) for industry of employment, this variable set is originally a dummy set but we will transform the coefficients of 0/1 dummy variables so that they reflect deviations from the "grand mean" rather than deviations from the reference category (Oaxaca and Ransom 1999; Yun 2005). That way, we will be able to add all industries in the wage equation without excluding any industry as the reference group. This transformation will not change the final results of the study and will enable us to identify the specific effect of each industry. This is particularly

important in our case, since our main interest is to figure out the role of industry of employment in wage differentials. The wage regressions will be estimated separately for male and females.

The wage equations will be estimated with selectivity terms; if the selectivity term has an explanatory power it will be kept in the model and if it is statistically insignificant, it will be excluded. The estimated coefficients in separate wage equations will be tested in order to investigate whether or not the returns of human capital and other explanatory variables differentiate between male and female workers. If the coefficients of an explanatory variable are statistically different in male and female wage equations, this will highlight a gap in returns of that particular variable and hence, a gap in wages. This test will be performed by estimating the model on a pooled sample of male and females by including a MALE dummy and the interaction between this MALE dummy and all other explanatory variables.

A significant coefficient for a male interaction variable will point out a statistically significant difference in the effects of this variable and hence a likely source of gender wage gap.

Before beginning wage gap decomposition analysis we will employ one final model for 2005 and 2006 which will enable a more detailed examination of industry of employment and wage differentials. The model in equation 6.2 will be revisited by replacing industry dummies with some other macro variables acting as a proxy for openness. Equation 6.3 presents this altered model:

$$\begin{aligned} lnW = \ & \beta_0 + \sum_{e=1}^{4} \alpha_e \, EDU_e + \beta_1 EXP + \beta_2 EXP^2 + \beta_3 \, JT + \sum_{r=1}^{7} \gamma_r \, REGION_r \\ & + \beta_4 \, MARRIED + \beta_5 \, URBAN + \beta_6 SEC + \sum_{o=1}^{3} \delta_o \, OCC_o \\ & + \beta_7 \, EXsh + \beta_8 \, IMsh + \beta_9 \, FDIsh + \beta_{10} \, FDIr \\ & + \beta_{11} \lambda + u \end{aligned} \qquad \textbf{(6.3)}$$

The definition of included industry characteristics are as follows:

EXsh: The industry specific export to GNP ratio

IMsh: The industry specific import to GNP ratio

FDIsh: The industry specific FDI inflows to GNP ratio

FDIr: The industry specific FDI density variable

We expect the estimated coefficients of common explanatory variables such as EDU, EXP, EXP^2, SEC, REGION *etc.* not to differ in equations 6.2 and 6.3, since the additional variables can represent industry characteristics adequately and therefore, could be replaced by industry dummies. Later on the coefficients of industry variables estimated from equation 6.3 will be used in the examination of rank correlation coefficients[11] which will be computed after wage gap decomposition.

Using these macro-level variables for industry characteristics has both practical and theoretical motivations. Main reason of replacing the industry dummies with the variables shown in equation 6.3 is to explore the actual sources of the differences between industries in terms of wage discrimination, rather than using predetermined dummies for the industries. An industry may be characterized with various features and all possibly effecting wage gaps in different dimensions. Whereas industry dummies in wage estimation may give clues about the industry specific wage structure, they do not provide any information on the possible sources of their varying coefficients. Alternatively, using continuous variables which have representative power of industry characteristics, such as import-export volumes and FDI inflows, will generate a deeper understanding of wage disparities.

Moreover, as mentioned above, usage of dummy variables generates some statistical issues such as dummy variable trap and identification problem. Although, new econometric tools are developed to eliminate these problems, there are still some disadvantages of dummy variables. In our case, the main problem of having dummy variables is the decreased sample size. The effect of an industry dummy on the wage differential can only be estimated accurately, if there are enough male and female workers in that industry.

The abovementioned problem of sample size occurs in our dataset. First of all, women employment tends to concentrate in some particular industries and this often results in statistically insignificant coefficients for industry dummies in wage regressions. On the other hand, the employment status and industry interaction can further suppress sample size. When sample is limited with only one of the

[11] The computation of rank correlation coefficients is detailed in Section 6.3.

employment statuses, this restriction may affect different industries' shares in the sample asymmetrically. For example, general pattern of employment in agriculture tends to be in the form of "unpaid family worker", however if wages are considered into account, this group of employment status should be omitted. Consequently, the omission of unpaid family workers in general, will result in dramatic decreases in agricultural employment, which is the case in our sample. Therefore, if there are continuous variables which may proxy industry characteristics, their usage will eliminate quantitative restrictions and moreover, will improve F values through increased degrees of freedom.

6.3 Decomposing Gender Wage Gap

After estimating wage regressions, the female-male mean wage difference will be decomposed into explained and unexplained components by the widely used Oaxaca (1973) method. In this analysis male wage structure is assumed to be the non-discriminatory structure, assuming that males are paid according to their productivity and only the female wages are affected by discriminatory behavior due to women's lower level of bargaining power.

Hereafter, the equations 6.4 and 6.5 below will be used for simplicity to represent the wage functions of males and females respectively.

$$lnW_{mi} = \alpha_m Z_{mi} + \theta_m \lambda_{mi} + u_{mi} \quad \textbf{(6.4)}$$

$$lnW_{fi} = \alpha_f Z_{fi} + \theta_f \lambda_{fi} + u_{fi} \quad \textbf{(6.5)}$$

In equations 6.4 and 6.5 Z is the vector of explanatory variables mentioned above, λ is the selectivity term and u is error term, which is assumed to be normally distributed with zero mean. The selectivity term λ is unique for each individual; therefore the inclusion of λ to the vector Z_i in equations 6.6 and 6.7 with other explanatory variables will not cause a drawback.

$$\beta_m X_m = \alpha_m Z_{mi} + \theta_m \lambda_{mi} \quad \textbf{(6.6)}$$

and

$$\beta_f X_f = \alpha_f Z_{fi} + \theta_f \lambda_{fi} \quad \textbf{(6.7)}$$

will yield the expressions given below:

$$lnW_{mi} = \beta_m X_{mi} + u_{mi} \quad \textbf{(6.8)}$$

$$lnW_{fi} = \beta_f X_{fi} + u_{fi} \quad \textbf{(6.9)}$$

The difference between log hourly wages of males and females can be written by subtracting equation 6.9 from 6.8. Considering that u_{mi} and u_{fi} have zero means and that the regression line passes through the sample means, the mean wage difference can be written as in equation 6.10.

$$\overline{lnW_m} - \overline{lnW_f} = (\hat{\beta}_m \bar{X}_m - \hat{\beta}_f \bar{X}_f) \quad \textbf{(6.10)}$$

In equation 6.10, bars denote the sample means and $\hat{\beta}$ is a vector of OLS regression coefficients. First term on the right hand side of equation 6.10 can be transformed into 6.11.

$$(\hat{\beta}_m \bar{X}_m - \hat{\beta}_f \bar{X}_f) = \hat{\beta}_m \left(\bar{X}_m - \bar{X}_f\right) + \bar{X}_{fi}(\hat{\beta}_m - \hat{\beta}_f) \quad \textbf{(6.11)}$$

Thus, equation 6.11 can be rewritten as 6.12.

$$\overline{lnW_m} - \overline{lnW_f} = \hat{\beta}_m \left(\bar{X}_m - \bar{X}_f\right) + \bar{X}_f(\hat{\beta}_m - \hat{\beta}_f) \quad \textbf{(6.12)}$$

The first term on the right hand side is called as “endowment” part and refers to the share of wage gap which can be attributed to differences of female-male characteristics, in a way, which can be “explained” or “justified”. On the other hand, the second “treatment” term reveals the differentiation in female-male wages due to the differences in estimated coefficient vector $\hat{\beta}$, which is expected to be equal to zero in a non-discriminatory environment. This is the “unexplained” or “unjustified” component.

While using dummy variable sets in a regression analysis, one of the dummies should be omitted in order to eliminate perfect multicollinearity, resulting with an issue known as the “dummy variable trap”. The parameter estimates for each dummy variable will differ depending on the left out group, *i.e.* the comparison category. Decomposition results for categorical predictors highly depend on the choice of the omitted base category (Oaxaca and Ransom 1999; Horrace and Oaxaca 2001; Polavieja 2005; Yun 2005b). To avoid this identification problem, base categories will be added to the regressions through a standard dummy coding and transforming

the coefficients vector so that deviations from the grand mean are expressed (Yun 2005b; Jann 2008). This transformation will not change the final results of the study and will enable us to identify the specific effect of each dummy variable in all dummy sets. This is particularly important in our case, since our main interest is to figure out the role of industry of employment in wage differentials.

The methodology explained above will be used for 1988, 2005 and 2006 datasets and the changes in wage differentials will be discussed. Afterwards, the computed values of unexplained gender wage gap due to the differences in industry of employment will be further examined for 2005 and 2006. Rank correlation coefficients will be calculated between each industry's contribution to unexplained gender wage gap and the values of industry specific openness indicators to evaluate the interaction between industry of employment and unexplained gender wage gap. Finally, the coefficients of openness indicators computed from equation 6.3 will be compared to rank correlation coefficients and their compatibility will be examined.

7. ESTIMATION RESULTS

7.1 Multinomial Probit Estimates

First we estimate a multinomial logit model for labor force participation choice of males and females separately for each year. The explanatory variables in the multinomial logit model of each year are identical with only one exception, which is due to the different grouping of possible outcomes.

Common explanatory variables are as follows: A set of dummy variables representing region of residence are included to control for the differentials in living standards and employment opportunities. These regional dummy variables are Istanbul, Blacksea, Central Anatolia, Mediterranean, Aegean, Marmara, East and Southeast. The reference group is the Southeast. Istanbul is excluded from the Marmara region and taken as a separate dummy since it has particularly distinctive characteristics. Similarly, a set of dummy variables are included for the highest level of diploma attained; Illiterate / None, Primary School, Secondary School, High School[12], and University or higher. Illiterate / None is the reference group and is limited with those who are not literate and who are literate but do not hold any diploma. Urban is another location dummy, which has the value 1 for those living in areas with a population over 20000 and 0 otherwise. Married is a dummy representing marital status, it takes the value 0 for those who are single, widowed or divorced and 1 otherwise. In 2005 and 2006, couples who are not married but living together are counted as married and vice versa married couples who are not living together counted as single[13]. Student is another dummy variable and represents those who continue his/her education and it excludes people continuing to Open University[14]. Age and HH Size are continuous variables and stand for individual's

[12] This group includes both regular high schools and technical high schools.

[13] 1988 HLFS data does not have such a distinction.

[14] Open University is established in 1982 but this category is only provided in 2005 and 2006 HLFS. Therefore, in 1988 such a distinction could not be made.

age and the size of the household respectively. PC Income is the variable for per capita household income and is computed as total household income divided by household size. Here total household income excludes the income of the individual at hand. As mentioned in Section 5, 2005 and 2006 HLFS only provides earnings of those who work as casual or regular wage earners; therefore, in 2005 and 2006 an additional variable, PC Schooling, is included into the model. PC Schooling is the per capita years of schooling of the household members other than the person at hand and calculated as total years of schooling of employers and self employed people divided by household size[15]. PC Schooling is a proxy for earnings of employers and self employed. Since unpaid family workers do not have an income, they are not taken into account.

The model also includes the age information for the households, in particular the children. The number of children in the household are categorized into three age groups; Children 0-6 (R), Children 7-14 (R) and Children 15-24 (R) representing the children aged between 0-6, 7-14 and 15-24 respectively. All three variables are defined as ratios; the share of children at the specified age group in total household size. Children 0-6 (R) represents small children who do not attend any educational institution, while Children 7-14 (R) accounts for dependent children who study. Finally, Children 15-24 (R) covers those at a working age, but who were continuing to their study and neither married nor employed at the time of the survey. Likewise, Unemp. Elderly (R) counts for the share of those older than 64 and who are not employed.

For 1988 estimations, as two different choices of employment are to work with an earning and being an unpaid family worker, we added to the model two additional variables which will provide a distinction between these two categories; Paid Emp.(R) and Unpaid FW (R). These are the share of those employed with an earning[16] and the share of the unpaid family workers in the household respectively. Here too, one's own employment status is ignored in order to avoid a possible upward bias in estimations. In 2005 and 2006 the variable Paid Emp.(R) expanded into four new variables, since the employment choices in these years are a detailed

[15] Note that, for an individual who is employer or self employed, total years of schooling variable excludes one's own years of schooling consistent with the calculation of PC Income.

[16] This covers those, who are casual/regular wage earner, employer or self employed.

version of employment choices in 1988. These are Regular WE (R), Casual WE (R), Employer (R) and Self Employed (R) and all are generated with a similar logic, representing those regular wage earners, casual wage earners, employers and those self employed.

Models for females include one final additional variable; Emp. Female (R). Emp. Female (R) represents the share of employed[17] women in aggregate number of women in working age within the household. This variable is included to the model in order to capture households' attitude towards the idea of women working outside home to earn money. The coefficient of this variable is expected to be positive, since higher Emp. Female (R). will indicate a more positive attitude and therefore, induce women to participate in the labor force.

The multinomial logit model we that we estimated with above mentioned explanatory variables did not satisfy the IIA assumption[18]. For this reason, we use multinomial probit modeling instead in the following analysis[19].

The choices in 1988 model are not working (j=0), working with an earning (j=1) and being an unpaid family worker (j=2). Since we are particularly interested in paid employment, marginal effects of each variable on the probability of joining paid employment are given in Table 7.1. Associated standard errors are reported in parenthesis.

While secondary school graduation has a significantly negative effect on males labor force participation choice, all other components of educational dummy set have a significantly positive effect on paid employment both for men and women and except primary school graduation, all have a stronger effect of women's employment compared to men. Being married decreases women's labor force participation while it has a positive effect on men's paid employment choice, residency in an urban area has similar effects though it is insignificant in women's paid employment choice.

[17] Here employed refers to paid employment.

[18] Marginal effects computed from multinomial logit and multinomial probit estimates are almost identical, but their reported significance levels differ. Moreover, depending on the multinomial probability model used, also inverse Mills ratios vary. Therefore, to test multinomial logit estimates for IIA assumption is particularly important.

[19] Our analysis reveals that selectivity bias does not occur in our data sets, therefore, we will limit the discussion of multinomial probit analysis in order to evaluate model accuracy with 1988 data, but will not provide any further examination of multinomial probit estimates of 2005 and 2006. On the other hand, multinomial probit as well as multinomial logit estimates are provided in Appendices.

Being a student decreases the probability of being employed for both gender groups as it is expected. Age is also negatively correlated with employment probability but it is significant only in case of male employment.

