



POLICY RESEARCH REPORT ON
GENDER AND DEVELOPMENT
Working Paper Series No. 24

Wage Earners, Self-Employment and Gender in the Informal Sector in Turkey

Aysit Tansel

Month Year
The World Bank
Development Research Group/
Poverty Reduction and Economic Management Network

Survey data is used to examine selection into formal and informal wage labor, and self-employment. Wage differentials across the formal and informal sectors are estimated, as well as gender wage differentials for each group.

The PRR on Gender and Development Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about the Policy Research Report. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions are the author's own and do not necessarily represent the view of the World Bank, its Board of Directors, or any of its member countries.
Copies are available online at <http://www.worldbank.org/gender/prr>.

Wage Earners, Self-Employment and Gender in the Informal Sector in Turkey

**by
Aysit Tansel**

**Department of Economics
Middle East Technical University,
06531 Ankara, TURKEY**

**E-mail : atansel@metu.edu.tr
Telephone : 90-312-210 2057
Fax : 90-312-210 1244**

Revised: November, 2000

**Key Words: Informal Sector, Wage Earners, Self-Employment, Gender.
JEL Codes: J16, J31, J42**

An earlier version of this paper was written as a background paper for the World Bank, Policy Research Report on Gender and Development and presented at the Authors' Workshop, June 23-25, 1999, in Oslo. The findings, interpretations and conclusions expressed in this paper are entirely those of the author. They do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent. I would like to thank E.M. King, A.D. Mason, J. Maluccio, Y.M. Rodgers and other participants of the workshop for their comments. I am grateful to T.P. Schultz and J.L. Hotchkiss for a discussion. I would also like to thank Nurhan Süral who helped me to understand the legal aspects of the Turkish labor market. Thanks are also due to members of the State Institute of Statistics, president Ömer Gebizlioğlu and vice president Nurgül Ögüt who helped to implement this study. Any errors are my own.

Wage Earners, Self-Employment and Gender in the Informal Sector in Turkey

Abstract:

This study considers covered and uncovered wage earners and the self-employed. The analysis is carried out for men and women workers separately. The 1994 Turkish Household Expenditure Survey is used to examine how individuals are selected into the covered and uncovered wage earner and the self-employed categories. Next, selectivity corrected wage equations are estimated to examine wage determination in these sectors. Oaxaca-Blinder decompositions of the labor sector and male-female wage differentials are carried out. When controlled for the observed characteristics and sample selection, for men, covered wage earners earn more than uncovered wage earners and the self-employed. For the covered wage earners, men's expected wages are about twice the women's wages. For uncovered wage earners, men's wages are near parity with those of women. These results suggest segmentation for men along the formal and informal lines and substantial discrimination against women in the covered private sector.

1. Introduction

Although the informal sector has been characterized by several attributes¹, noncompliance with the legal and administrative regulations is often regarded as its most important characteristic. Castells and Portes (1989: 12) state that the most central feature of informal sector activities is that they are “unregulated by the institutions of society, in a legal and social environment in which similar activities are regulated”. Portes (1994) and Assaad (1997) emphasize that it is noncompliance with the legal and administrative regulations rather than with social regulations that is important. The early development literature assumed that in the developing countries the informal sector would disappear over time as it did in the developed countries. Turnham (1993: 147) estimated the proportion of informal employment for groups of countries at different levels of development and found that the share of informal employment declines as the level of development rises. His definition of informal sector employment included wage workers in small enterprises and the self-employed excluding professionals and technicians. Recently, governments and international organizations have emphasized the dynamic features of the informal sector and its job creating aspect. Ranis and Stewart (1999) examined the informal sector in relation to the rest of the economy and divided it into two parts, a modernizing dynamic component and a traditional stagnant one.

The traditional view sees the informal sector as the disadvantaged segment of a dualistic labor market. This view is expressed in the Harris-Todaro (1970) model and by Mazumdar (1983) among other writers. According to an alternate view, dualism arises

endogenously from efficiency wage type considerations which lead large firms to pay remuneration above market clearing levels. This is expressed by Stiglitz (1974), Esfahani and Salehi-Isfahani (1989) and Rosenzweig (1989). According to a more recent conceptualization of duality, large firms confronted by global competition subcontract to unprotected workers in order to reduce costs and gain flexibility. For this view see Portes, Castells and Benton (1989) and Portes and Schauffler (1993).

This study focuses on the gender earnings differential of private sector wage earners and the self-employed. The wage earner in this study is defined to include regular employees (wage and salary earners) and casual workers. Two groups of private sector wage earners are considered: those who are covered by a social security program and those who are not covered by any social security program. They are sometimes referred to as protected and unprotected workers respectively. They will be referred to as covered and uncovered wage earners in this paper. They are parts of the formal and informal sectors respectively. Self-employment defined to include people who own their business. They are the sole workers of their enterprises. They do not hire labor or use services of unpaid family members. They exclude the professionals and technicians and as such they are part of the informal sector. In the survey used in this study no question was asked about the social security coverage of the self-employed. Thus, uncovered wage-earners and all of the self-employed (excluding professionals and technicians) are taken to form the informal sector. This may not be the general way of identifying the formal and informal sectors in the literature. Magnac (1991) and Pradhan and van Soest (1995)

identified the total of the wage earners as formal sector workers and the total of the self-employed as informal sector workers.

Examining the earnings of covered and uncovered wage earners, and the self-employed in Turkey is important for several reasons. First, since the establishment of the Social Insurance Organization (SSK), in 1964, the uncovered wage earners are still a sizable segment of the labor force although declining over time. Second, Turkey features a highly unequal distribution of income. The division between formal and informal sector work captures this income inequality. One purpose of this paper is to show the extent of this income differential.

In this paper, I first examine how individuals are selected into nonparticipation and employment in different sectors. A five-way multinomial logit model includes the following choices: non-participation, private sector covered wage work, uncovered wage work, self-employment and other employment. Next, I estimate the selectivity corrected wage equations in different sectors. These estimations are done for men and women separately. Oaxaca-Blinder decompositions of sector of work and male-female wage differentials are performed. Estimations are carried out with individual level survey data from the 1994 Turkish Household Expenditure Survey of the State Institute of Statistics. The differentials in employment sector selection and in wages are examined for covered and uncovered wage earners and the self-employed along with the differentials in these processes. When controlled for the observed characteristics and sample selection, for men, covered wage earners earn more than the uncovered wage earners and the self-

employed. For covered wage earners, men's expected wages are about twice women's wages. For uncovered wage earners, men's wages are near parity with those of women. These results suggest segmentation for men along the formal and informal lines and substantial discrimination against women in the covered private sector.

This paper is organized as follows. Section 2 presents background information about the institutional setting of the labor market in Turkey and employment composition. Section 3 provides the theoretical framework and the empirical specification of the analysis. Section 4 introduces the main characteristics of the data used in this study. Estimation results are presented in Section 5. Conclusions appear in Section 6.

2. Labor Market in Turkey

Institutional Background

Wage earners who are not covered by any social security program are considered informal sector workers. Wage earners who are covered by social security are considered formal sector workers. Retirement Fund(ES) provides coverage for civil servants while the Social Security Organization (SSK) provides coverage for the workers at state owned enterprises and private sector employees. Both ES and the SSK supply health benefits and retirement benefits. It is well known that the quality of benefits provided by ES is superior to those provided by SSK. Bağkur provides health and retirement benefits for the self-employed.

According to the 1994 Household Expenditure Survey used in this study, 34 percent of the male wage earners and 35 percent of the female wage earners do not have social security coverage and thus work in the informal sector. Bulutay (1997: 275-276) computes that about 35 percent of the wage earners are not under social security coverage and thus in the informal sector according to the Household Labor Force Survey of April 1996. According to the same source the number of uncovered workers amounts to 2.3 million. The rate of social security non-coverage varies with the type of industry and size of establishment. It is expected that uncovered workers are employed in small establishments and that temporary workers may be a sizable portion of uncovered wage earners (Bulutay, 1997: 276). Casual workers are those wage earners who work on an irregular basis. Casual workers comprised about 15 percent of the male covered wage earner sample; 59 percent of the male uncovered wage earner sample; 3 percent of the female covered wage earner sample and 52 percent of the female uncovered wage earner sample (Appendix Table). According to Assaad (1997: 25) uncovered workers accounted for 59 percent of the total wage earners in Egypt in 1988. The percentage of the self-employed who are not covered by social security is much higher than the percentage of wage earners not covered. Tansel (1997) reports that 42 percent of self-employed men and 82 percent of self-employed women have no social security coverage according to the 1989 Household Labor Force Survey.

Labor Law no. 67 forbids employment of children under 15 years of age. However, it is possible to employ children who have completed 13 years of age in light jobs that will not interfere with their health, physical development and schooling or

training programs². These children can be covered by social security only in terms of health coverage. According to the Social Security Law no. 2422 which was promulgated in 1981, retirement benefits of social security can only accumulate after the individual completes 18 years of age.

It is illegal for an employer to employ workers without social security coverage. If the investigators of the Social Security Organization (SSK) find out that the workers are employed without social security coverage they will fine the employer. According to SSK laws, this monetary penalty is twice the amount of the current monthly gross minimum wage for each uncovered worker. The current monthly gross minimum wage is about 160 US Dollars. Thus, the monetary penalty amounts to about 320 US Dollars per uncovered worker which is a rather stiff penalty. However, we observe that this is not an avertive penalty and the compliance rate with the law is rather low, possibly due to low probability of being caught by the SSK inspectors.

The Labor Law, Article 33 stipulates that the minimum wage will be determined at least every two years by the Ministry of Labor. The Ministry of Labor establishes a minimum wage board consisting of the representatives of the labor unions, employers and representatives from independent organizations such as universities. The minimum wages of the industrial and agricultural workers who have not attained 16 years of age is determined separately from those of 16 and older.

An employer may end the employment either according to Article 13 or Article 17 of the Labor Law. Article 13 describes termination through a term of notice whether justified or not while Article 17 describes termination through a just cause with instant dismissal. In this case, termination reasons must be specified in the notification.

The employer can terminate an open ended contract through a written notification. The employer must give a notice period. The notice period varies from two weeks to eight weeks depending on the length of employment. These minimum notice periods specified in the Labor Law can be increased through agreements. The employer is liable to pay notice compensation if the notice period is not complied with. Notice compensation will include the basic wage plus all wage supplements. A worker dismissed according to Article 13 is entitled to severance compensation.

A worker may resign from his/her job under Article 13 of the Labor Law. The worker must also observe the notice period or pay notice compensation. A worker resigning under Article 13 is not entitled to severance compensation. However, a worker terminating employment for a just cause under Article 17 is entitled to severance compensation. Each year of employment at an establishment is rewarded with thirty days of pay in the severance compensation. The basis for the severance pay is the last daily gross wage plus wage supplements of a continuous nature.

Labor Law Article 26 prohibits discrimination based on sex. According to this article, male and female workers performing jobs of the same nature and working with equal efficiency, will receive the same wages.

Employment Composition

In developing countries, self-employment comprises a relatively large proportion of the labor force compared to wage earners while in developed countries, wage earners form a relatively larger fraction of the labor force. In development literature, the importance of self-employment is hypothesized to decline over time during the development process (Schultz, 1991). Kuznets(1971) was the first to notice this empirical regularity. Yamada (1996: 297) found a correlation coefficient of -0.85 between the GDP per capita and the share of self-employment in the urban labor force for a cross section of 31 countries representing different stages of development. Fields (1994) reported that wage earners as a percentage of total employment increased from 47.3 in 1980 to 60.2 in 1990 in the Republic of Korea while it increased from 85.0 to 87.5 in Taiwan and 64.5 to 65.6 in China during the same period. In the urban labor markets in Turkey the fraction of self-employed declined in favor of wage employment over time. According to the census data in Turkey, the proportion of self-employed men declined from about 44 percent in 1955 to about 31 percent in 1990 while the proportion of wage earner men increased from about 21 percent in 1955 to about 50 percent in 1990 as predicted in the development literature. For women, the fraction of self-employed and wage earners both increased over time due to increased paid labor force participation of women (Tansel, 1996).

Table 1 shows the employment composition for men and women by urban and rural regions in Turkey in 1998. The difference between urban and rural regions is striking. Wage earners (including casual employees) form the largest fraction of total employed for both men and women in the urban areas with 56 and 73 percent respectively. However, in the rural areas about half of working men are self-employed and about one fifth of them are wage employed. For rural women the dominant form of employment is unpaid family membership with about 84 percent of the total.

3. The Model

The framework used in this study is a joint model of employment sector choice and wage determination. Such a structure avoids sector selection bias in the wage equations and controls for unobserved heterogeneity among workers.