Table 7.1: Marginal effects after multinomial probit estimation (1988)

	Female	Male
Istanbul [d]	0.025**	0.009
	(0.009)	(0.01)
Blacksea [d]	-0.01	-0.06***
	(0.009)	(0.01)
Center An. [d]	-0.001	-0.02
	(0.008)	(0.01)
Mediterranean [d]	-0.0003	-0.03*
	(0.008)	(0.01)
Aegean [d]	0.012	-0.012
	(0.009)	(0.01)
Marmara [d]	0.0004	0.004
	(0.009)	(0.013)
East [d]	-0.049***	-0.04**
	(0.007)	(0.01)
Primary School [d]	0.003	0.03**
	(0.005)	(0.008)
Secondary School [d]	0.06***	-0.03**
	(0.011)	(0.012)
High School [d]	0.277***	0.03**
	(0.014)	(0.01)
University/ higher [d]	0.638***	0.12***
	(0.019)	(0.01)
Urban [d]	-0.008	0.04***
	(0.004)	(0.007)
Age	-0.0003	-0.005***
	(0.0002)	(0.0003)
Married [d]	-0.079***	0.33***
	(0.006)	(0.01)
HH Size	-0.01***	-0.03***
	(0.001)	(0.001)
Children 0-6(R)	-0.03	0.38***
	(0.016)	(0.02)
Children 7-14(R)	0.066***	0.37***
	(0.013)	(0.02)
Children 15-24(R)	-0.112***	-0.11**
	(0.023)	(0.03)
Emp. Female(R)	0.173***	-----
	(0.01)	
Unemp. Elderly(R)	-0.042	0.19***
	(0.025)	(0.04)
PC Income	-0.0001***	-0.0002***
	(0.00001)	(0.00003)
Paid Emp.(R)	-0.017	-0.07**
	(0.015)	(0.02)
Unpaid FM(R)	-0.062 **	0.5***
	(0.023)	(0.024)
Student [d]	-0.097***	-0.56***
	(0.003)	(0.014)
Number of observation	31223	29652
Accurate estimates (%)	0.71	0.78

Note 1: * p<0.05, ** p<0.01,*** p<0.001

Note 2: Standard errors are reported in parenthesis and reported marginal effects are computed for paid employment category. Superscript "d" refers to dummy variables.

Shares of children aged below 15 have a positive relation with men's paid employment choice, while in case of women, share of children aged below 6 has a negative parameter for the choice of paid employment but it is not statistically significant, this holds also for elderly people's share in household. As expected, an

increase in per capita household income reduces the tendency to be employed both for men and women. The female employment pattern of the household, Emp. Female (R), has also a positive effect on women's employment choice in the context of paid employment.

7.2 Wage Regressions

Our wage equation includes four sets of dummy variables for a) region of residence (Istanbul, Blacksea, Central Anatolia, Mediterranean, Aegean, Marmara, East, Southeast), b) industry of employment (Agriculture, Mining, Manufacturing, Utilities, Construction, Trade, Transportation, Financial, Service), c) occupation (Occupation A, Occupation B, Occupation C, Occupation D) and d) final diploma attained (Literate / None, Primary School, Secondary School, High School, University or higher). Other dummies included to the model represent e) location of the residence: Urban, f) whether or not individual is covered by a social security system: Security, g) marital status: Married, h) gender: Male. Experience is actually a proxy for total years of employment and is calculated as age minus seven minus years of schooling. Job Tenure on the other hand, was already included in the raw data. The coverage of each industry category is as follows; Agriculture covers those who are employed in agriculture, forestry, hunting and fishing, Mining covers mining and quarrying, Utilities covers electricity, gas and water supply sub-industries, Trade covers wholesale and retail trade, hotels and restaurants, Transportation covers transportation, communication and storage, Financial covers financial intermediation ,real estate, rental and business services and finally, Service covers community services, social and personal activities.

Occupational categories are not unique in each year's raw data set. Therefore, we regrouped occupations for both three years. The grouping procedure depends on average characteristics of each pre-determined occupation. New occupations are classified in line with the sub-sample's average level of monthly earning, years of schooling, experience and job tenure. Each occupation is ordered and then clustered due to their rank for each variable and interaction of these variables.[20]

[20] Regrouping process is detailed in Appendices.

Pooled wage equation estimations of 1988, 2005 and 2006 are represented in Table 7.2. To estimate wage equation with a male dummy aims to control the accuracy of a wage differentiation assumption. As seen in Table 7.2[21] male dummies' coefficients are statistically significant at 0.001 level for the whole period. The coefficient which was 0.105 in 1988, is reduced by approximately 50 percent in 2005 and is 0.056, however, in 2006 it rise again and become 0.083.

[21] Southeast (*REGION*), Literate/ None (*EDU*) and Occupation D (*OCC*) are base categories.

Table 7.2: Pooled wage estimates of 1988, 2005 and 2006

	1988	2005	2006
Istanbul	0.211***	0.220***	0.280***
	(0.020)	(0.009)	(0.009)
Blacksea	-0.073**	-0.034***	0.047***
	(0.025)	(0.010)	(0.010)
Center Anatolia	0.026	0.012	0.075***
	(0.021)	(0.010)	(0.009)
Mediterranean	-0.038	-0.007	0.049***
	(0.023)	(0.010)	(0.010)
Aegean	-0.083***	-0.040***	0.028**
	(0.023)	(0.009)	(0.009)
Marmara	0.008	0.050***	0.103***
	(0.024)	(0.009)	(0.009)
East	0.003	0.058***	0.107***
	(0.026)	(0.011)	(0.011)
Mining	-0.133*	0.530***	0.436***
	(0.052)	(0.026)	(0.026)
Manufacturing	-0.062	0.045*	-0.005
	(0.044)	(0.021)	(0.021)
Utilities	-0.180*	0.394***	0.341***
	(0.076)	(0.029)	(0.028)
Construction	0.201***	0.056*	0.011
	(0.046)	(0.024)	(0.023)
Trade	-0.081	-0.100***	-0.134***
	(0.045)	(0.021)	(0.021)
Transportation	-0.007	0.127***	0.086***
	(0.046)	(0.022)	(0.022)
Financial	0.105*	0.076***	0.048*
	(0.047)	(0.022)	(0.022)
Services	-0.117**	0.154***	0.136***
	(0.043)	(0.021)	(0.021)
Primary School	0.043*	0.072***	0.047***
	(0.019)	(0.013)	(0.012)
Secondary School	0.223***	0.133***	0.119***
	(0.024)	(0.014)	(0.013)
High School	0.468***	0.346***	0.324***
	(0.023)	(0.014)	(0.013)
University/ higher	0.920***	0.693***	0.692***
	(0.028)	(0.015)	(0.014)
Urban	0.034**	0.056***	0.065***
	(0.013)	(0.005)	(0.005)
Married	0.093***	0.102***	0.084***
	(0.014)	(0.006)	(0.005)
Job Tenure	0.007***	0.019***	0.019***
	(0.001)	(0.000)	(0.000)
Experience	0.040***	0.026***	0.027***
	(0.002)	(0.001)	(0.001)
Experience Square	-0.001***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Security	0.171***	0.352***	0.327***
	(0.015)	(0.005)	(0.005)
Occupation A	0.125***	0.283***	0.329***
	(0.020)	(0.009)	(0.009)
Occupation B	0.005	0.139***	0.149***
	(0.018)	(0.007)	(0.006)
Occupation C	0.011	0.053***	0.054***
	(0.015)	(0.007)	(0.006)
Male	0.105***	0.056***	0.083***
	(0.013)	(0.005)	(0.005)
Constant	-1.164***	-0.381***	-0.290***
	(0.047)	(0.025)	(0.025)
R-squared	0.433	0.573	0.585
N	9933	49880	52818

* p<0.05, **p<0.01 , *** p<0.001

The statistically significant positive coefficients of male dummies give adequate motivation to continue the analysis with separate estimates of female male wage equations and investigate possible gender pay discrimination. Note that separate

wage equation estimates for the males and females provide a more general model than the pooled estimates with a male dummy above. In particular, all parameters are allowed to vary between males and females in the separate estimation procedure. We further stress that the inverse Mills ratio that was calculated in the previous section was statistically insignificant; hence it is not included in wage regressions.

Female male wage equation estimates for 1988, 2005 and 2006 are given in Table 7.3 below. Second, third and fourth columns of the table correspond to significance levels of differences in female male wage regression coefficients. Significance levels are derived from year based pooled wage estimates which are modeled with male interaction variables[22]. Estimated coefficients of female and male wages are represented in fifth and six columns respectively. Seventh and eighth columns refer to 2005 and finally, ninth and tenth columns report the estimation results for 2006. OLS estimates reveal that region of residence does not affect wage setting of male and female workers dissimilarly and urban residency has a parallel effect on wages. All educational attainment dummies have statistically significant positive signs, except for primary school graduation, which has a positive but insignificant coefficient. Increased educational attainment favors both genders, but women usually experience lower returns to education compared to men, except secondary school graduates, though male-female difference is statistically insignificant. Marriage dummy has a positive sign for both males and females but it is only significant for males. Since it reflects formal employment, being covered by a social security system benefits the two groups, but mostly women. Job tenure reveals higher returns to women on the contrary to experience. Occupational categories appears to have slightly differentiated effects on male-female wages, where only women employed in occupation C earn less than their male counterparts. Most beneficial industries for men are construction and financial respectively. On the other hand, women employed in financial and manufacturing earn more than men while the opposite holds true for women employed in construction. In terms of industry of employment, other industries neither have a significant effect on wages nor do their returns differentiate between male and female workers.

[22] Pooled wage equation which includes male interaction variables is employed in order to compute the differences in female male wage regression coefficients. In pooled estimates, any statistically significant coefficient of male interaction variables reports that the return of that particular variable differs between genders. Pooled estimates for 1988, 2005 and 2006 are provided in Appendices.

Table 7.3: Female- male wage estimations (1988, 2005 and 2006)

	Significance level of coeff. diff.			1988		2005		2006	
	1988	2005	2006	Female	Male	Female	Male	Female	Male
Istanbul		*		0.170**	0.226***	0.138***	0.225***	0.213***	0.285***
				(0.060)	(0.022)	(0.024)	(0.010)	(0.025)	(0.010)
Blacksea		***	***	-0.140*	-0.056*	-0.209***	-0.003	-0.076**	0.070***
				(0.070)	(0.026)	(0.026)	(0.011)	(0.026)	(0.011)
C. Anatolia				0.044	0.028	-0.023	0.010	0.029	0.078***
				(0.062)	(0.022)	(0.025)	(0.011)	(0.026)	(0.010)
Mediterranean		*	*	-0.050	-0.032	-0.106***	0.004	-0.035	0.062***
				(0.066)	(0.024)	(0.026)	(0.011)	(0.027)	(0.011)
Aegean		*	***	-0.089	-0.076**	-0.128***	-0.029**	-0.070**	0.047***
				(0.064)	(0.024)	(0.025)	(0.010)	(0.025)	(0.010)
Marmara		***	***	-0.097	0.034	-0.098***	0.078***	-0.023	0.131***
				(0.070)	(0.026)	(0.025)	(0.010)	(0.025)	(0.010)
East				0.013	0.007	-0.012	0.064***	0.036	0.116***
				(0.082)	(0.027)	(0.032)	(0.012)	(0.031)	(0.012)
Agriculture		***		0.179	0.004	-0.048	-0.144***	-0.016	-0.107***
				(0.104)	(0.042)	(0.066)	(0.020)	(0.059)	(0.020)
Mining				-0.209	-0.095**	0.387***	0.385***	0.208*	0.334***
				(0.124)	(0.029)	(0.089)	(0.015)	(0.097)	(0.014)
Manufacturing	*			0.053	-0.026	-0.110***	-0.096***	-0.102***	-0.099***
				(0.039)	(0.014)	(0.019)	(0.006)	(0.019)	(0.005)
Utilities				-0.207	-0.125*	0.202**	0.255***	0.162*	0.249***
				(0.152)	(0.060)	(0.069)	(0.020)	(0.069)	(0.017)
Construction	**			-0.067	0.238***	-0.151***	-0.084***	-0.169***	-0.087***
				(0.086)	(0.020)	(0.038)	(0.011)	(0.034)	(0.010)
Trade		***	***	0.009	-0.052**	-0.205***	-0.251***	-0.179***	-0.244***
				(0.047)	(0.018)	(0.019)	(0.007)	(0.019)	(0.006)
Transportation		*	***	0.067	0.017	0.017	-0.020*	0.064*	-0.023**
				(0.058)	(0.021)	(0.026)	(0.009)	(0.027)	(0.009)
Financial	*	*	***	0.226***	0.119***	-0.057**	-0.075***	-0.002	-0.069***
				(0.043)	(0.023)	(0.021)	(0.010)	(0.020)	(0.009)
Services				-0.052	-0.080***	-0.034	0.029***	0.036*	0.046***
				(0.035)	(0.014)	(0.018)	(0.006)	(0.018)	(0.006)
Primary Sch.		**	**	0.024	0.034	-0.019	0.098***	-0.033	0.068***
				(0.047)	(0.020)	(0.023)	(0.016)	(0.021)	(0.015)
Secondary Sch.		***	*	0.236***	0.214***	0.028	0.165***	0.055*	0.141***
				(0.062)	(0.025)	(0.025)	(0.016)	(0.023)	(0.015)
High School		***	***	0.388***	0.475***	0.226***	0.380***	0.240***	0.350***
				(0.059)	(0.026)	(0.025)	(0.016)	(0.023)	(0.015)
University/hig.		**	**	0.842***	0.923***	0.580***	0.720***	0.604***	0.713***
				(0.065)	(0.031)	(0.027)	(0.018)	(0.025)	(0.017)
Urban		**		0.028	0.035*	0.019	0.065***	0.072***	0.062***
				(0.032)	(0.014)	(0.011)	(0.006)	(0.011)	(0.005)
Married	*		*	0.025	0.105***	0.110***	0.096***	0.101***	0.076***
				(0.026)	(0.017)	(0.009)	(0.007)	(0.009)	(0.007)
Job Tenure	**	*		0.014***	0.005***	0.020***	0.018***	0.018***	0.018***
				(0.002)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
Experience	***			0.024***	0.045***	0.024***	0.029***	0.029***	0.028***
				(0.004)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Sq.	*		***	-0.000***	-0.001***	-0.001***	-0.000***	-0.001***	-0.000***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Security	***		***	0.332***	0.126***	0.356***	0.340***	0.350***	0.309***
				(0.036)	(0.016)	(0.011)	(0.006)	(0.011)	(0.006)
Occupation A				0.150**	0.101***	0.294***	0.275***	0.314***	0.326***
				(0.051)	(0.023)	(0.019)	(0.010)	(0.018)	(0.010)
Occupation B				-0.042	0.003	0.114***	0.143***	0.121***	0.151***
				(0.047)	(0.020)	(0.015)	(0.007)	(0.014)	(0.007)
Occupation C	*	***	***	-0.094*	0.010	-0.046**	0.074***	-0.066***	0.079***
				(0.047)	(0.016)	(0.015)	(0.007)	(0.015)	(0.007)
Constant				-1.134***	-1.116***	0.065	-0.253***	-0.017	-0.152***
				(0.089)	(0.034)	(0.039)	(0.019)	(0.038)	(0.018)
R-squared				0.507	0.423	0.637	0.557	0.641	0.569
N				1763	8170	10786	39094	11922	40896

* p<0.05, **p<0.01 , *** p<0.001

On the other hand, the regional equity in male-female wages is distorted in 2005 in favor of male workers and also urban residency favors males. The difference between experience and job tenure's returns appears to be disappearing. Same holds for security coverage too. Married dummy has statistically significant and positive sign for both males and females, and married women appear to be experiencing higher earnings, which contradicts our intuition. Similar to 1988, all educational attainment dummies have statistically significant positive signs, except primary school graduation, of which's coefficient is negative and insignificant. Men experience higher returns to schooling in each educational attainment level. Occupational categories still appear to have slightly differentiated effects on male-female wages; women employed in occupation B and occupation C earn less than their male counterparts, though this different is only statistically significant in terms of occupation C. Being employed in mining or utilities is beneficial for both groups, additionally men are also favored in service industry. Financial, manufacturing, construction, trade and agriculture pays both genders lower than the average, where being employed in trade, transportation or financial industries even further restricts male wages.