In order to explain sector selection, individuals are assumed to face five mutually exclusive choices. These choices are not working ($j=0$), covered private sector wage earner ($j=1$), uncovered wage earner ($j=2$), self-employed ($j=3$) and other employment ($j=4$). These choices are shown in Figure 1. The actual and perceived net differentials in the monetary and non-monetary compensations determine the sectoral choice. Worker's tastes, preferences, personal and human capital characteristics also influence this choice. I assume a conditional multinomial logit model for the probability that the individual chooses sector j as follows:

$$P_j = \exp(Z\alpha_j) / (1 + \sum_{j=1}^4 \exp(Z\alpha_j))$$

Where Z is a vector of explanatory variables affecting sectoral choice such as human capital variables and α_j is the vector of unknown parameters of alternative j .

Alternatives

j=0 Not working	j=1 Covered Private Sector Wage Earner	j=2 Uncovered Wage Earner	j=3 Self- Employment	j=4 Other
--------------------	---	------------------------------------	----------------------------	--------------

Figure 1. Alternative Choices for the Individuals

A traditional human capital framework (Becker, 1975; Mincer, 1958 and 1974) is employed in the specification of the wage equations. Log wages ($\ln W$) are explained by personal and human capital characteristics and locational factors (X) as follows:

$$\ln W_j = \beta_j X_j + u_j$$

where β is a vector of unknown parameters and u is the random disturbance term; j stands for covered and uncovered wage earners and the self-employed.

If, in estimating the wage equations, selection into different sectors is ignored, then the Ordinary Least Squares (OLS) wage equation estimates could potentially be biased and inconsistent (Heckman, 1974; Heckman and Hotz, 1986). To take this into account, I adopt the two-stage estimation method developed by Lee (1983) and Trost and Lee (1984). In the first stage, I estimate the sectoral choice probabilities by maximum

likelihood estimation of the conditional multinomial logit model and construct the selection term for the alternative j (λ_j) as follows:

$$\lambda_j = \phi(H_j) / \Phi(H_j) \quad \text{where} \quad H_j = \Phi^{-1}(P_j),$$

ϕ is the standard normal density function and Φ is the standard normal distribution function. In the second stage, the estimated λ_j is included among the explanatory variables of the wage equations. The implied wage equations which are then estimated by OLS are:

$$\ln W_j = X_j\beta_j + \theta_j\lambda_j + v_j \quad j=1,2,3$$

where $\theta_j = p_j / \sigma_j$, provides consistent estimates of β and θ .

Empirical Specification

Education, experience and locational variables are included in both the multinomial logit and wage equations. Education is represented by the dummy variables indicating different levels of diplomas achieved. The reference category is the illiterate and nongraduate group. The experience variable is computed as age minus the number of years of schooling minus six, the age of entry into school (Mincer, 1974). In order to take the nonlinearities in the experience profile into account, a quadratic term in experience is also included. A dummy variable indicates whether the individual resides in an urban area. An urban area is defined as a location with a population over twenty thousand people. Regions of residence are represented by dummy variables. They are included to control for differentials in labor market opportunities among the regions. Interviews took place in different months throughout 1994. In order to control for

seasonal factors if any, I included seasonal dummy variables. Winter was the reference category.

The multinomial logit equation included the following additional variables: Unearned income of the individual, unearned income of the other household members and the amount of the land owned. These variables are suggested by Schultz(1990) to explain choices involving labor force participation. They are expected to reduce the probability of labor force participation by raising the shadow value of a person's time in nonmarket activities.

4. Data

Individual level sample data are used in the estimation of the multinomial logit equations and the wage equations. The data come from the 1994 Turkish Household Expenditure Survey conducted by the State Institute of Statistics³. I restrict the sample to individuals 15 to 65 years of age. Individuals engaged in agricultural activities are included in the category of "other employment" as explained in Figure 1. Covered wage earners are those private sector workers who are covered by SSK and uncovered wage earners are not covered by any form of social security. Self-employed are the sole owners of their enterprise and do not employ paid or unpaid workers; professionals and technicians are excluded. This is taken to define the self-employed in the informal sector.

Wages are the sum of cash earnings, bonuses and the value of income in-kind⁴. Fringe benefits are not included in the wage earners reported earnings. The survey reported the net income of the self-employed by adding all revenues and subtracting all expenses. Strauss and Thomas (1995: 1960) elaborate on two problems often encountered

in the work on the self-employed. The first problem is that although the value of the material inputs is deducted from the gross earnings of the self-employed, returns to physical capital remain. Thus, some of the earnings of the self-employed are returns to their physical capital, managerial ability and risk taking. The second problem is that some of the self-employed employ unpaid family labor and net income was not allocated among family members. In this study, in order to circumvent the second problem, the self-employed included are the sole workers of their business.

Two kinds of earnings were collected during the interviews: one for the month of the interview and the other for the previous year. The survey also asked the usual hours of work per week. However, no information was collected on the number of weeks worked during a month or during a year. The monthly hours of work is calculated by multiplying the usual hours of work per week by 4.3. I obtained the hourly wage by dividing the reported monthly wage by the imputed monthly hours of work. Hourly wages based on annual wages could not be computed without an assumption about the number of weeks worked during a year. In this paper, I used the hourly wage based on the monthly wage, rather than the hourly wage based on the annual wage, assuming that there may be fewer errors of measurement in the monthly wage⁵.

The Appendix Table gives the main characteristics of the covered and uncovered wage earners and the self-employed. Among male workers, the highest hourly wage is observed for the self-employed, while covered sector wages are markedly higher than those in the uncovered sector. Log hourly wages of the self-employed is 53 percent

higher than that of uncovered wage earners while log hourly wages of covered wage earners is 35 percent higher than that of uncovered wage earners. Among the female workers, the highest hourly wage is observed for covered wage earners and the lowest for uncovered wage earners. The log hourly wages of the self-employed is about 50 percent lower than that of covered wage earners. The log hourly wage of covered wage earners is about 80 percent higher than that of uncovered wage earners. These percentages point to the fact that the differential between covered and uncovered log wages is much higher for women than for men. Tansel (1996) found that self-employed men and women had higher earnings than wage earner men and women respectively.

Self-employed men are 7-8 years older than wage earner men. Similarly, self-employed women are 6-7 years older than wage earner women. Accordingly, the self-employed men have about nine years more experience than wage earners and self-employed women have about 11 years more experience than covered wage earners and six years more experience than uncovered wage earners. Tansel (1996) also found that the self-employed were older and had more experience than wage earners with the 1989 Household Labor Force Survey.

Years of schooling achieved is highest among covered wage earners. Covered wage earner women have about a year more of schooling than covered wage earner men. Uncovered wage earners and self-employed men and women both have significantly fewer years of schooling than covered wage earners. Uncovered wage earners and the self-employed have about the same years of schooling, which is just over five years for

men and just under five years for women. Five years was the compulsory level of schooling until recently. In August 1997 the compulsory level of schooling was extended from five to eight years. These patterns in educational attainment are also evident from the distribution of schooling attainment given in the Appendix Table. Covered wage earner women include about twice the proportion of high school and university graduates than covered wage earner men. There are higher proportions from the illiterate and nongraduate group in the uncovered wage earner and the self-employed groups. The proportion from the illiterate and nongraduate group is particularly high among uncovered wage earner women and self-employed women (26-29 percent). Thus, the lowest educational achievement is observed among uncovered wage earner women and self-employed women.

Unearned income includes rental income, interest income, and dividends. Appendix Table gives information about unearned income of the individual, unearned income of other household members and land holdings. Unearned incomes are adjusted for inflation as indicated in Note 5. Individual unearned income is highest among self-employed men. Unearned income of other household members is highest among covered wage earner men. Covered wage earner women have the highest land holdings.

As expected, the proportions of covered wage earners, uncovered wage earners and the self-employed are larger in urban areas for both men and women than in the rural

areas. The distribution of covered and uncovered wage earners and the self-employed among different regions of the country, however, shows expected patterns. The proportion of covered wage earners is highest in the Marmara and the Aegean regions for both men and women. The proportion of uncovered wage earners is highest in Southeast Anatolia for men and in the Mediterranean for women. Self-employed men are somewhat evenly distributed across the different regions of the country while the proportion of self-employed women is highest in the Black Sea region. I also note that in the Eastern Anatolia and the Southeastern Anatolia regions the proportions of wage earner women and self-employed women are rather very low compared to other regions. This may possibly be due to the prevailing social norms in these two regions being adverse to women's market employment.

Casual wage earners are those workers who work on an irregular basis. The proportion of casual wage earners is much higher among uncovered wage earners than among covered wage earners: 59 percent of men and 51 percent of women are casual wage earners in the uncovered sector. A dummy variable indicates whether the self-employed own the location of their business. As Appendix Table indicates, 70 percent of self-employed men and 87 percent of self-employed women own their business location rather than renting it.

5. Estimation Results

Multinomial Logit Estimates

Multinomial logit estimates of employment sector choice are given in Table 2 for men and Table 3 for women. The five employment alternatives considered are

nonparticipation, covered wage employment, uncovered wage employment, self-employment and other employment. The category of other employment includes public employment, employers, self-employed with unpaid family members as workers and unpaid family workers. This category also includes the individuals who are engaged in agriculture. Tables 2 and 3 give the marginal effects of each variable on the probability of joining a particular sector and the associated asymptotic t-ratios. The marginal effects are calculated at the mean values of the variables.

The results in Table 2 for men indicate that the probabilities of covered wage employment and self-employment increase with experience at a decreasing rate while the probability of uncovered wage employment decreases with experience at a slowing rate. Different levels of education all reduce the probabilities of covered and uncovered wage employment and self-employment. Increasing levels of education reduce the probability of uncovered wage employment by larger amounts. Thus, there is clear evidence that workers with more education are less likely to be in the uncovered wage employment.

Unearned income of the individual reduces the probability of both covered and uncovered wage employment but increases the probability of self-employment. Unearned income of other household members increases the probability of covered wage employment but reduces the probability of uncovered wage employment and self-employment. The amount of land owned reduces the probability of covered and uncovered wage-employment and self-employment. The probabilities of covered and uncovered wage employment and self-employment are all higher in urban areas than in

rural areas. The regional coefficients indicate the following patterns: The probability of covered wage employment is lower in all regions as compared to Marmara. The probability of uncovered wage employment is lower in all regions than in Marmara but higher in the Mediterranean and the Southeast Anatolia regions???. Mediterranean and Southeastern Turkey may have more temporary workers and fewer large establishments as compared to Marmara. The probability of self-employment is higher in all regions than in Marmara but lower in Central Anatolia and is not significantly different in the Black Sea than in the Marmara region???

The multinomial logit estimation results for women are given in Table 3. In these results the probability of covered wage employment decreases with experience at an accelerating rate. The probability of uncovered wage employment decreases with experience at a slowing rate and the probability of self-employment increases with experience at a slowing rate. Different levels of education all increase the probability of covered wage employment at rates which get larger at higher levels of education. Thus, higher levels of education increase the probability of covered wage employment. Different levels of education decrease the probability of uncovered wage employment while different levels of education contribute positively to the probability of self-employment except at the university level. An individual's unearned income increases the probability of covered wage employment, but reduces the probability of uncovered wage employment and self-employment. Unearned income of other household members reduces the probabilities of covered and uncovered wage employment and self-employment. The amount of land owned increases the probability of covered wage

employment, but reduces the probabilities of uncovered wage employment and self-employment. The probabilities of covered and uncovered wage employment and self-employment are all higher in urban areas than in rural areas. The probability of covered wage employment is higher in the Aegean but lower in all other regions than in Marmara. The probability of uncovered wage employment is also higher in the Aegean but lower in all other regions than in Marmara. The probability of self-employment is lower in all regions than in Marmara except in the Black Sea region.

The Wage Equations

Mincerian wage equations are estimated with selectivity correction using the results of the multinomial logit employment sector selection equations. These wage equations for covered and uncovered wage earners and the self-employed are given in Table 4 for men and Table 5 for women. All of the wage equations are overall statistically significant except for the equation for self-employed women which has very low R-squared and F statistic values indicating poor fit. This may be due to the small number of observations for self-employed women. The wage equation for uncovered wage earner women should be interpreted cautiously also, in particular the educational attainment coefficients, since some of these cells have very few observations.

Selection terms for the equations for covered and uncovered wage earner men are negative and statistically significant while for self-employed men the selection term is statistically insignificant. As for the women's wage equations, the selection term is statistically significant only for uncovered wage earner women. Gindling(1991) finds

sectoral selectivity terms to be statistically insignificant while Pradhan and van Soest(1995) find statistically significant sectoral selectivity terms in explaining wages of the formal and informal sectors. Rees and Shah (1986) and Gill (1988) find no selection bias in their self-employed samples.