In 2006, regional residency is still a source of male female wage disparities, but in terms of urban residency the situation reversed. The returns of experience and job tenure equalized and registry in a social security system still favors female workers more than males. Like security coverage, being married continues to increase female wages. In terms of education, wage estimates are akin to 1988 and 2005, all educational attainment dummies have statistically significant positive signs, except primary school graduation. Moreover, men still experience higher returns to schooling in each educational attainment level. Similarly, the returns of occupational employment shows a consistent pattern with 2005 estimations, women employed in any occupation earn less than their male counterparts, however, this different is only statistically significant in terms of occupation C. Males employed in mining, utilities and services earn above average, while being employed in trade, transportation or financial sector have lower returns for males compared to females. Wages in construction is below the average for both groups, but males are still in a favorable condition in this industry.

Our analysis will continue with the examination of changes in coefficients between 1988 and 2006, this comparison will be made separately for the two groups. Table 7.4 and Table 7.5 below demonstrate changes in female and male wage estimates in that order. Second, third and fourth columns report the 1988, 2005 and 2006 wage estimates respectively and fifth columns show the t statistics of changes in coefficients between 1988 and 2005, similarly sixth columns account for changes between 2005 and 2006.

Table 7.4: Changes in female coefficients (1988, 2005 and 2006)

	1988	2005	2006	Test statistic [$\Delta_{(1988-2005)}$]	Test statistic [$\Delta_{(2005-2006)}$]
Istanbul	0.170**	0.138***	0.213***	-0.50	2.16
	(0.060)	(0.024)	(0.025)		
Blacksea	-0.140*	-0.209***	-0.076**	-0.92	3.62
	(0.070)	(0.026)	(0.026)		
Center Anatolia	0.044	-0.023	0.029	-1.00	1.44
	(0.062)	(0.025)	(0.026)		
Mediterranean	-0.050	-0.106***	-0.035	-0.79	1.89
	(0.066)	(0.026)	(0.027)		
Aegean	-0.089	-0.128***	-0.070**	-0.57	1.64
	(0.064)	(0.025)	(0.025)		
Marmara	-0.097	-0.098***	-0.023	-0.01	2.12
	(0.070)	(0.025)	(0.025)		
East	0.013	-0.012	0.036	-0.28	1.08
	(0.082)	(0.032)	(0.031)		
Agriculture	0.179	-0.048	-0.016	-1.84	0.36
	(0.104)	(0.066)	(0.059)		
Mining	-0.209	0.387***	0.208*	3.90	-1.36
	(0.124)	(0.089)	(0.097)		
Manufacturing	0.053	-0.110***	-0.102***	-3.76	0.30
	(0.039)	(0.019)	(0.019)		
Utilities	-0.207	0.202**	0.162*	2.45	-0.41
	(0.152)	(0.069)	(0.069)		
Construction	-0.067	-0.151***	-0.169***	-0.89	-0.35
	(0.086)	(0.038)	(0.034)		
Trade	0.009	-0.205***	-0.179***	-4.22	0.97
	(0.047)	(0.019)	(0.019)		
Transportation	0.067	0.017	0.064*	-0.79	1.25
	(0.058)	(0.026)	(0.027)		
Financial	0.226***	-0.057**	-0.002	-5.91	1.90
	(0.043)	(0.021)	(0.020)		
Services	-0.052	-0.034	0.036*	0.46	2.75
	(0.035)	(0.018)	(0.018)		
Primary School	0.024	-0.019	-0.033	-0.82	-0.45
	(0.047)	(0.023)	(0.021)		
Secondary School	0.236***	0.028	0.055*	-3.11	0.79
	(0.062)	(0.025)	(0.023)		
High School	0.388***	0.226***	0.240***	-2.53	0.41
	(0.059)	(0.025)	(0.023)		
University/ higher	0.842***	0.580***	0.604***	-3.72	0.65
	(0.065)	(0.027)	(0.025)		
Urban	0.028	0.019	0.072***	-0.27	3.41
	(0.032)	(0.011)	(0.011)		
Married	0.025	0.110***	0.101***	3.09	-0.71
	(0.026)	(0.009)	(0.009)		
Job Tenure	0.014***	0.020***	0.018***	2.68	-1.41
	(0.002)	(0.001)	(0.001)		
Experience	0.024***	0.024***	0.029***	0.00	3.54
	(0.004)	(0.001)	(0.001)		
Experience Square	-0.000***	-0.001***	-0.001***	-	-
	(0.000)	(0.000)	(0.000)		
Security	0.332***	0.356***	0.350***	0.64	-0.39
	(0.036)	(0.011)	(0.011)		
Occupation A	0.150**	0.294***	0.314***	2.65	0.76
	(0.051)	(0.019)	(0.018)		
Occupation B	-0.042	0.114***	0.121***	3.16	0.34
	(0.047)	(0.015)	(0.014)		
Occupation C	-0.094*	-0.046**	-0.066***	0.97	-0.94
	(0.047)	(0.015)	(0.015)		
Constant	-1.134***	0.065	-0.017		
	(0.089)	(0.039)	(0.038)		
R-squared	0.507	0.637	0.641		
N	1763	10786	11922		

* p<0.05, **p<0.01 , *** p<0.001

Table 7.5: Changes in male coefficients (1988, 2005 and 2006)

	1988	2005	2006	Test statistic [$\Delta_{(1988-2005)}$]	Test statistic [$\Delta_{(2005-2006)}$]
Istanbul	0.226***	0.225***	0.285***	-0.04	4.24
	(0.022)	(0.010)	(0.010)		
Blacksea	-0.056*	-0.003	0.070***	1.88	4.69
	(0.026)	(0.011)	(0.011)		
Center Anatolia	0.028	0.010	0.078***	-0.73	4.57
	(0.022)	(0.011)	(0.010)		
Mediterranean	-0.032	0.004	0.062***	1.36	3.73
	(0.024)	(0.011)	(0.011)		
Aegean	-0.076**	-0.029**	0.047***	1.81	5.37
	(0.024)	(0.010)	(0.010)		
Marmara	0.034	0.078***	0.131***	1.58	3.75
	(0.026)	(0.010)	(0.010)		
East	0.007	0.064***	0.116***	1.93	3.06
	(0.027)	(0.012)	(0.012)		
Agriculture	0.004	-0.144***	-0.107***	-3.18	1.31
	(0.042)	(0.020)	(0.020)		
Mining	-0.095**	0.385***	0.334***	14.70	-2.49
	(0.029)	(0.015)	(0.014)		
Manufacturing	-0.026	-0.096***	-0.099***	-4.60	-0.38
	(0.014)	(0.006)	(0.005)		
Utilities	-0.125*	0.255***	0.249***	6.01	-0.23
	(0.060)	(0.020)	(0.017)		
Construction	0.238***	-0.084***	-0.087***	-14.11	-0.20
	(0.020)	(0.011)	(0.010)		
Trade	-0.052**	-0.251***	-0.244***	-10.30	0.76
	(0.018)	(0.007)	(0.006)		
Transportation	0.017	-0.020*	-0.023**	-1.62	-0.24
	(0.021)	(0.009)	(0.009)		
Financial	0.119***	-0.075***	-0.069***	-7.74	0.45
	(0.023)	(0.010)	(0.009)		
Services	-0.080***	0.029***	0.046***	7.16	2.00
	(0.014)	(0.006)	(0.006)		
Primary School	0.034	0.098***	0.068***	2.50	-1.37
	(0.020)	(0.016)	(0.015)		
Secondary School	0.214***	0.165***	0.141***	-1.65	-1.09
	(0.025)	(0.016)	(0.015)		
High School	0.475***	0.380***	0.350***	-3.11	-1.37
	(0.026)	(0.016)	(0.015)		
University/ higher	0.923***	0.720***	0.713***	-5.66	-0.28
	(0.031)	(0.018)	(0.017)		
Urban	0.035*	0.065***	0.062***	1.97	-0.38
	(0.014)	(0.006)	(0.005)		
Married	0.105***	0.096***	0.076***	-0.49	-2.02
	(0.017)	(0.007)	(0.007)		
Job Tenure	0.005***	0.018***	0.018***	13.00	-
	(0.001)	(0.000)	(0.000)		
Experience	0.045***	0.029***	0.028***	-7.16	-0.71
	(0.002)	(0.001)	(0.001)		
Experience Square	-0.001***	-0.000***	-0.000***	-	-
	(0.000)	(0.000)	(0.000)		
Security	0.126***	0.340***	0.309***	12.52	-3.65
	(0.016)	(0.006)	(0.006)		
Occupation A	0.101***	0.275***	0.326***	6.94	3.61
	(0.023)	(0.010)	(0.010)		
Occupation B	0.003	0.143***	0.151***	6.61	0.81
	(0.020)	(0.007)	(0.007)		
Occupation C	0.010	0.074***	0.079***	3.66	0.51
	(0.016)	(0.007)	(0.007)		
Constant	-1.116***	-0.253***	-0.152***		
	(0.034)	(0.019)	(0.018)		
R-squared	0.423	0.557	0.569		
N	8170	39094	40896		

* p<0.05, **p<0.01 , *** p<0.001

From 1988 to 2005, being employed in Istanbul, Blacksea and Marmara region served against female workers, but it became favorable from 2005 to 2006 and the return of living in these regions increased even above its level in 1988. Returns of regional residency for males on the contrary, increased substantially during the whole period. Similarly, the returns of educational attainment dramatically decreased from 1988 to 2005 and slightly recovered from 2005 to 2006 for female workers, except primary school graduation. However, male workers experienced absolute loses in returns of education in all categories. Additionally, the contribution of occupational categories to wages increased in this period both for males and females.

This analysis also reveals the convergence of male female returns to experience, job tenure and security coverage; while return to experience was decreasing for males, it was increasing for females and leading a narrowing gap between their returns. Moreover, the stepper increase in male returns to job tenure and security further eliminated male female differences.

Females' industrial returns differentiated form each other; some of the industries experienced decreased returns such as agriculture, manufacturing, construction, trade and financials, while the returns of some others like mining, utilities and services increased. On the other hand, male workers mostly practiced decreases in industrial returns (agriculture, manufacturing, construction, trade, transportation and financials) except in mining, utilities and service.

Before proceeding with Oaxaca decomposition, we will estimate wage equations with trade variables instead of using industry dummies. This re-estimation will be applied to both 2005 and 2006 data. Table 7.6 gives the two estimation results; The first column is the equation estimated with Model I and the second column is the regression results with Model II , where Model I is the model with dummy variables and Model II with trade variables.

Table 7.6: Industry dummies vs openness variables (2005 - 2006)