The linear and quadratic terms in experience are statistically significant with positive and negative signs as expected. Wages peak at 34 years of experience for covered wage earner men, at 32 years of experience for uncovered wage earner men and at 31 years of experience for self-employed men. Wages peak at 23, 33 and 28 years of experience for covered and uncovered wage earner women and self-employed women respectively. The effects of educational levels on wages are all positive except in the case of self-employed women where they are all statistically insignificant. Self-employed men have smaller education coefficients for high school and university levels than covered and uncovered wage earners. This is not implausible given that the earnings of the self-employed contain returns to physical capital also, which may not proportionately increase with education. Similarly, Rees and Shah (1986), Soon (1987) and Gill (1988) find smaller schooling coefficients for the self-employed than for the wage employed. Evans and Jovanovic (1989) and Tansel (1996) find opposite results in this regard. In the wage equations of the self-employed it was not possible to include a variable on the ownership of physical capital. The dummy variable “owner” indicates whether the self-employed own the location of his/her business. It could be a proxy for physical capital. This variable was insignificant for self-employed men and had a negative sign for self-

employed women. Lack of data for physical capital was also a problem in several other studies such as Rees and Shah (1986).

Urban and rural wages are not statistically different from each other for covered and uncovered wage earner men, while urban wages are significantly higher than rural wages for self-employed men. In the case of women, urban and rural wages are not statistically different from each other for covered wage earners and the self-employed, while urban wages are significantly higher than rural wages for uncovered wage earners. There are regional differentials in wages. For men, regional wage differentials are statistically significant in the case of covered and uncovered wage earners but not in the case of the self-employed. For women, regional wage differentials are mostly statistically insignificant in all cases.

The estimate of the variance of log income is much larger for uncovered wage earner and self-employed men and women than for covered wage earner men and women. This may possibly be due to the heterogeneity of uncovered wage earner activities and self-employment activities. Similar results are found by other researchers (Pradhan and van Soest, 1995).

Table 6 compares expected wages at different levels of experience and educational attainment among the three groups of workers for men and women. For men, at all levels of experience and educational attainment, the highest wages are found for covered wage earners and the lowest wages are found for the self-employed. For women, covered and uncovered sector wages are similar, but the lowest wages are observed for

the self-employed. However, this result is not reliable due to poor wage equation estimate for self-employed women. It is noteworthy that in all cases, there are no more substantial wage gains after 25 years of experience. Furthermore, a comparison of the expected wages of men and women leads to the following patterns: for covered wage earners, men's expected wages are about twice women's wages, while for uncovered wage earners, men's wages are near parity with those of women. This indicates substantial wage discrimination against women in the covered private sector. Similar results are found in Tansel (1998 and 1999a). In the literature on dualism, higher formal sector earnings are taken to be evidence of segmentation (Rosenzweig, 1988). In a market with no distortions, informal sector earnings will be above those of the formal sector to compensate for the value of benefits that the formal sector jobs provide. In this study, the substantial difference in the wages between covered and uncovered wage earner men and self-employed men indicate segmentation along formal and informal lines for men while the difference between the two sectors is not substantial for women. Marcouiller, Ruiz and Woodruff (1997) found higher mean earnings in the Mexican informal sector than in the formal sector while the mean earnings in formal sector were higher than in the informal sector in El Salvador and Peru. Bernhardt (1994) found higher potential earnings for wage earners than for the self-employed in Canada.

Oaxaca-Blinder Decompositions

This section presents the Oaxaca(1973) and Blinder(1974) decompositions of the wage differentials. Table 7 shows the decomposition of the total mean log wage differential between covered and uncovered wage earners and the self-employed into four components, including the selectivity bias (Idson and Feaster, 1990), as follows:

$$\ln W_j - \ln W_i = (\beta_{0j} - \beta_{0i}) + 0.5 (\beta_j + \beta_i) (X_j - X_i) + 0.5 (X_j + X_i) (\beta_j - \beta_i) + (\theta_j \lambda_j - \theta_i \lambda_i)$$

Where the variables are evaluated at their sample means; j denotes covered or uncovered wage earners and i denotes the self-employed. The first component is the difference in the constant terms. This differential is often interpreted as the premium or pure rent from being in a given sector (Terrell, 1993). The second component is due to the difference in endowments of workers. The third component is due to the difference in the coefficients or due to the market returns to the endowments. The final component is due to the difference in the selection terms. The sum of the difference in the constant terms and the difference in the coefficients is often referred to as the unexplained differential. The decomposition in Table 7 indicates that the positive covered-uncovered sector wage differential in favor of the covered sector, in the case of men, is partly due to the constant term and partly due to the higher levels of human capital endowments of covered wage earners. In the case of women, it is partly due to higher levels of human capital endowments of covered wage earners and partly due to the large positive selection differential.

The total unexplained differential is positive in the case of covered versus uncovered sectors for men but negative for women. This differential is mostly due to the differential in the constant terms in the men's case and due to the coefficients in the women's case which results from the higher returns to worker characteristics for covered wage earners. In the case of the covered wage earner versus self-employed differential for men, the total unexplained differential is positive and large and in the case of the uncovered wage earner versus self-employed differential for men the unexplained

differential is also positive and large. In these two cases, the positive and large differentials in the constant terms indicate a large unexplained premium attributable to being a covered wage earner. Although the self-employed women's wage equation had a poor fit and for this reason the decompositions pertaining to self-employed women in Table 7 are not reliable, the following pattern is observed: In the case of the covered wage earner versus self-employed differential for women and in the case of the uncovered wage earner versus self-employed differential for women, the unexplained differentials are positive and large. Both of these are due to positive and large differentials in the constant terms which indicate unexplained premiums to being covered and uncovered wage earners.

Table 8 presents the decomposition of male-female wage differentials. The results indicate that there are positive male-female wage differentials in favor of men in all of the three sectors of employment. In the case of covered wage earners, the positive male-female wage differential is partly due to the constant term and partly due to higher levels of market returns to males. The total unexplained differential is positive and large indicating an unexplained premium attributable to being male. In the case of uncovered wage earners, the positive male-female wage differential is partly due to the higher levels of human capital endowments of men and partly due to the large positive selection differential. In the case of the self-employed, the positive male-female differential is partly due to the constant term and partly due to higher levels of market returns to men. The case of the self-employed is not reliable due to poor wage equation estimates for women. The total unexplained differential is positive and large indicating an unexplained

premium attributable to being male. The negative selection term for covered wage earners and for the self-employed means that the type of women drawn into covered wage work and self-employment help to reduce the observed wage differential between men and women in those sectors. The negative constant term for uncovered workers could be interpreted as the presence of unobservables in the determinant of wages in that sector working to reduce the differential between men and women.

6. Conclusion

This study addresses gender differentials in compensation for private sector covered and uncovered wage earners and the self-employed. Uncovered wage earners and the self-employed are defined to be part of the informal sector, while covered wage earners are defined to be part of the formal sector. The analysis is carried out for men and women workers separately. For this purpose, 1994 Turkish Household Expenditure Survey is used. I examine the factors which determine employment sector choice and the determinants of wage differentials for covered and uncovered wage earners and the self-employed. Employment sector choice is explained with a five-way multinomial logit model with nonparticipation as the base choice. There is evidence that workers with more education are less likely to be uncovered wage earners. For men, the probability of uncovered wage employment is found to be higher in the Mediterranean and Southeast Anatolia regions than in the Marmara region, possibly because these regions have more temporary and migrant workers and Southeastern Turkey has fewer large establishments as compared to Marmara.

Using the sector selection results, wage equations are estimated for covered and uncovered wage earners and the self-employed. Oaxaca-Blinder decomposition of sector and male-female wage differentials are carried out. When controlled for observed characteristics and sample selection, for men, covered wage earners earn more than uncovered wage earners and the self-employed. For women, covered and uncovered sector wages are similar. These results indicate substantial earnings differences between the formal and informal sectors for men. This could be one of the factors contributing to the inequality of income distribution in Turkey. The substantial earnings difference also implies segmentation in the labor market along formal and informal lines. For covered wage earners, men's expected wages are about twice women's wages. For uncovered wage earners, men's wages are near parity with those of women. These results suggest segmentation for men along covered-uncovered lines and substantial discrimination against women in the covered private sector. Furthermore, uncovered wage earner jobs not only pay less and do not provide retirement and health benefits but may also lack a number of desirable nonpecuniary job attributes. These attributes may include job security, work contract, paid vacations and leave and other fringe benefits. Formal sector jobs are more likely to involve a work contract than informal sector jobs. Uncovered wage workers are more likely to be temporary. Uncovered wage work environments may also be unregulated and hence may involve poor and unhealthy working conditions. Furthermore, wage employment and self-employment may differ in hours worked, degree of risk taken and degree of independence.

Endnotes

1. These determining attributes of the informal sector include ease of entry into the sector, size of establishment, style of production, type of technology used, and whether or not there is compliance with various laws and regulations.
2. For those children going to school, their work hours must not interfere with their school hours and their schooling hours must be counted in the 7.5 hours of work per day.
3. The survey was administered to 26,256 households. Interviews covered 58 provinces out of the total of 76 provinces in the country. There were 281 clusters which were selected with stratified, multistage sampling. The stratification was on seven geographical regions, rural-urban settlements in each region and according to the size of its population. Further stratification was according to socioeconomic status of the settlements as developed, developing and undeveloped. Household was the sampling unit. Each household was interviewed ten times a month. A different series of households were interviewed in each month throughout 1994. Details may be found in State Institute of Statistics (1997).

4. I considered only wages from the main job. Some of the individuals had a second job. I ignored earnings from the second job since no information was collected on hours of work on the second job.

5. The wages and unearned income figures were deflated with the local monthly consumer price index (CPI) since the households were interviewed at different months throughout 1994 during which the annual rate of inflation was about 90 percent. Households in the 16 major cities were assigned the monthly CPIs for those cities. Households in other locations were assigned either a rural or an urban monthly CPI for the one of the five regions in which they are located according to whether they were in a rural or an urban location. A location is considered urban if its population is over twenty thousand. The base for the CPI figures was 1987. They were obtained from the State Institute of Statistics (1994).

References

Assaad, R. 1987. "Explaining Informality: The Determinants of Compliance with Labor Market Regulations in Egypt." Paper presented at the Economic Research Forum, Fourth Annual Conference in Beirut, Lebanon, September 7-9, 1997.

Blinder, A.S. 1974. "Wage Discrimination: Reduced Form and Structural Estimates." **Journal of Human Resources**, 8(4): 436-455.

Becker, G.S. 1975. **Human Capital**. Second edition, National Bureau of Economic Research, New York: Columbia University Press.

Bernhardt, I. 1994. "Comparative advantage in Self-Employment and Paid Work." **Canadian Journal of Economics**, 27: 273-289.

Bulutay, T. 1997. "İşgücü Piyasası Bilgi Danışma Kurulu Raporu." (Report of the Information Commission on Labor Market) In T. Bulutay, ed. **İmalat Sanayiinde İstihdam** (Employment in the Manufacturing Sector) 267-308, Ankara: State Institute of Statistics.

Castells, M. and A. Portes, 1989. "World Underneath: The Origins, Dynamics and Effects of the Informal Economy." In A. Portes, M. Castells and L.A. Benton, eds., **The Informal Economy: Studies in Advanced and Less Developed Countries**, 11-37. Baltimore: The Johns Hopkins University Press.

Esfahani, H.S. and D. Salehi-Isfahani, 1989. "Effort Observability and Worker Productivity: Towards an Explanation of Economic Dualism." **Economic Journal**, 99 (September): 818-836.

Evans, D.S. and B. Jovanovic, 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints". **Journal of Political Economy**, 97(4): 808-827.

Fields, G.S., 1994. "Changing Labor Market Conditions and Economic Development in Hong Kong, the Republic of Korea, Singapore, Taiwan and China." **The World Bank Economic Review**, 8(3): 395-414.

Harris, J.R. and M.P. Todaro, 1970. "Migration, Unemployment and Development: A Two-Sector Analysis." **American Economic Review**, 60(1): 126-142.

Gill, A.M., 1988. "Choice of Employment Status and the Wage Employees and the Self-Employed: Some Further Evidence." **Journal of Applied Econometrics**, 3: 229-234.

Gindling, T.H. 1991. "Labor Market Segmentation and the Determination of Wages in the Public, Private-Formal and Informal Sectors in San Jose, Costa Rica." **Economic Development and Cultural Change**, 39(3): 585-605.