	2005				2006			
	Female		Male		Female		Male	
	Model I	Model II	Model I	Model II	Model I	Model II	Model I	Model II
Istanbul	0.138***	0.137***	0.225***	0.221***	0.213***	0.210***	0.285***	0.280***
	(0.024)	(0.024)	(0.010)	(0.010)	(0.025)	(0.025)	(0.010)	(0.010)
Blacksea	-0.209***	-0.209***	-0.003	-0.005	-0.076**	-0.077**	0.070***	0.068***
	(0.026)	(0.026)	(0.011)	(0.011)	(0.026)	(0.027)	(0.011)	(0.011)
Center Anatolia	-0.023	-0.026	0.010	0.006	0.029	0.025	0.078***	0.075***
	(0.025)	(0.025)	(0.011)	(0.011)	(0.026)	(0.026)	(0.010)	(0.010)
Mediterranean	-0.106***	-0.109***	0.004	0.000	-0.035	-0.038	0.062***	0.056***
	(0.026)	(0.026)	(0.011)	(0.011)	(0.027)	(0.027)	(0.011)	(0.011)
Aegean	-0.128***	-0.129***	-0.029**	-0.033**	-0.070**	-0.072**	0.047***	0.043***
	(0.025)	(0.025)	(0.010)	(0.010)	(0.025)	(0.025)	(0.010)	(0.010)
Marmara	-0.098***	-0.099***	0.078***	0.073***	-0.023	-0.026	0.131***	0.124***
	(0.025)	(0.025)	(0.010)	(0.010)	(0.025)	(0.025)	(0.010)	(0.010)
East	-0.012	-0.011	0.064***	0.064***	0.036	0.039	0.116***	0.120***
	(0.032)	(0.032)	(0.012)	(0.012)	(0.031)	(0.031)	(0.012)	(0.012)
Mining	0.435***		0.529***		0.224		0.441***	
	(0.123)		(0.027)		(0.126)		(0.027)	
Manufacturing	-0.063		0.048*		-0.086		0.008	
	(0.072)		(0.022)		(0.065)		(0.022)	
Utilities	0.250*		0.399***		0.178		0.356***	
	(0.105)		(0.031)		(0.099)		(0.029)	
Construction	-0.103		0.060*		-0.152*		0.020	
	(0.081)		(0.025)		(0.073)		(0.024)	
Trade	-0.157*		-0.107***		-0.163*		-0.137***	
	(0.073)		(0.023)		(0.065)		(0.023)	
Transportation	0.065		0.124***		0.080		0.084***	
	(0.076)		(0.024)		(0.068)		(0.024)	
Financial	-0.009		0.069**		0.014		0.038	
	(0.073)		(0.024)		(0.066)		(0.024)	
Services	0.013		0.173***		0.053		0.154***	
	(0.072)		(0.022)		(0.065)		(0.022)	
Primary School	-0.019	-0.019	0.098***	0.107***	-0.033	-0.032	0.068***	0.072***
	(0.023)	(0.023)	(0.016)	(0.016)	(0.021)	(0.021)	(0.015)	(0.015)
Secondary School	0.028	0.028	0.165***	0.176***	0.055*	0.055*	0.141***	0.149***
	(0.025)	(0.025)	(0.016)	(0.016)	(0.023)	(0.023)	(0.015)	(0.015)
High School	0.226***	0.227***	0.380***	0.394***	0.240***	0.243***	0.350***	0.361***
	(0.025)	(0.025)	(0.016)	(0.016)	(0.023)	(0.023)	(0.015)	(0.015)
University/ higher	0.580***	0.581***	0.720***	0.736***	0.604***	0.609***	0.713***	0.730***
	(0.027)	(0.027)	(0.018)	(0.018)	(0.025)	(0.025)	(0.017)	(0.017)
Job Tenure	0.020***	0.020***	0.018***	0.018***	0.018***	0.018***	0.018***	0.019***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Experience	0.024***	0.025***	0.029***	0.029***	0.029***	0.029***	0.028***	0.028***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience Square	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Security	0.356***	0.356***	0.340***	0.347***	0.350***	0.348***	0.309***	0.318***
	(0.011)	(0.011)	(0.006)	(0.006)	(0.011)	(0.011)	(0.006)	(0.006)
Married	0.110***	0.109***	0.096***	0.097***	0.101***	0.103***	0.076***	0.075***
	(0.009)	(0.009)	(0.007)	(0.007)	(0.009)	(0.009)	(0.007)	(0.007)
Urban	0.019	0.020	0.065***	0.067***	0.072***	0.072***	0.062***	0.064***
	(0.011)	(0.011)	(0.006)	(0.006)	(0.011)	(0.011)	(0.005)	(0.005)
Occupation A	0.294***	0.292***	0.275***	0.283***	0.314***	0.314***	0.326***	0.332***
	(0.019)	(0.018)	(0.010)	(0.010)	(0.018)	(0.018)	(0.010)	(0.010)
Occupation B	0.114***	0.113***	0.143***	0.147***	0.121***	0.119***	0.151***	0.151***
	(0.015)	(0.015)	(0.007)	(0.007)	(0.014)	(0.014)	(0.007)	(0.007)
Occupation C	-0.046**	-0.048**	0.074***	0.080***	-0.066***	-0.066***	0.079***	0.078***
	(0.015)	(0.015)	(0.007)	(0.007)	(0.015)	(0.015)	(0.007)	(0.007)
Import Share		0.106**		0.122***		0.069*		0.114***
		(0.037)		(0.007)		(0.034)		(0.005)
Export Share		-0.203***		-0.230***		-0.111***		-0.086***
		(0.051)		(0.011)		(0.012)		(0.006)
FDI Share		5.924***		1.221		0.668***		0.249***
		(1.742)		(0.713)		(0.108)		(0.068)
FDI Density		-0.552***		-0.861***		-1.225***		-1.549***
		(0.041)		(0.023)		(0.070)		(0.037)
Constant	0.017	0.037	-0.397***	-0.240***	-0.033	0.075*	-0.260***	-0.065***
	(0.078)	(0.037)	(0.027)	(0.019)	(0.072)	(0.036)	(0.027)	(0.018)
R-squared	0.637	0.636	0.557	0.554	0.641	0.640	0.569	0.566
N	10786	10786	39094	39094	11922	11922	40896	40896

* p<0.05, **p<0.01 , *** p<0.001

The coefficients of common variables do not differ from one model to the other. Therefore, we can claim that trade variables are good proxies of industry characteristic. The usage of trade variables may also provide a deeper understanding of wage gaps. We will test this foresight in the next section.

7.3 Oaxaca-Blinder Decomposition

Here after we will use Model I, to decompose wage differential into its components. The usage of Model I instead of Model II will enable us to identify each industries contribution to gender wage gap. Table 7.7 reports the estimates of wage differentials for male and female workers in 1988, 2005 and 2006. Decomposition is made by equation 6.2 and differences are shown as deviations from mean log male wages. The row "difference" shows the difference in predicted male female average wages and its positive sign points out that average wages are higher for men compared to women. In decomposition section, the component "explained" shows how much of this difference can be attributed to differences in endowments, differences in education, experience etc. "Unexplained" component on the contrary points out a variation without any possible reason.

Table 7.7: Oaxaca-Blinder decomposition

	1988	2005	2006
Predicted Male mean lnW	-0.092***	0.994***	1.093***
	(0.007)	(0.003)	(0.003)
Predicted Female mean lnW	-0.139***	0.931***	1.035***
	(0.015)	(0.007)	(0.006)
Difference	0.048**	0.063***	0.058***
	(0.016)	(0.007)	(0.007)
Decomposition			
Explained	-0.042***	0.012*	-0.020***
	(0.012)	(0.006)	(0.006)
Unexplained	0.090***	0.051***	0.078***
	(0.014)	(0.005)	(0.005)
N	9933	49880	52818

* p<0.05, ** p<0.01, ***p<0.001

As it is shown in Table 7.7 a wage differential exists between male and female workers in both years. There was a 4.8 percent gap between female male hourly earnings in 1988 and this gap widens by 30 percent in 2005 with a 6.3 percent total

difference. On the other hand, this gap slightly narrows in 2006 but is still 20 percent wider then it was in 1988.

One interesting point is that explained wage gap was negative in 1988, which means women's higher levels of endowments reduced wage gap by 4.2 percent. However discriminatory attitude of labor market widened it by 9 percent and the total effect resulted in a 4.8 percent wage differential.

Now we will further examine explained wage gap. Table 7.8 below provides explained wage gaps' components.

Table 7.8: Explained part of wage gap decomposition (detailed)

	1988	2005	2006
Region	-0.021***	-0.011***	-0.012***
	(0.003)	(0.001)	(0.001)
Industry	0.014***	-0.003*	-0.005***
	(0.003)	(0.001)	(0.001)
Education	-0.163***	-0.095***	-0.103***
	(0.010)	(0.003)	(0.003)
Urban	-0.001*	-0.002***	-0.002***
	(0.001)	(0.000)	(0.000)
Marital Status	0.027***	0.029***	0.022***
	(0.005)	(0.002)	(0.002)
Job Tenure	0.008***	0.039***	0.034***
	(0.002)	(0.002)	(0.001)
Experience	0.108***	0.063***	0.060***
	(0.008)	(0.003)	(0.002)
Security	-0.003*	0.013***	0.011***
	(0.001)	(0.002)	(0.001)
Occupation	-0.012*	-0.020***	-0.023***
	(0.006)	(0.001)	(0.001)
Total	-0.042***	0.012*	-0.020***
	(0.012)	(0.006)	(0.006)

As seen, women's lower levels of experience and job tenure are two main reasons of enduring wage gaps. Their contribution decreased in time, but their effect is still statistically significant. The contribution of security is interesting. In 1988 it was significantly negative, which suggests that compared to men women are more included more in social security system. Its unexplained part shown in Table 7.9 is also negative further contributing to narrowing wage gap. However, explained part of wage gap in terms of security is positive in 2005 and 2006. This means that women shifted from formal sector to the informal, since explained part is calculated through the mean values of endowments.

Table 7.9: Unexplained part of wage gap decomposition (detailed)

	1988	2005	2006
Region	0.000	0.012**	0.012**
	(0.010)	(0.004)	(0.004)
Industry	-0.052*	0.018	-0.015
	(0.025)	(0.020)	(0.015)
Education	0.016	0.024***	0.020***
	(0.010)	(0.005)	(0.005)
Urban	0.003	0.016***	-0.003
	(0.013)	(0.005)	(0.004)
Marital Status	0.001	0.000	0.001*
	(0.001)	(0.000)	(0.000)
Job Tenure	-0.056**	-0.013*	0.001
	(0.018)	(0.006)	(0.006)
Experience	0.199***	0.063***	0.029*
	(0.042)	(0.015)	(0.014)
Security	-0.075***	-0.004	-0.011**
	(0.019)	(0.003)	(0.003)
Occupation	0.004	0.004	0.002
	(0.008)	(0.002)	(0.002)
Constant	0.049	-0.070**	0.044
	(0.051)	(0.027)	(0.022)
Total	0.090***	0.051***	0.078***
	(0.014)	(0.005)	(0.005)

Table 7.10 gives some key variable's total contribution to wage gap, these are namely industry of employment, education, job tenure, experience, social security coverage and occupation of employment. It is obvious that except industry, security and job tenure, the way these variables affect wage gap did not change during 1988-2006. For example, Educational attainment is always lowering the degree of wage differentiation, while experience caused an increase. Occupational distribution also promoted gender wage equality. The changes in job tenure's contribution could be a result of massive job losses in 2000s and could be justify the claim that women have higher job insecurity compared to men.

Table 7.10: Total contribution to wage gap

	1988	2005	2006
Industry	-0.038	0.015	-0.020
Education	-0.147	-0.071	-0.083
Job Tenure	-0.048	0.026	0.033
Experience	0.307	0.126	0.089
Security	-0.011	0.009	0.000
Occupation	-0.008	-0.016	-0.021

However, in terms of industry to make an implementation is difficult. Each industry has distinctive characteristics, does not allow any generalization and therefore, needs

particular attention. Table 7.11 shows each industries total contribution to wage differentials.

Table 7.11: Industries' total contribution to wage gap

	1988	2005	2006
Agriculture	-0.002	-0.001	-0.001
Mining	-0.001	0.007	0.006
Manufacturing	-0.025	0.002	-0.003
Utilities	0.000	0.002	0.002
Construction	0.019	-0.001	-0.001
Trade	-0.006	-0.013	-0.016
Transportation	-0.002	-0.002	-0.003
Financial	-0.017	0.001	-0.004
Services	-0.004	0.021	-0.001

Table 7.12 summarizes four trade variables we used in Model II. First column are industry variables' contribution to the unexplained gender wage gap in 2005 and 2006. We calculated correlation coefficient between industries' contribution to unexplained gender wage gap and four explanatory variables' industry specific values. Results are reported in the table 7.12 and the last row of the Table 7.12 reports t statistics of these rank correlation coefficients.

Table 7.12: Rank correlation coefficients

		Unexplained Contribution of Industry	IM-GNP ratio	EX-GNP ratio	FDI Density	FDI-GNP ratio	Openness GWG (Male-Female)
2005	Agriculture	-0.0003	0.082	0.078	0.011	0.000	-0.0084
	Mining	0.0000	3.038	0.179	0.012	0.022	-0.0667
	Manufacturing	0.0046	1.315	0.972	0.085	0.004	-0.0824
	Utilities	0.0001	0.002	0.006	0.016	0.007	-0.0411
	Construction	0.0007	0.000	0.000	0.044	0.002	-0.0307
	Trade	-0.0081	0.053	0.004	0.344	0.002	-0.1560
	Transportation	-0.0011	0.000	0.000	0.070	0.016	-0.1063
	Financial	-0.0016	0.000	0.000	0.111	0.003	-0.0507
	Services	0.0240	0.000	0.000	0.034	0.002	-0.0236
2006	Agriculture	-0.0003	0.076	0.094	0.010	0.000	-0.0003
	Mining	0.0002	3.157	0.157	0.013	0.008	0.1356
	Manufacturing	0.0008	1.254	0.916	0.081	0.011	0.0211
	Utilities	0.0002	0.002	0.009	0.003	0.000	-0.0021
	Construction	0.0011	0.000	0.000	0.065	0.005	-0.0427
	Trade	-0.0120	0.046	0.004	0.225	0.002	-0.1094
	Transportation	-0.0025	0.000	0.000	0.066	0.063	-0.0565
	Financial	-0.0066	0.000	0.000	0.146	0.127	-0.1144
	Services	0.0037	0.000	0.000	0.055	0.004	-0.0249
Rank Correlation Coefficient (r)			0.04	0.13	-0.52	-0.25	0.35
t statistics			0.16	0.52	-2.43*	-1.07	1.49

If the coefficients of trade variables in Model II (Table 7.6) are considered, the values of rank correlation coefficient will be more meaningful.

Table 7.13: Model coefficients from wage estimations

	2005		2006	
	Female	Male	Female	Male
Import Share	0.106**	0.122***	0.069*	0.114***
	(0.037)	(0.007)	(0.034)	(0.005)
Export Share	-0.203***	-0.230***	-0.111***	-0.086***
	(0.051)	(0.011)	(0.012)	(0.006)
FDI Share	5.924***	1.221	0.668***	0.249***
	(1.742)	(0.713)	(0.108)	(0.068)
FDI Density	-0.552***	-0.861***	-1.225***	-1.549***
	(0.041)	(0.023)	(0.070)	(0.037)

Increases in import share will raise wages for both genders while for females it appears to have a lower positive effect on wages. An asymmetric increase in male wages will result in a higher wage gap, and the positive rank correlation between import share and industries share in wage gap is compatible with it. This contradicts the findings of Hazarika and Otero (2002), Black and Brainerd (2004) and Jacob (2007), since their studies revealed that an increase in imports will lead narrowing gender wage gaps. On the contrary, positive association we found between import share and gender wage gap is parallel to Berik's (2003) results.

For export share, the situation is slightly different, increased export shares repress wages and it makes a stronger pressure on female wages in 2006 and therefore, will yield in a wider wage gap, again justifying positive rank correlation. However, in 2005 exports decrease male wages more than female wages, though this difference is not statistically significant. On the other hand, the correlation coefficients we calculated are not statistically significant both for import and export shares.

FDI shares on the other hand promote increases in both female and male wages, but favors women in both years (it has statistically insignificant negative effect in 2006 on male wages). This is consistent with negative rank correlation we found, yet still this correlation is too weak; statistically insignificant. The explored negative correlation between FDI shares and gender wage gap is partially similar to Braunstein and Brenner's (2007) results.

The relation we found between export, import, FDI shares and gender wage gaps are reasonable, but yet are not strong enough for being considered as statistically

significant. FDI density, on the other hand, shows a stronger effect on wages. If one industry is dense in terms of foreign owned companies, this will yield a more crucial competition in final products market, hence a higher intensive to reduce operation costs including wages. Our intuition is that foreign owned companies have a higher productivity level and once they began to compete with each other in a dense industry, it will yield higher levels of competition. FDI densities negative correlation with wage gap justifies our intuition. On the other hand, it does not justify Becker. Becker (1957) argued that increased competition will reduce the intensive to discriminate, which should be then result in a decrease in male wages and in stationary female wages. However, the results imply a suppression of female wages as well as male wages, this reduction occurred due to cost constrains and the higher reduction in male wages is the obvious result of higher male wages in the first place. FDI density's stronger negative effect on male wages is expected to lower gender wage gap and this finding is parallel to negative rank correlation coefficient, which is statistically significant at the 0.015 level.