Heckman, J.J. 1974. "Shadow Prices, Market Wages and Labor Supply." **Econometrica**, 42: 679-694.

Heckman, J. and V.J. Hotz 1986. "The Sources of Inequality for Males in Panama's Labor Markets." **The Journal of Human Resources**, 21(4): 507-542.

Idson, T. and D. Feaster. 1990. "A Selectivity Model of Employer-Size Wage Differentials." **Journal of Labor Economics**, 8(1): 99-122.

Kuznets, S. 1971. **Economic Growth of Nations, Total Output and Production Structure.** Cambridge, Massachusetts: Harvard University Press.

Lee, L.F. 1983. "Generalized Econometric Models with Selectivity." **Econometrica**, 51: 507-512.

Magnac, T.H. 1991. "Segmented or Competitive Labor Markets." **Econometrica**, 59: 165-187.

Marcoiller, D.V., Ruiz de Castilla and C. Woodruff, 1997. "Formal Measures of the Informal Sector Wage Gap in Mexico, El Salvador and Peru." **Economic Development and Cultural Change**, 45: 711-749.

Mazumdar, D. 1983. "Segmented Labor Markets in LDC's." **American Economic Review**, 73(2): 254-259.

Mincer, J. 1958. "Investments in Human Capital and Personal Income Distribution." **Journal of Political Economy**, 56: 281-302.

Mincer, J. .1974. **Schooling, Experience and Earnings.** National Bureau of Economic Research. New York: Columbia University Press.

Oaxaca, R. 1973. "Male-Female Wage Differentials in Urban Labor Markets." **International Economic Review**, 14(3): 693-709.

Portes, A., M. Castells and L.A. Benton, eds. 1989. **The Informal Economy: Studies in Advanced and Less Developed Countries**. Baltimore: The Johns Hopkins University Press.

Portes, A. and R. Schauffler, 1993. "Competing Perspectives on the Latin American Informal Sector." **Population and Development Review**, 19(1): 33-49.

Portes, A. 1994. "The Informal Economy and its Paradoxes." In N. Smelser and R. Swedberg, eds. **The Handbook of Economic Sociology**. Princeton, N.J.: Princeton University Press.

Pradhan, M. and A. van Soest. 1995. "Formal and Informal Sector Employment in Urban Areas of Bolivia." **Labor Economics**, 2: 275-297.

Ranis, G. and F. Stewart. 1999. "V-Goods and the Role of the Urban Informal Sector in Development." **Economic Development and Cultural Change**, 47(2): 259-288.

Rees, H. and A. Shah, 1986. "An Empirical Analysis of Self Employment in the U.K." **Journal of Applied Econometrics**, 1: 95-108.

Rosenzweig, M.R. 1988. "Labor Markets in Low Income Countries." In H. Chenery and T.N. Srinivasan, eds. **Handbook of Development Economics**, Vol. 1, New York: North Holland.

Schultz, T.P. 1991. "International Differences in Labor Force Participation in Families and Firms." Economic Growth Center Discussion, Paper no: 634. New Haven: Yale University.

Soon, L.Y. 1987. "Self-Employment vs Wage Employment: Estimation of Earnings Functions in LDCs." **Economics of Education Review**, 6(2): 81-89.

State Institute of Statistics (SIS) 1994. **Monthly Bulletin of Statistics**, Ankara: SIS.

State Institute of Statistics (SIS) 1997. **Household Consumption Expenditures Survey Results, 1994**. Ankara: SIS.

State Institute of Statistics (SIS) 1998. **Household Labor Force Survey, April 1998**. Ankara: SIS:

Stiglitz, J.E. 1974. "Alternative Theories of Wage Determination and Unemployment in LDC's: The Labor Turnover Model." **Quarterly Journal of Economics**, 88: 194-227.

- Strauss, J. and D. Thomas, 1995. "Human resources: Empirical Modelling of Household and Family Decisions." In J. Behrman and T.N. Srinivasan, eds. **Handbook of Development Economics**, Volume III, Amsterdam: Elsevier Science B.V.
- Tansel, A. 1994. "Wage Employment, Earnings and Returns to Schooling for Men and Women in Turkey." **Economics of Education Review**, 13(4): 305-320.
- Tansel, A. 1996. "Self Employment, Wage Employment and Returns to Education for Urban Men and Women in Turkey." In T. Bulutay, ed. **Education and the Labor Markets in Turkey**, Ankara: State Institute of Statistics.
- Tansel, A. 1997. "Informal Sector Earnings Determination in Turkey." **ERF, Regional Trade, Finance and Labor Markets in Transition**, Conference Proceedings, September, 7-9, 1997, Beirut, Lebanon: 153-161.
- Tansel, A. 1998. "Public-Private Employment Choice, Wage Differentials and Gender in Turkey." Economic Growth Center Discussion Paper No. 797. New Haven: Yale University.
- Tansel, A. 1999a. "Formal versus Informal Sector Choice of Wage Earners and Their Wages in Turkey." Economic Research Forum Working Paper no: 9927. Cairo.

Terrell, K. 1993. "Public-Private Wage Differentials in Haiti. Do Public Servants earn a rent?" **Journal of Development Economics**, 42: 293-314.

Trost, R. and L.F. Lee 1984. "Technical Training and earnings: A Polytomous Model with Selectivity." **Review of Economics and Statistics**, 66: 151-156.

Turnham, D. 1993. **Employment and Development: A New review of Evidence**, Development Center Seminars, Paris: Organization for Economic Cooperation and Development.

Yamada, G. 1996. "Urban Informal Employment and Self Employment in Developing Countries: Theory and Evidence." **Economic Development and Cultural Change**, 44(2): 291-314.

Table 1: Employment Composition by Gender and Region, Turkey, 1998 (%)

Employment Status	Urban		Rural	
	Men	Women	Men	Women
Wage and Salary Earner	56.0	73.2	20.7	5.9
Casual Employee	11.1	5.9	7.6	1.9
Employer	12.3	2.3	3.1	0.2
Self Employed	17.1	7.7	47.9	9.2

Unpaid Family Workers	3.5	11.1	20.7	83.7
Total	100.0	100.0	100.0	100.0

Source: State Institute of Statistics (1998: 126 and 184).

Table 2: Maximum Likelihood Multinomial Logit Estimates of Employment Sector Choice of Men, Turkey, 1994.