Finally, last column of Table 7.12 reports the computed wage differentials using only the coefficients of openness variables estimated in Model II. These are computed as the variations in average male female wages within industries due to variations in openness variables. We first computed the industry specific wage variations separately for male and female workers and then used their difference as an indicator of industries' contribution to unexplained gender wage gap. The positive rank correlation, which is considerably high, shows that these computed wage differentials and observed unexplained industry wage gaps are to some extend parallel to each other. This cross-check of our findings suggests that openness variables could be used in wage gap analysis and may provide a further explanation to gender wage gaps.

8. CONCLUSION

We found that female workers' hourly earnings significantly differed from male hourly earnings and even after controlling for productivity related characteristics, these differentials remained significant. We investigated male female wage differentials in 1988, 2005 and 2006. Our analysis reported that wage gaps existed in all three periods at slightly different levels. However, 1988 has a particular importance as 1988 was the crossroad of 1980s; pre 1988 was an era characterized with repressed wages, high inflation and hence decreasing real wages, on the contrary, post 1988 witnessed populist wage increases. The wage gap in 1988 existed despite the enormous pressure on both male and female wages. Moreover, it is significant regardless of women's higher levels of endowments. While their productivity related characteristics foresaw the female male hourly wage ratio to be 104.2, female wages accounted for only 95.2 percent of male wages because of a twice more unexplainable adverse affect. The picture was nearly the same in 2005, however, this time the results indicated that average female productivity related characteristics were lower compared to men. Lower female endowment was not the only source of this wage differential, actually it only accounted for less than 20 percent of the whole gender wage gap in 2005. In 2006, women again attained higher level of endowments, but not as high as it was in 1988 and once more unexplained labor market dynamics repressed female wages by 7.8 percent.

Within this period gender wage gap contribution of human capital endowments and other explanatory variables evolved too; a convergence between male female returns to experience, job tenure and security coverage is observed in the whole period. Women's lower experience and job tenure levels and lower female returns to experience remained as the main sources of enduring wage gaps. However, women's lower returns to experience could be addressed to a possible overvaluation

of female experience levels[23]. On the other hand, returns to education decreased dramatically. Decline in returns to education provides supportive evidence to OECD's (2007) foresight claiming that in near future the increases in human capital endowments will mostly depend on the quality of education instead of its quantity as the level of educational attainment increases and reaches its natural boundaries.

This study further employed a methodology which linked changes in industry characteristics to fluctuations in gender wage gap, instead of limiting the research with pre-determined industry dummy variables. Our motivation was differentiating returns to industry of employment during the whole period. In some industries, such as agriculture, forestry, hunting and fishing, manufacturing, construction, wholesale and retail trade, hotels and restaurants, financial intermediation, real estate, rental and business services, female workers experienced decreased returns in time, while the returns of some others like mining and quarrying, electric, gas and water supply and community services, social and personal activities increased. On the other hand, male workers mostly practiced decreases in industrial returns, except for mining and quarrying, electric, gas and water supply and community services, social and personal activities. Although, industries' contribution to unexplained wage gap is not as severe as experience's contribution, it was yet not stagnant, varied substantially in time and hence needed to be investigated. Therefore, we further examined industry characteristic and gender wage gap interaction. We showed that trade volumes and FDI indicators could represent industry characteristics and therefore, could be used in wage estimation models. This provided a deeper understanding of wage gaps due to differences in industry of employment.

In terms of openness as an industry characteristic, we found that increases in industry specific international trade- GNP ratios could be associated with widening unexplained gender wage gaps. On the other hand, increases in industry specific FDI- GNP ratios promoted wage increases but slightly favored female workers, while higher FDI density suppressed wages with a more adverse effect on male wages. Consequently, both FDI inflows and industries' FDI density appeared to have a lowering effect on unexplained gender wage gaps.

[23] The computation of experience is identical for female and male workers and it does not take into account possible distortions in female labor force participation due to marriage and/or childbearing.

This results challenge neoclassical foresight in terms of trade wage discrimination interaction. 1980s and after Turkey experienced high increases in its international trade volumes, both in terms of imports and exports. This increase was mostly due to increased capacity utilization rather than increased productivity or higher investments, but yet wages were an important component especially in case of manufacturing (Yentürk, 2005). Moreover, beginning 1989 also financial markets were liberalized; the country became a completely open economy and also involved in structural adjustment plans conditioning decreases in wages. Despite the double pressure on both female and male wages, on one hand; increased international competition, on the other hand; terms of structural adjustment, wage gaps did not disappear, as Becker (1957) predicted. On the contrary, this increased openness brought new forms of derogations such as informalization, mass job losses and disruption in income distribution.

From a view point, the openness variables used in this study are to a certain extent emblematic; there could be additional variables, which can differ from one industry to the other and hence could be added into the analysis. We aimed to find possible explanations of industries' differences in terms of gender wage gaps, although both micro and macro level data constrains prevented the application of more adequate methodologies. Analyzing possible sources of wage gaps between male and female workforce will assist elimination of these differences and from this perspective this study aimed to provide a deeper understanding of wage gaps and to contribute to development of policies targeting gender wage equity.

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APPENDICES

Computation of FDI Density variable

First, firms with foreign capital are categorized into four groups according to their capital amount, namely firms with a capital i) less than $50000, ii) between $50000-$200000, iii) between $200000- $500000 and iv) more than $500000. Afterwards, each industry's share within a particular category is calculated by dividing number of firms in an industry by total number of firms in that category. Table Appendix A.1 shows number of firms in each category for all industries in 2006.

Table Appendix A.1: Number of firms in industries (2006)

	< $ 50000 (1)		$ 50000-$200000 (2)		$ 200000-$500000 (3)		> $ 500000(4)			
	# of firms	% share	# of firms	% share	# of firms	% share	# of firms	% share	Total # of firms	FDI Density
Agriculture	24	0.01	6	0.01	7	0.04	3	0.02	40	0.010
Mining	31	0.02	7	0.01	7	0.04	5	0.04	50	0.013
Manufacturing	258	0.14	132	0.18	37	0.23	29	0.23	456	0.081
Utilities	4	0.00	7	0.01	0	0.00	1	0.01	12	0.003
Construction	202	0.11	103	0.14	28	0.17	15	0.12	348	0.065
Trade	633	0.34	254	0.35	47	0.29	38	0.30	972	0.225
Transportation	177	0.10	63	0.09	14	0.09	6	0.05	260	0.066
Financial	373	0.20	118	0.16	17	0.10	12	0.10	520	0.146
Services	136	0.07	30	0.04	5	0.03	16	0.13	187	0.055
	1838	1.00	720	1.00	162	1.00	125	1.00	2845	

Then number of firms in an industry is multiplied by its share for each category (First Step). These multiplications are weighted according to the capital amount each category is identified; first category with less than $ 50000 capital is weighted by 1, second category by 4, third category by 10 and fourth category by 11 (Second Step). Finally, weighted categorical shares of an industry are summed (Third Step) and the sum is divided by total number of firms in that industry in order to avoid over/under valuation of FDI density variable (Fourth Step). Table Appendix A.2 below shows the calculation of FDI density variable for agriculture in 2006.

Table Appendix A.2: Calculation of FDI density of agriculture (2006)

	First Step	Second Step	Third Step	Fourth Step
Category 1 (< $50000)	24*0.01 = 0.24	0.24*1 = 0.24	024+0.24+2.8+0.66=3.94	3.94/40=0.0985
Category 2 ($50000-$200000)	6*0.01 = 0.06	0.06*4 = 0.24		
Category 3 ($200000-$500000)	7*0.04 = 0.28	0.28*10= 2.8		
Category 4 (>$500000)	3*0.02 = 0.06	0.06*11= 0.66		

Multinomial probit vs logit estimates

Table Appendix A.3: Multinomial probit vs multinomial logit estimates (1988)

	Paid Employment (j=1)				Unpaid Family Worker (j=0)			
	Female		Male		Female		Male	
	M. Probit	M. Logit	M. Probit	M. Logit	M. Probit	M. Logit	M. Probit	M. Logit
Istanbul	0.114	0.183*	0.057	0.043	-0.768***	-1.301***	0.110	0.081
	(0.066)	(0.093)	(0.057)	(0.074)	(0.091)	(0.145)	(0.093)	(0.137)
Blacksea	-0.033	-0.096	-0.263***	-0.370***	0.333***	0.462***	-0.089	-0.179
	(0.074)	(0.108)	(0.063)	(0.083)	(0.067)	(0.088)	(0.089)	(0.127)
Center Anatolia	-0.040	-0.028	-0.098	-0.152*	-0.256***	-0.331***	-0.012	-0.053
	(0.066)	(0.094)	(0.056)	(0.074)	(0.066)	(0.088)	(0.084)	(0.121)
Mediterranean	-0.055	-0.036	-0.168**	-0.243**	-0.520***	-0.763***	-0.250**	-0.401**
	(0.069)	(0.099)	(0.059)	(0.077)	(0.072)	(0.097)	(0.091)	(0.132)
Aegean	0.063	0.109	-0.049	-0.070	-0.289***	-0.428***	0.069	0.080
	(0.070)	(0.100)	(0.062)	(0.081)	(0.071)	(0.094)	(0.094)	(0.134)
Marmara	-0.029	-0.011	0.060	0.046	-0.287***	-0.407***	0.274**	0.314*
	(0.075)	(0.108)	(0.066)	(0.086)	(0.075)	(0.100)	(0.097)	(0.140)
East	-0.459***	-0.689***	-0.150*	-0.196*	0.040	0.046	0.210*	0.267*
	(0.080)	(0.121)	(0.061)	(0.081)	(0.064)	(0.084)	(0.083)	(0.118)
Primary School	0.010	0.046	0.151***	0.206***	-0.117**	-0.155**	0.219***	0.263**
	(0.041)	(0.060)	(0.039)	(0.050)	(0.040)	(0.053)	(0.066)	(0.094)
Secondary School	0.341***	0.521***	-0.134*	-0.160*	-0.839***	-1.276***	0.110	0.141
	(0.069)	(0.096)	(0.055)	(0.070)	(0.123)	(0.182)	(0.088)	(0.127)
High School	1.364***	1.797***	0.201***	0.252***	-0.460***	-1.044***	0.327***	0.414**
	(0.055)	(0.074)	(0.054)	(0.069)	(0.109)	(0.176)	(0.089)	(0.130)
University/ higher	2.662***	3.384***	0.717***	0.935***	-0.625*	-1.659**	0.234	0.184
	(0.082)	(0.106)	(0.074)	(0.097)	(0.303)	(0.595)	(0.167)	(0.278)
Urban	-0.404***	-0.375***	0.099**	0.069	-1.961***	-2.771***	-0.665***	-1.023***
	(0.037)	(0.053)	(0.034)	(0.044)	(0.041)	(0.063)	(0.053)	(0.078)
Age	-0.005**	-0.007**	-0.036***	-0.053***	-0.018***	-0.024***	-0.105***	-0.170***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
Married	-0.520***	-0.738***	1.484***	1.914***	0.334***	0.531***	0.920***	1.435***
	(0.040)	(0.055)	(0.044)	(0.058)	(0.048)	(0.065)	(0.064)	(0.094)
Household Size	-0.085***	-0.122***	-0.130***	-0.163***	-0.066***	-0.093***	0.035***	0.050***
	(0.008)	(0.013)	(0.007)	(0.009)	(0.008)	(0.010)	(0.009)	(0.013)
Emp. Female(R)	1.509***	1.992***			1.191***	1.477***		
	(0.077)	(0.109)			(0.076)	(0.103)		
Children 0-6(R)	-0.003	0.023	1.961***	2.572***	1.864***	2.720***	1.557***	2.310***
	(0.133)	(0.188)	(0.130)	(0.180)	(0.159)	(0.217)	(0.211)	(0.313)
Children 7-14(R)	0.792***	1.080***	1.894***	2.298***	2.219***	3.162***	1.122***	1.602***
	(0.104)	(0.146)	(0.095)	(0.126)	(0.137)	(0.191)	(0.167)	(0.248)
Children 15-24(R)	-0.726***	-0.944***	-0.611***	-0.599**	1.179***	1.724***	-0.861*	-1.569**
	(0.186)	(0.264)	(0.150)	(0.185)	(0.283)	(0.402)	(0.342)	(0.547)
Unemp. Elderly(R)	-0.003	-0.044	1.009***	1.271***	2.585***	3.698***	0.988**	1.513**
	(0.202)	(0.281)	(0.210)	(0.267)	(0.264)	(0.356)	(0.369)	(0.537)
PC Income	-0.001***	-0.002***	-0.001***	-0.002***	0.000	0.000	0.001***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Paid Emp.(R)	0.294*	0.536**	-0.121	0.016	3.411***	4.824***	1.754***	2.312***
	(0.121)	(0.176)	(0.103)	(0.135)	(0.190)	(0.269)	(0.183)	(0.265)
Unpaid FM(R)	0.271	-0.173	3.183***	4.713***	6.023***	8.030***	6.399***	9.530***
	(0.186)	(0.293)	(0.125)	(0.183)	(0.178)	(0.250)	(0.163)	(0.248)
Student	-1.657***	-2.287***	-2.304***	-2.949***	-1.960***	-2.742***	-2.773***	-4.185***
	(0.102)	(0.154)	(0.060)	(0.080)	(0.191)	(0.286)	(0.102)	(0.163)
Constant	-0.918***	-1.188***	1.428***	2.055***	-1.666***	-2.295***	0.704***	1.506***
	(0.106)	(0.152)	(0.090)	(0.117)	(0.127)	(0.176)	(0.145)	(0.211)
N	31223	31223	29652	29652	31223	31223	29652	29652

* p<0.05, ** p<0.01, *** p<0.001

Table Appendix A.4: Multinomial probit estimates (2005)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Istanbul	1.127***	0.728***	0.154*	-0.079*	1.370***	0.732***	0.393***	-0.089**	0.100	-0.128*
	(0.042)	(0.025)	(0.064)	(0.035)	(0.345)	(0.038)	(0.063)	(0.028)	(0.059)	(0.063)
Blacksea	0.797***	0.428***	0.531***	0.116***	1.667***	0.353***	1.489***	0.039	1.280***	0.131**
	(0.044)	(0.025)	(0.057)	(0.033)	(0.345)	(0.040)	(0.053)	(0.027)	(0.041)	(0.046)
Center Anatolia	0.622***	0.335***	0.167**	0.049	0.976**	0.219***	0.741***	0.012	0.573***	0.278***
	(0.043)	(0.025)	(0.060)	(0.032)	(0.349)	(0.039)	(0.056)	(0.027)	(0.045)	(0.048)
Mediterranean	0.793***	0.297***	0.572***	0.134***	1.392***	0.351***	1.153***	0.075**	0.782***	-0.078
	(0.044)	(0.026)	(0.054)	(0.032)	(0.346)	(0.040)	(0.055)	(0.028)	(0.045)	(0.052)
Aegean	0.976***	0.433***	0.659***	-0.015	1.142**	0.204***	0.800***	0.120***	0.813***	0.151**
	(0.043)	(0.024)	(0.054)	(0.032)	(0.348)	(0.039)	(0.056)	(0.026)	(0.044)	(0.049)
Marmara	1.098***	0.630***	0.875***	0.311***	1.572***	0.426***	0.981***	0.101***	0.912***	0.348***
	(0.042)	(0.024)	(0.053)	(0.031)	(0.344)	(0.039)	(0.055)	(0.027)	(0.044)	(0.048)
East	0.246***	0.206***	-0.439***	-0.192***	0.476	-0.251***	0.744***	0.054*	0.852***	0.286***
	(0.051)	(0.026)	(0.080)	(0.035)	(0.401)	(0.048)	(0.056)	(0.028)	(0.041)	(0.044)
Primary School	0.373***	0.607***	-0.138***	0.157***	0.257*	0.808***	-0.078**	0.220***	0.084***	0.468***
	(0.029)	(0.026)	(0.032)	(0.028)	(0.102)	(0.051)	(0.024)	(0.024)	(0.023)	(0.046)
Secondary School	0.719***	0.756***	-0.366***	-0.135***	0.554***	0.950***	-0.316***	0.036	-0.118**	0.450***
	(0.035)	(0.028)	(0.053)	(0.033)	(0.126)	(0.055)	(0.045)	(0.028)	(0.039)	(0.048)
High School	1.232***	0.958***	-0.468***	-0.436***	0.868***	1.066***	-0.343***	-0.004	-0.153***	0.412***
	(0.032)	(0.027)	(0.055)	(0.034)	(0.110)	(0.053)	(0.042)	(0.027)	(0.040)	(0.048)
University/ higher	2.814***	1.670***	0.176	-0.697***	1.912***	1.468***	0.594***	0.092**	0.561***	0.488***
	(0.035)	(0.031)	(0.092)	(0.061)	(0.111)	(0.057)	(0.051)	(0.034)	(0.066)	(0.070)
Urban	-0.005	0.182***	-0.304***	-0.015	-0.269***	0.306***	-0.824***	-0.331***	-1.287***	-0.272***
	(0.019)	(0.014)	(0.027)	(0.018)	(0.062)	(0.022)	(0.020)	(0.014)	(0.020)	(0.026)
Age	-0.018***	-0.053***	-0.011***	-0.041***	0.012***	-0.020***	0.014***	-0.015***	0.001	-0.075***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Married	-0.522***	1.406***	-0.267***	0.985***	-0.375***	1.497***	-0.024	1.374***	0.522***	0.858***
	(0.021)	(0.020)	(0.033)	(0.028)	(0.064)	(0.035)	(0.025)	(0.023)	(0.027)	(0.035)
Household Size	-0.060***	-0.112***	-0.052***	-0.050***	-0.152***	-0.118***	-0.109***	-0.069***	0.056***	0.115***
	(0.005)	(0.003)	(0.007)	(0.004)	(0.023)	(0.006)	(0.006)	(0.003)	(0.004)	(0.005)

Table Appendix A.4: Multinomial probit estimates (2005- contd.)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Emp. Female(R)	0.540***		1.162***		0.360		0.540***		1.101***	
	(0.048)		(0.074)		(0.197)		(0.061)		(0.048)	
Children 0-6(R)	-0.616***	1.347***	0.208	1.477***	0.543*	1.540***	0.867***	1.410***	1.473***	0.802***
	(0.067)	(0.052)	(0.108)	(0.069)	(0.222)	(0.076)	(0.079)	(0.057)	(0.084)	(0.116)
Children 7-14(R)	0.597***	1.713***	1.462***	1.407***	1.085***	1.690***	1.592***	1.383***	2.404***	0.865***
	(0.052)	(0.040)	(0.081)	(0.055)	(0.173)	(0.060)	(0.062)	(0.045)	(0.070)	(0.093)
Children 15-24(R)	0.179*	0.133*	0.884***	-0.087	0.640**	0.618***	1.027***	0.110	1.857***	-1.307***
	(0.078)	(0.056)	(0.136)	(0.092)	(0.243)	(0.087)	(0.102)	(0.070)	(0.115)	(0.169)
Unemp. Elderly(R)	0.253**	0.593***	0.110	0.571***	0.381	0.793***	0.409***	1.229***	2.324***	1.370***
	(0.079)	(0.070)	(0.144)	(0.102)	(0.216)	(0.114)	(0.091)	(0.076)	(0.110)	(0.144)
PC Income	-0.000***	-0.001***	-0.002***	-0.001***	0.000**	0.000***	-0.000**	-0.000	-0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PC Schooling	0.000	-0.052**	-0.120***	-0.107***	0.116**	0.033	0.164***	0.228***	-0.099***	-0.007
	(0.016)	(0.017)	(0.033)	(0.028)	(0.041)	(0.028)	(0.018)	(0.020)	(0.011)	(0.019)
Regular WE(R)	1.310***	1.261***	0.944***	0.470***	-0.448*	-0.840***	0.114	-0.627***	1.404***	-1.484***
	(0.069)	(0.065)	(0.148)	(0.114)	(0.216)	(0.100)	(0.106)	(0.083)	(0.153)	(0.166)
Casual WE(R)	0.900***	0.448***	4.248***	4.295***	-0.139	-1.521***	0.803***	-0.250	1.967***	-2.920***
	(0.117)	(0.106)	(0.129)	(0.111)	(0.505)	(0.258)	(0.136)	(0.127)	(0.173)	(0.337)
Employer(R)	-1.313***	-0.491*	-0.972*	-0.949*	-0.018	2.410***	-2.544***	-3.326***	5.931***	8.112***
	(0.195)	(0.223)	(0.404)	(0.429)	(0.503)	(0.333)	(0.238)	(0.313)	(0.167)	(0.249)
Self-Employed(R)	-0.622***	-0.549***	0.544*	0.028	-1.904***	-1.964***	-1.689***	-3.084***	7.785***	5.869***
	(0.142)	(0.118)	(0.215)	(0.167)	(0.505)	(0.220)	(0.150)	(0.140)	(0.122)	(0.152)
Unpaid FM(R)	-0.342*	1.256***	-1.233***	1.829***	2.688***	4.705***	3.343***	6.044***	5.126***	6.491***
	(0.154)	(0.086)	(0.271)	(0.115)	(0.360)	(0.096)	(0.115)	(0.075)	(0.097)	(0.094)
Student	-2.107***	-2.565***	-2.079***	-1.963***	-2.025***	-2.490***	-2.185***	-2.737***	-2.774***	-2.556***
	(0.052)	(0.032)	(0.129)	(0.051)	(0.431)	(0.108)	(0.172)	(0.081)	(0.096)	(0.060)
Constant	-2.359***	-0.061	-2.465***	-0.385***	-5.098***	-2.893***	-3.180***	-0.844***	-4.927***	-1.572***
	(0.064)	(0.043)	(0.087)	(0.054)	(0.386)	(0.079)	(0.076)	(0.046)	(0.073)	(0.080)

Table Appendix A.5: Multinomial logit estimates (2005)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Istanbul	1.490***	0.961***	-0.066	-0.274***	3.121**	1.194***	0.481***	-0.208***	-0.220*	-0.389***
	(0.061)	(0.033)	(0.124)	(0.057)	-1.011	(0.066)	(0.125)	(0.041)	(0.095)	(0.102)
Blacksea	0.914***	0.558***	0.597***	0.127*	3.530***	0.560***	2.464***	0.011	1.706***	0.096
	(0.065)	(0.034)	(0.104)	(0.053)	-1.010	(0.069)	(0.101)	(0.038)	(0.058)	(0.071)
Center Anatolia	0.776***	0.444***	0.062	0.031	2.291*	0.334***	1.291***	-0.005	0.739***	0.359***
	(0.063)	(0.033)	(0.111)	(0.051)	-1.019	(0.068)	(0.107)	(0.037)	(0.063)	(0.073)
Mediterranean	0.975***	0.393***	0.772***	0.170***	3.027**	0.552***	1.927***	0.083*	1.000***	-0.224**
	(0.064)	(0.034)	(0.093)	(0.050)	-1.014	(0.070)	(0.104)	(0.038)	(0.064)	(0.080)
Aegean	1.216***	0.564***	0.952***	-0.114*	2.472*	0.279***	1.328***	0.129***	1.056***	0.135
	(0.062)	(0.032)	(0.093)	(0.051)	-1.018	(0.070)	(0.107)	(0.037)	(0.061)	(0.075)
Marmara	1.390***	0.823***	1.233***	0.380***	3.419***	0.624***	1.590***	0.087*	1.166***	0.417***
	(0.061)	(0.032)	(0.092)	(0.049)	-1.009	(0.068)	(0.106)	(0.038)	(0.062)	(0.075)
East	0.252***	0.272***	-1.194***	-0.344***	1.004	-0.519***	1.376***	0.066	1.147***	0.400***
	(0.075)	(0.036)	(0.165)	(0.056)	-1.156	(0.090)	(0.105)	(0.038)	(0.057)	(0.067)
Primary School	0.732***	0.867***	-0.254***	0.195***	0.546*	1.408***	-0.165***	0.276***	0.116***	0.722***
	(0.050)	(0.037)	(0.058)	(0.043)	(0.254)	(0.104)	(0.039)	(0.032)	(0.031)	(0.070)
Secondary School	1.295***	1.053***	-0.719***	-0.294***	1.274***	1.677***	-0.644***	0.014	-0.208***	0.637***
	(0.056)	(0.039)	(0.096)	(0.051)	(0.306)	(0.108)	(0.080)	(0.039)	(0.055)	(0.073)
High School	1.925***	1.274***	-1.183***	-0.901***	1.893***	1.831***	-0.835***	-0.087*	-0.421***	0.519***
	(0.052)	(0.038)	(0.113)	(0.055)	(0.264)	(0.106)	(0.077)	(0.038)	(0.059)	(0.074)
University/ higher	3.852***	2.183***	-0.594**	-1.734***	3.368***	2.399***	0.293**	-0.029	0.265*	0.531***
	(0.054)	(0.043)	(0.215)	(0.127)	(0.262)	(0.110)	(0.093)	(0.050)	(0.109)	(0.110)
Urban	0.131***	0.235***	-0.360***	-0.030	-0.243	0.568***	-1.298***	-0.490***	-1.825***	-0.410***
	(0.028)	(0.018)	(0.050)	(0.029)	(0.144)	(0.038)	(0.033)	(0.020)	(0.029)	(0.040)
Age	-0.025***	-0.070***	-0.022***	-0.061***	0.028***	-0.027***	0.024***	-0.021***	0.002	-0.114***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.006)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Married	-0.750***	1.828***	-0.477***	1.323***	-0.736***	2.342***	0.035	1.950***	0.814***	1.207***
	(0.030)	(0.027)	(0.060)	(0.046)	(0.145)	(0.065)	(0.041)	(0.036)	(0.038)	(0.054)
Household Size	-0.085***	-0.156***	-0.069***	-0.059***	-0.350***	-0.191***	-0.186***	-0.093***	0.082***	0.195***
	(0.008)	(0.005)	(0.013)	(0.007)	(0.056)	(0.011)	(0.010)	(0.005)	(0.006)	(0.007)

Table Appendix A.5: Multinomial logit estimates (2005- contd.)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Emp. Female(R)	0.645***		1.999***		0.332		0.650***		1.479***	
	(0.069)		(0.126)		(0.457)		(0.103)		(0.066)	
Children 0-6(R)	-0.728***	1.891***	0.367	2.242***	1.439**	2.389***	1.478***	1.954***	2.328***	1.072***
	(0.095)	(0.071)	(0.204)	(0.110)	(0.507)	(0.129)	(0.133)	(0.082)	(0.119)	(0.181)
Children 7-14(R)	0.777***	2.287***	2.445***	1.986***	1.986***	2.557***	2.553***	1.855***	3.605***	1.108***
	(0.075)	(0.055)	(0.149)	(0.090)	(0.396)	(0.101)	(0.102)	(0.064)	(0.101)	(0.147)
Children 15-24(R)	0.229*	0.308***	1.624***	-0.144	1.399**	1.170***	1.863***	0.265**	2.933***	-2.142***
	(0.112)	(0.075)	(0.260)	(0.161)	(0.534)	(0.142)	(0.170)	(0.099)	(0.167)	(0.277)
Unemp. Elderly(R)	0.381***	0.853***	-0.038	0.790***	0.625	1.222***	0.478**	1.750***	3.593***	2.212***
	(0.111)	(0.092)	(0.287)	(0.171)	(0.476)	(0.200)	(0.146)	(0.106)	(0.153)	(0.223)
PC Income	-0.001***	-0.001***	-0.005***	-0.002***	0.001***	0.001***	-0.001**	-0.001*	-0.003***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PC Schooling	0.067**	-0.074**	-0.236***	-0.218***	0.264**	0.055	0.385***	0.404***	-0.124***	0.000
	(0.023)	(0.023)	(0.069)	(0.050)	(0.091)	(0.050)	(0.034)	(0.032)	(0.016)	(0.028)
Regular WE(R)	1.864***	1.698***	1.608***	0.573**	-1.120*	-1.548***	0.101	-0.812***	2.282***	-2.681***
	(0.096)	(0.086)	(0.281)	(0.189)	(0.484)	(0.172)	(0.184)	(0.140)	(0.236)	(0.270)
Casual WE(R)	1.013***	0.608***	6.906***	6.238***	-1.404	-3.887***	1.002***	-0.451*	2.782***	-5.306***
	(0.176)	(0.146)	(0.216)	(0.161)	-1.363	(0.569)	(0.224)	(0.197)	(0.268)	(0.588)
Employer(R)	-2.396***	-0.546	-2.406**	-2.053*	-0.315	3.864***	-5.669***	-6.015***	8.331***	12.717***
	(0.292)	(0.306)	(0.892)	(0.834)	-1.186	(0.575)	(0.460)	(0.524)	(0.238)	(0.373)
Self-Employed(R)	-1.725***	-0.645***	0.287	0.390	-5.336***	-3.701***	-4.756***	-5.410***	10.945***	9.271***
	(0.220)	(0.162)	(0.428)	(0.276)	-1.194	(0.417)	(0.290)	(0.234)	(0.174)	(0.233)
Unpaid FM(R)	-1.159***	1.406***	-4.439***	1.800***	4.967***	7.599***	5.444***	8.680***	6.923***	9.702***
	(0.247)	(0.142)	(0.598)	(0.217)	(0.788)	(0.161)	(0.184)	(0.117)	(0.135)	(0.148)
Student	-2.933***	-3.318***	-3.734***	-2.825***	-3.592***	-3.987***	-3.847***	-4.482***	-3.908***	-3.758***
	(0.084)	(0.048)	(0.280)	(0.096)	-1.025	(0.244)	(0.417)	(0.182)	(0.147)	(0.100)
Constant	-3.304***	-0.062	-3.281***	-0.424***	-9.460***	-4.915***	-4.620***	-1.123***	-6.870***	-2.426***
	(0.096)	(0.059)	(0.157)	(0.085)	-1.087	(0.149)	(0.137)	(0.065)	(0.104)	(0.124)

Table Appendix A.6: Multinomial probit estimates (2006)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Istanbul	1.210***	0.839***	0.277***	-0.098**	1.123***	1.036***	0.565***	-0.003	-0.005	-0.511***
	(0.041)	(0.024)	(0.069)	(0.036)	(0.226)	(0.041)	(0.065)	(0.028)	(0.071)	(0.081)
Blacksea	0.933***	0.577***	0.883***	0.244***	1.403***	0.709***	1.629***	0.068*	1.614***	0.330***
	(0.043)	(0.025)	(0.060)	(0.034)	(0.225)	(0.043)	(0.056)	(0.028)	(0.046)	(0.048)
Center Anatolia	0.683***	0.442***	0.433***	0.155***	0.740**	0.688***	0.879***	0.072**	0.810***	0.411***
	(0.042)	(0.024)	(0.063)	(0.032)	(0.229)	(0.041)	(0.058)	(0.026)	(0.049)	(0.049)
Mediterranean	0.856***	0.403***	0.899***	0.278***	1.020***	0.546***	1.258***	0.159***	1.220***	0.145**
	(0.043)	(0.025)	(0.058)	(0.032)	(0.228)	(0.044)	(0.057)	(0.027)	(0.048)	(0.052)
Aegean	1.048***	0.557***	0.843***	0.138***	0.973***	0.571***	0.989***	0.189***	1.091***	0.441***
	(0.041)	(0.024)	(0.058)	(0.032)	(0.227)	(0.042)	(0.058)	(0.026)	(0.048)	(0.049)
Marmara	1.154***	0.728***	1.037***	0.367***	1.176***	0.762***	1.085***	0.125***	1.184***	0.528***
	(0.041)	(0.024)	(0.057)	(0.031)	(0.225)	(0.041)	(0.058)	(0.026)	(0.048)	(0.049)
East	0.360***	0.332***	-0.183*	-0.079*	0.447	0.352***	0.938***	0.155***	1.226***	0.508***
	(0.048)	(0.026)	(0.084)	(0.035)	(0.261)	(0.047)	(0.058)	(0.028)	(0.045)	(0.045)
Primary School	0.355***	0.654***	-0.010	0.170***	0.457***	0.819***	-0.037	0.284***	0.151***	0.494***
	(0.028)	(0.026)	(0.032)	(0.028)	(0.097)	(0.050)	(0.024)	(0.024)	(0.022)	(0.047)
Secondary School	0.641***	0.793***	-0.192***	-0.157***	0.650***	0.926***	-0.285***	0.073**	-0.082*	0.454***
	(0.033)	(0.028)	(0.049)	(0.032)	(0.116)	(0.053)	(0.044)	(0.028)	(0.038)	(0.048)
High School	1.210***	1.000***	-0.410***	-0.397***	0.908***	1.071***	-0.214***	0.072**	-0.139***	0.423***
	(0.030)	(0.027)	(0.055)	(0.033)	(0.105)	(0.052)	(0.040)	(0.027)	(0.040)	(0.049)
University/ higher	2.799***	1.684***	0.375***	-0.718***	1.962***	1.467***	0.671***	0.092**	0.383***	0.537***
	(0.033)	(0.031)	(0.081)	(0.060)	(0.105)	(0.055)	(0.050)	(0.034)	(0.068)	(0.071)
Urban	0.053**	0.218***	-0.296***	-0.083***	-0.003	0.375***	-0.825***	-0.333***	-1.270***	-0.214***
	(0.019)	(0.013)	(0.027)	(0.018)	(0.062)	(0.021)	(0.020)	(0.014)	(0.020)	(0.026)
Age	-0.020***	-0.054***	-0.009***	-0.044***	0.012***	-0.021***	0.015***	-0.013***	0.002*	-0.072***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Married	-0.521***	1.366***	-0.251***	1.031***	-0.421***	1.505***	-0.090***	1.286***	0.490***	0.889***
	(0.020)	(0.020)	(0.033)	(0.028)	(0.057)	(0.034)	(0.025)	(0.023)	(0.027)	(0.035)
Household Size	-0.055***	-0.117***	-0.043***	-0.053***	-0.143***	-0.113***	-0.105***	-0.076***	0.059***	0.115***
	(0.005)	(0.003)	(0.007)	(0.004)	(0.020)	(0.006)	(0.006)	(0.003)	(0.004)	(0.005)

Table Appendix A.6: Multinomial probit estimates (2006- contd.)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Emp. Female(R)	0.386***		0.847***		0.126		0.237***		0.720***	
	(0.046)		(0.069)		(0.156)		(0.061)		(0.048)	
Children 0-6(R)	-0.782***	1.443***	-0.292*	1.344***	0.243	1.719***	0.798***	1.531***	1.090***	0.815***
	(0.067)	(0.054)	(0.116)	(0.072)	(0.211)	(0.078)	(0.084)	(0.059)	(0.087)	(0.122)
Children 7-14(R)	0.572***	1.597***	1.402***	1.394***	1.067***	1.678***	1.696***	1.434***	2.271***	0.844***
	(0.050)	(0.039)	(0.078)	(0.053)	(0.155)	(0.058)	(0.061)	(0.043)	(0.068)	(0.090)
Children 15-24(R)	0.199**	0.122*	0.579***	-0.162	0.329	0.547***	0.924***	0.131	1.409***	-1.728***
	(0.075)	(0.055)	(0.132)	(0.091)	(0.226)	(0.085)	(0.102)	(0.069)	(0.117)	(0.173)
Unemp. Elderly(R)	0.248***	0.489***	-0.034	0.566***	0.383*	0.738***	0.571***	1.354***	2.063***	1.031***
	(0.075)	(0.067)	(0.141)	(0.098)	(0.195)	(0.109)	(0.088)	(0.072)	(0.107)	(0.148)
PC Income	-0.001***	-0.001***	-0.002***	-0.001***	0.000	0.000	-0.001***	-0.000	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PC Schooling	-0.005	-0.050**	-0.134***	-0.079**	0.130***	0.132***	0.122***	0.271***	-0.120***	0.009
	(0.015)	(0.016)	(0.033)	(0.027)	(0.035)	(0.027)	(0.019)	(0.019)	(0.012)	(0.018)
Regular WE(R)	1.376***	1.365***	0.826***	0.450***	-0.012	-0.475***	0.504***	-0.531***	1.494***	-0.851***
	(0.066)	(0.062)	(0.136)	(0.107)	(0.189)	(0.095)	(0.104)	(0.078)	(0.142)	(0.244)
Casual WE(R)	0.713***	0.689***	3.986***	4.037***	-1.249	-1.111***	0.868***	-0.358**	2.005***	-1.086***
	(0.117)	(0.105)	(0.125)	(0.112)	(0.701)	(0.240)	(0.136)	(0.129)	(0.163)	(0.305)
Employer(R)	-1.230***	-0.039	-0.368	-0.630	0.239	1.453***	-2.365***	-3.432***	5.942***	8.191***
	(0.189)	(0.208)	(0.372)	(0.394)	(0.431)	(0.323)	(0.250)	(0.294)	(0.166)	(0.242)
Self-Employed(R)	-0.504***	-0.359**	0.499*	-0.005	-1.830***	-2.619***	-1.281***	-3.005***	7.705***	5.808***
	(0.138)	(0.116)	(0.220)	(0.161)	(0.432)	(0.228)	(0.152)	(0.139)	(0.119)	(0.152)
Unpaid FM(R)	-0.442**	1.351***	-0.761**	1.924***	3.866***	4.840***	3.542***	6.016***	5.142***	6.227***
	(0.152)	(0.085)	(0.253)	(0.110)	(0.270)	(0.095)	(0.117)	(0.075)	(0.098)	(0.095)
Student	-1.989***	-2.492***	-1.461***	-1.848***	-1.670***	-2.185***	-1.915***	-2.516***	-2.098***	-2.125***
	(0.048)	(0.030)	(0.093)	(0.049)	(0.278)	(0.086)	(0.160)	(0.074)	(0.088)	(0.056)
Constant	-2.354***	-0.112**	-2.858***	-0.339***	-5.054***	-3.286***	-3.411***	-0.989***	-5.130***	-1.854***
	(0.062)	(0.043)	(0.090)	(0.054)	(0.277)	(0.080)	(0.078)	(0.046)	(0.074)	(0.082)

Table Appendix A.7: Multinomial logit estimates (2006)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Istanbul	1.603***	1.104***	0.144	-0.332***	2.251***	1.719***	0.755***	-0.093*	-0.485***	-1.028***
	(0.059)	(0.032)	(0.137)	(0.060)	(0.592)	(0.074)	(0.132)	(0.041)	(0.121)	(0.140)
Blacksea	1.097***	0.762***	1.192***	0.308***	2.599***	1.158***	2.708***	0.040	2.170***	0.417***
	(0.063)	(0.034)	(0.112)	(0.054)	(0.590)	(0.077)	(0.109)	(0.039)	(0.066)	(0.075)
Center Anatolia	0.860***	0.589***	0.563***	0.193***	1.460*	1.143***	1.552***	0.066	1.064***	0.583***
	(0.061)	(0.032)	(0.117)	(0.051)	(0.600)	(0.074)	(0.114)	(0.037)	(0.071)	(0.077)
Mediterranean	1.041***	0.533***	1.342***	0.393***	1.962**	0.880***	2.116***	0.192***	1.644***	0.124
	(0.062)	(0.034)	(0.104)	(0.049)	(0.598)	(0.079)	(0.112)	(0.038)	(0.069)	(0.083)
Aegean	1.314***	0.729***	1.267***	0.135**	1.865**	0.907***	1.622***	0.208***	1.448***	0.579***
	(0.060)	(0.032)	(0.105)	(0.050)	(0.594)	(0.076)	(0.114)	(0.036)	(0.069)	(0.076)
Marmara	1.464***	0.951***	1.515***	0.460***	2.273***	1.209***	1.786***	0.107**	1.551***	0.706***
	(0.060)	(0.032)	(0.104)	(0.049)	(0.591)	(0.075)	(0.114)	(0.037)	(0.069)	(0.077)
East	0.388***	0.437***	-0.772***	-0.188**	0.770	0.567***	1.704***	0.192***	1.674***	0.760***
	(0.071)	(0.036)	(0.175)	(0.057)	(0.679)	(0.086)	(0.112)	(0.038)	(0.065)	(0.070)
Primary School	0.642***	0.920***	-0.042	0.197***	1.001***	1.391***	-0.098*	0.362***	0.205***	0.769***
	(0.046)	(0.036)	(0.058)	(0.042)	(0.239)	(0.101)	(0.039)	(0.032)	(0.030)	(0.073)
Secondary School	1.121***	1.090***	-0.414***	-0.354***	1.513***	1.597***	-0.598***	0.060	-0.160**	0.639***
	(0.051)	(0.038)	(0.091)	(0.050)	(0.277)	(0.105)	(0.080)	(0.039)	(0.053)	(0.075)
High School	1.832***	1.322***	-1.091***	-0.845***	1.918***	1.797***	-0.605***	0.016	-0.429***	0.556***
	(0.047)	(0.038)	(0.111)	(0.054)	(0.252)	(0.103)	(0.074)	(0.038)	(0.059)	(0.076)
University/ higher	3.774***	2.199***	-0.159	-1.828***	3.452***	2.382***	0.418***	-0.027	-0.097	0.625***
	(0.050)	(0.042)	(0.179)	(0.128)	(0.249)	(0.107)	(0.092)	(0.050)	(0.117)	(0.112)
Urban	0.214***	0.280***	-0.386***	-0.154***	0.369*	0.682***	-1.333***	-0.496***	-1.836***	-0.337***
	(0.027)	(0.018)	(0.049)	(0.028)	(0.147)	(0.038)	(0.034)	(0.020)	(0.029)	(0.041)
Age	-0.027***	-0.072***	-0.018***	-0.066***	0.027***	-0.029***	0.027***	-0.018***	0.002*	-0.111***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.005)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Married	-0.750***	1.776***	-0.413***	1.419***	-0.781***	2.378***	-0.050	1.810***	0.773***	1.265***
	(0.028)	(0.026)	(0.060)	(0.046)	(0.127)	(0.064)	(0.041)	(0.035)	(0.038)	(0.054)
Household Size	-0.075***	-0.163***	-0.057***	-0.065***	-0.318***	-0.178***	-0.183***	-0.103***	0.082***	0.198***
	(0.007)	(0.005)	(0.013)	(0.007)	(0.048)	(0.010)	(0.010)	(0.005)	(0.006)	(0.007)

Table Appendix A.7: Multinomial logit estimates (2006- contd.)

	Regular Wage Earner (j=1)		Casual Wage Earner (j=2)		Employer (j=3)		Self Employed (j=4)		Unpaid Family Worker (j=5)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Emp. Female(R)	0.468***		1.583***		0.027		0.201		0.949***	
	(0.065)		(0.119)		(0.349)		(0.104)		(0.066)	
Children 0-6(R)	-0.888***	2.020***	-0.639**	2.001***	0.815	2.662***	1.480***	2.139***	1.837***	1.061***
	(0.094)	(0.074)	(0.225)	(0.117)	(0.472)	(0.131)	(0.141)	(0.086)	(0.125)	(0.194)
Children 7-14(R)	0.742***	2.137***	2.315***	1.979***	1.956***	2.520***	2.745***	1.929***	3.432***	1.050***
	(0.071)	(0.053)	(0.143)	(0.086)	(0.349)	(0.097)	(0.102)	(0.062)	(0.098)	(0.143)
Children 15-24(R)	0.247*	0.329***	1.095***	-0.229	0.703	1.070***	1.786***	0.324**	2.360***	-3.367***
	(0.107)	(0.073)	(0.256)	(0.159)	(0.507)	(0.140)	(0.171)	(0.099)	(0.172)	(0.301)
Unemp. Elderly(R)	0.355***	0.712***	-0.305	0.800***	0.687	1.120***	0.763***	1.928***	3.263***	1.692***
	(0.105)	(0.088)	(0.283)	(0.165)	(0.422)	(0.193)	(0.143)	(0.100)	(0.150)	(0.232)
PC Income	-0.001***	-0.001***	-0.003***	-0.001***	0.000*	0.000	-0.001***	-0.000	-0.001***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
PC Schooling	0.055*	-0.072**	-0.221**	-0.180***	0.310***	0.229***	0.314***	0.434***	-0.142***	0.016
	(0.022)	(0.022)	(0.070)	(0.049)	(0.074)	(0.047)	(0.036)	(0.030)	(0.016)	(0.027)
Regular WE(R)	1.948***	1.807***	1.140***	0.431*	-0.319	-0.864***	0.796***	-0.823***	2.290***	-1.746***
	(0.091)	(0.081)	(0.262)	(0.177)	(0.412)	(0.161)	(0.184)	(0.127)	(0.219)	(0.409)
Casual WE(R)	0.742***	0.933***	6.338***	5.844***	-3.957*	-2.716***	1.137***	-0.659***	2.852***	-2.337***
	(0.175)	(0.143)	(0.207)	(0.160)	-1.862	(0.489)	(0.226)	(0.198)	(0.249)	(0.536)
Employer(R)	-2.178***	0.087	-1.444	-1.947*	-0.219	2.149***	-5.438***	-5.931***	8.171***	13.008***
	(0.278)	(0.284)	(0.805)	(0.789)	(0.983)	(0.560)	(0.482)	(0.495)	(0.239)	(0.364)
Self-Employed(R)	-1.503***	-0.358*	-0.146	0.279	-5.412***	-4.831***	-4.089***	-5.007***	10.747***	9.154***
	(0.211)	(0.158)	(0.446)	(0.271)	-1.002	(0.431)	(0.292)	(0.227)	(0.170)	(0.233)
Unpaid FM(R)	-1.356***	1.587***	-3.274***	2.123***	7.381***	7.763***	5.837***	8.567***	7.025***	9.278***
	(0.241)	(0.138)	(0.538)	(0.202)	(0.542)	(0.158)	(0.188)	(0.116)	(0.137)	(0.150)
Student	-2.756***	-3.233***	-2.531***	-2.630***	-3.092***	-3.377***	-3.569***	-4.116***	-3.093***	-2.928***
	(0.076)	(0.045)	(0.192)	(0.092)	(0.734)	(0.185)	(0.416)	(0.163)	(0.138)	(0.095)
Constant	-3.256***	-0.125*	-3.905***	-0.299***	-9.101***	-5.567***	-5.082***	-1.326***	-7.152***	-2.825***
	(0.092)	(0.058)	(0.164)	(0.085)	(0.695)	(0.150)	(0.144)	(0.065)	(0.107)	(0.129)

Regrouping Occupational Categories

Occupational categories are not unique in each year's raw data set. Therefore, we regrouped occupations for both three years. The regrouping procedure depends on average characteristics of each pre-determined occupation. New occupations are classified in line with the sub-sample's average levels of monthly earning, years of schooling, experience and job tenure. Each occupation's average monthly earning is the average yield of being employed in that particular occupation. Moreover, years of schooling and experience are two determinants of productivity and they are included into the regrouping process in order to avoid a possible overvaluation of an occupation. On the other hand, average job tenure level is putted into the analysis since it could be a sign of job security to some extent. Regrouping process is basically a scoring process, where each occupation's score is increasing in line with its favorable features or decreasing in case of a disadvantage. The process shown in Table Appendix A.8 is as follows:

Occupational categories are ordered from the highest one to the lowest by average occupation characteristics and ranked; lowest levels ranked as 1 or vice versa (1st Step). Schooling rank and experience rank are subtracted from wage rank (2nd Step). As both average years of schooling and experience are productivity related variables, their increasing values should be reflected in increasing average wages. Therefore, negative values of this subtraction are interpreted as sign of a disadvantaged situation. Afterwards, each occupation's wage rank and the two subtractions are weighted by 0.3 and job tenure rank is weighted by 0.1 (3rd Step). Then, the total score of each occupation is calculated as the sum of all weighted values (4th Step) and the total scores are ranked (5th Step). Finally, occupations are clustered according to their total score rank (6th Step). In case of an equality wage rank is used to differentiate, those with higher average wage ranked higher.

Table Appendix A.8: Regrouping occupational categories

		Share in Female Employment (%)	Share in Male Employment (%)	Female Share (%)	Rank (1st Step)				Difference (2nd Step)		Weighting (3rd Step)				Total Score (4th Step)	Score Rank (5th Step)	New Occ. Group (6th Step)
					Av. Wage	Av. Sch.	Av. Exp.	Av. JT	Wage - Sch.	Wage - Exp	Av. Wage (0.30)	Wage - Sch. (0.30)	Wage-Exp. (0.30)	JT (0.10)			
1988	Scientific workers	28.0	13.5	31.0	7	8	2	7	-1	5	2.1	-0.3	1.5	0.7	4	1	A
	Administrative workers	1.5	2.3	12.6	8	7	7	8	1	1	2.4	0.3	0.3	0.8	3.8	2	A
	Cereal workers	29.7	11.6	35.6	5	6	4	5	-1	1	1.5	-0.3	0.3	0.5	2	4	B
	Sales workers	4.0	5.3	14.2	4	4	3	1	0	1	1.2	0	0.3	0.1	1.6	5	C
	Service workers	9.9	16.1	11.8	2	2	6	4	0	-4	0.6	0	-1.2	0.4	-0.2	7	D
	Agricultural workers	1.1	1.2	16.7	1	1	8	6	0	-7	0.3	0	-2.1	0.6	-1.2	8	D
	Production workers	24.3	49.0	9.7	3	3	5	3	0	-2	0.9	0	-0.6	0.3	0.6	6	C
	Occupation NA	1.3	1.1	-	6	5	1	2	1	5	1.8	0.3	1.5	0.2	3.8	3	B
2005	Legislators, senior officials and managers	3.3	5.2	14.9	9	8	7	9	1	2	2.7	0.3	0.6	0.9	4.5	2	A
	Professionals	15.6	7.9	35.2	8	9	1	8	-1	7	2.4	-0.3	2.1	0.8	5	1	A
	Technicians and market sales w.	16.5	9.5	32.3	7	7	2	7	0	5	2.1	0	1.5	0.7	4.3	3	B
	Clerks	20.8	9.1	38.7	6	6	3	5	0	3	1.8	0	0.9	0.5	3.2	4	B
	Service workers and shop and market sales w.	12.9	14.7	19.5	4	5	4	1	-1	0	1.2	-0.3	0	0.1	1	6	C
	Skilled agricultural and fishery workers	0.1	0.6	4.9	2	1	9	6	1	-7	0.6	0.3	-2.1	0.6	-0.6	8	D
	Craft and related trade workers	9.1	21.5	10.4	3	4	5	2	-1	-2	0.9	-0.3	-0.6	0.2	0.2	7	C
	Plant and machine operators and assemblers	10.2	18.8	13	5	3	6	3	2	-1	1.5	0.6	-0.3	0.3	2.1	5	B
	Elementary occupations	11.4	12.6	19.9	1	2	8	4	-1	-7	0.3	-0.3	-2.1	0.4	-1.7	9	D
2006	Legislators, senior officials and managers	3.1	4.8	15.6	9	8	7	9	1	2	2.7	0.3	0.6	0.9	4.5	2	A
	Professionals	15.2	7.5	37.1	8	9	1	8	-1	7	2.4	-0.3	2.1	0.8	5	1	A
	Technicians and market sales w.	17.3	9.9	33.8	7	7	2	6	0	5	2.1	0	1.5	0.6	4.2	3	B
	Clerks	21.3	9.4	39.8	6	6	3	5	0	3	1.8	0	0.9	0.5	3.2	4	B
	Service workers and shop and market sales w.	13.9	15.4	20.8	3	5	4	7	-2	-1	0.9	-0.6	-0.3	0.7	0.7	7	C
	Skilled agricultural and fishery w.	0.1	0.6	5.2	2	1	9	1	1	-7	0.6	0.3	-2.1	0.1	-1.1	8	D
	Craft and related trade workers	8.1	20.7	11.4	4	4	5	4	0	-1	1.2	0	-0.3	0.4	1.3	6	C
	Plant and machine operators and assemblers	9.3	18.5	14.6	5	3	6	2	2	-1	1.5	0.6	-0.3	0.2	2	5	B
	Elementary occupations	11.8	13.1	26.1	1	2	8	3	-1	-7	0.3	-0.3	-2.1	0.3	-1.8	9	D

Data Source: HLFS 1988, HLFS 2005

Wage Estimates with Male Interaction Variables

The estimation results shown in Table Appendix D.1 are compatible with previous findings of separate female male wage regressions. From 1988 to 2006 regional residence began to play a significant role in wage differentials between male and female workers in favor of men, while urban residency did not show such a strong pressure on female wages. In 2005 and 2006, educational attainment favored males compared to females, though male advantage was not that significant in 1988. Married women earned less than married male workers in 1988 and this relation had been reversed in 2006. Male-female returns to experience and job tenure converged in time and women's return to security coverage remained higher, though slightly decreasing, in the whole period. The wage setting pattern due to occupational categories did not changed its dimension, but male advantage of being employed in occupation C increased in time. Industry of employment had a particular effect on wage determination too. In 1988 wages in agriculture was above average and agricultural employment was lowering male wages; however this situation completely reversed in the following years. On the other hand, mining was paying slightly under average in 1988, but in 2000s being employed in this industry became favorable for both groups. In 1988, wages in manufacturing was slightly above the average but in 2005 and as well as in 2006 manufacturing wages decreased below average. This decline also smoothed the negative effect of manufacturing employment on male wages. Utilities and construction are the two industries, in which males are favored during the whole period. The returns of being employed in utilities increased substantially in the whole period for both groups and on the contrary to utilities, the returns of being employed in construction decreased over time. A similar decrease also experienced in trade industry and male workers were adversely affected even further compared to females. The return of being employed in transportation and financial industries did not have distinctive pattern during the period, but in both two industries male wages always occurred below their female counterparts' wages. Finally, wages in service industry increased constantly from 1988 and 2006, but male-female wages never differentiated from each other.

Table Appendix A.9 : Pooled wage estimations (1988, 2005 and 2006)

	1988		2005		2006	
		MI[24] variables		MI variables		MI variables
Istanbul	0.189**	0.034	0.170***	0.052*	0.234***	0.049
	(0.060)	(0.063)	(0.025)	(0.026)	(0.024)	(0.026)
Blacksea	-0.120	0.062	-0.175***	0.169***	-0.054*	0.123***
	(0.069)	(0.074)	(0.027)	(0.029)	(0.026)	(0.028)
Center Anatolia	0.063	-0.038	0.008	-0.001	0.050*	0.027
	(0.061)	(0.065)	(0.026)	(0.028)	(0.025)	(0.027)
Mediterranean	-0.029	-0.006	-0.070**	0.071*	-0.012	0.072*
	(0.066)	(0.069)	(0.027)	(0.029)	(0.026)	(0.028)
Aegean	-0.069	-0.009	-0.096***	0.064*	-0.049*	0.094***
	(0.064)	(0.068)	(0.025)	(0.027)	(0.024)	(0.026)
Marmara	-0.076	0.107	-0.066**	0.141***	-0.002	0.131***
	(0.069)	(0.073)	(0.025)	(0.027)	(0.024)	(0.026)
East	0.034	-0.029	0.021	0.039	0.058	0.056
	(0.082)	(0.086)	(0.033)	(0.035)	(0.031)	(0.033)
Agriculture	0.098	-0.077	-0.321***	0.198***	-0.156***	0.064
	(0.085)	(0.085)	(0.039)	(0.037)	(0.036)	(0.034)
Mining	-0.198	0.101	0.425***	-0.042	0.226*	0.107
	(0.127)	(0.130)	(0.094)	(0.095)	(0.098)	(0.099)
Manufacturing	0.064	-0.092*	-0.075***	-0.023	-0.084***	-0.017
	(0.039)	(0.041)	(0.018)	(0.019)	(0.018)	(0.018)
Utilities	-0.197	0.070	0.236**	0.016	0.179**	0.068
	(0.155)	(0.167)	(0.073)	(0.075)	(0.069)	(0.071)
Construction	-0.057	0.293**	-0.118**	0.031	-0.152***	0.063
	(0.088)	(0.090)	(0.039)	(0.040)	(0.034)	(0.035)
Trade	0.020	-0.074	-0.171***	-0.083***	-0.162***	-0.084***
	(0.047)	(0.050)	(0.019)	(0.020)	(0.018)	(0.019)
Transportation	0.078	-0.062	0.050	-0.072*	0.080**	-0.105***
	(0.059)	(0.062)	(0.027)	(0.028)	(0.026)	(0.027)
Financial	0.236***	-0.119*	-0.024	-0.053*	0.015	-0.085***
	(0.043)	(0.049)	(0.020)	(0.022)	(0.020)	(0.021)
Services	-0.042	-0.040	-0.001	0.028	0.054**	-0.009
	(0.035)	(0.038)	(0.018)	(0.018)	(0.017)	(0.018)
Primary School	0.032	-0.001	0.005	0.084**	-0.022	0.083**
	(0.048)	(0.052)	(0.024)	(0.028)	(0.021)	(0.025)
Secondary School	0.245***	-0.034	0.052*	0.103***	0.066**	0.069*
	(0.063)	(0.068)	(0.026)	(0.030)	(0.023)	(0.027)
High School	0.399***	0.073	0.252***	0.118***	0.251***	0.092***
	(0.059)	(0.064)	(0.025)	(0.030)	(0.023)	(0.027)
University/ higher	0.853***	0.066	0.606***	0.103**	0.616***	0.091**
	(0.066)	(0.072)	(0.027)	(0.032)	(0.025)	(0.029)
Urban	0.033	0.001	0.023	0.041**	0.075***	-0.014
	(0.033)	(0.036)	(0.012)	(0.013)	(0.011)	(0.012)
Married	0.025	0.080*	0.110***	-0.013	0.100***	-0.024*
	(0.026)	(0.031)	(0.010)	(0.012)	(0.009)	(0.011)
Job Tenure	0.013***	-0.008**	0.020***	-0.002*	0.018***	0.000
	(0.002)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
Experience	0.025***	0.020***	0.025***	0.003	0.029***	-0.001
	(0.004)	(0.005)	(0.002)	(0.002)	(0.001)	(0.002)
Experience Square	-0.001***	-0.000*	-0.001***	0.000	-0.001***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Security	0.331***	-0.204***	0.357***	-0.017	0.352***	-0.043***
	(0.036)	(0.040)	(0.011)	(0.013)	(0.011)	(0.012)
Occupation A	0.151**	-0.049	0.298***	-0.022	0.318***	0.008
	(0.052)	(0.057)	(0.019)	(0.022)	(0.018)	(0.021)
Occupation B	-0.042	0.045	0.118***	0.024	0.125***	0.026
	(0.048)	(0.053)	(0.016)	(0.017)	(0.015)	(0.016)
Occupation C	-0.093	0.103*	-0.041**	0.115***	-0.062***	0.140***
	(0.048)	(0.051)	(0.016)	(0.017)	(0.015)	(0.016)
Constant	-1.105***		-0.234***		-0.140***	
	(0.033)		(0.018)		(0.017)	
R-squared		0.440		0.576		0.588
N		9933		49880		52818

* p<0.05, **p<0.01 , *** p<0.001

[24] MI variable refers to male interaction variables which are generated by multiplying explanatory variables with male dummy.

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