Variables	Covered Wage Earners		Uncovered Wage Earners		Self-Employed		Other	
	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a
Constant	-0.0803	20.1	0.0505	15.3	-0.1519	47.8	-0.1311	5.96
Experience	0.0085	48.6	-0.0022	10.6	0.0064	59.2	0.0411	29.2
Experience Square($\times 10^{-3}$)	-0.2367	70.3	-0.0058	1.80	-0.0972	48.7	-0.6294	27.2
Educational Attainment:								
Primary School	-0.0001	0.04	-0.0406	18.0	-0.0059	3.59	0.0134	0.92
Middle School	-0.0345	10.8	-0.1145	37.0	-0.0213	10.6	0.0699	3.93

High School	-0.0339	9.93	-0.1412	39.3	-0.0194	9.13	0.2582	12.8
Voc-High School	-0.0016	0.28	-0.1452	27.0	-0.0338	9.27	0.2772	8.5
University	-0.0481	10.0	-0.2024	38.3	-0.0804	24.3	0.5250	17.9
Unearned Income(x10 ⁻⁵)	-0.4592	2.48	-11.788	43.7	0.4151	3.74	4.3553	4.69
Unearned HH Income(x10 ⁻⁵)	1.1488	6.05	-0.3504	1.63	-2.1605	11.8	-4.1986	2.71
Land (x10 ⁻³)	-0.4256	20.0	-0.8903	39.9	-0.4774	32.1	0.0017	14.5
Urban Location	0.0814	30.5	0.0472	23.3	0.0186	13.8	-0.3322	26.1
Regions:								
Aegean	-0.0090	3.10	-0.0097	3.95	0.0111	6.10	0.0566	3.52
Mediterranean	-0.0795	27.7	0.0103	4.68	0.0114	6.98	0.0531	3.67
Central Anatolia	-0.0638	23.6	-0.0160	7.46	-0.0041	2.57	0.0491	3.52
Black Sea	-0.0966	31.2	-0.0346	14.9	-0.0007	0.41	0.1630	10.9
East Anatolia	-0.1532	41.9	-0.0371	15.7	0.0103	6.34	0.1884	12.5
Southeast Anatolia	-0.1264	38.6	0.0150	6.61	0.0123	7.33	0.0491	3.31
Seasons:								
Spring	-0.0086	4.40	0.0057	3.46	-0.0007	0.59	0.0119	1.11
Summer	-0.0070	3.55	0.0118	7.15	-0.0012	1.00	0.0232	2.14
Fall	0.0001	0.04	0.0078	4.73	0.0017	1.37	-0.0148	1.37
- Log Likelihood				42,043				
Chi-Squared (80)				16,695				
Sample Size				35,849				

Notes: a: The absolute value of the asymptotic t-ratios associated with the marginal effects.

Table 3: Maximum Likelihood Multinomial Logit Estimates of Employment Sector Choice of Women, Turkey, 1994.

Variables	Covered Wage Earners		Uncovered Wage Earners		Self-Employed		Other	
	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a	Marginal Effect	t-Ratio ^a
Constant	-0.0239	227	-0.0172	116	-0.0357	316	-0.1070	10.8
Experience(x10 ⁻³)	-0.0542	12.9	-0.9074	118	1.0546	270	7.0649	14.7

Experience Square($\times 10^{-3}$)	-0.0062	87.4	0.0087	70.6	-0.0188	275	-0.1053	13.1
Educational Attainment:								
Primary School	0.0027	59.5	-0.0069	90.0	0.0010	28.8	-0.0056	1.15
Middle School	0.0038	40.0	-0.0177	109	0.0043	58.2	-0.0578	5.62
High School	0.0110	136	-0.0108	79.9	0.0007	12.2	0.1185	13.1
Voc-High School	0.0106	73.3	-0.0181	72.6	0.0025	22.6	0.1961	12.0
University	0.0186	180	-0.0034	17.9	-0.0036	39.4	0.4330	28.0
Unearned Income($\times 10^{-5}$)	0.0298	2.31	-0.0378	160.	-0.0302	3.04	2.7333	1.99
Unearned HH Income($\times 10^{-5}$)	-0.1287	350	-1.1800	378	-0.1397	360	0.1964	45.5
Land ($\times 10^{-3}$)	0.0034	27.6	-0.1823	342	-0.0941	347	0.0800	6.09
Urban Location($\times 10^{-3}$)	4.9144	93.2	1.5503	20.9	1.9845	53.5	-326.8	34.4
Regions($\times 10^{-2}$):								
Aegean	0.1366	21.6	0.3816	36.4	-0.0908	18.4	5.0093	7.31
Mediterranean	-0.7678	119	-0.0141	1.41	-0.2412	50.9	0.9871	1.53
Central Anatolia	-1.1567	174	-0.8843	87.0	-0.2023	43.4	-1.2733	1.99
Black Sea	-1.0204	150	-0.5028	50.0	0.1045	23.1	10.40	15.2
East Anatolia	-2.1649	252	-1.9608	168	-0.5150	103	5.4784	8.20
Southeast Anatolia	-2.2470	263	-1.9639	165	-0.7884	145	-4.3697	6.07
Seasons($\times 10^{-3}$):								
Spring	0.0325	0.69	4.3124	55.2	-1.3044	35.6	25.65	5.08
Summer	-0.2180	4.61	4.3610	56.0	-0.4283	11.8	28.93	5.73
Fall	-0.5014	10.6	3.3405	42.6	1.5068	41.3	15.31	3.04
- Log Likelihood	23,074							
Chi-Squared (80)	12,865							
Sample Size	38,098							

Notes: See Table 1.

Table 4: Selectivity Corrected Estimates of Wage Equations of Men, Turkey, 1994.

Variables:	Covered Wage Earners		Uncovered Wage Earners		Self-Employed	
	Coefficient	t-Ratio ^a	Coefficient	t-Ratio ^a	Coefficient	t-Ratio ^a
Constant	1.0541	6.97	0.7458	7.90	1.1307	3.70
Experience	0.0770	16.7	0.0822	30.5	0.0345	4.46
Experience Square($\times 10^{-3}$)	-1.1383	10.5	-1.2956	23.8	-0.5506	4.47
Educational Attainment:						
Primary School	0.1029	2.04	0.1692	4.46	0.1606	2.82
Middle School	0.3338	5.65	0.4866	7.60	0.3259	4.16

High School	0.7379	12.5	0.7457	10.4	0.5310	6.72
Voc-High School	0.7706	9.58	0.8226	6.82	0.1675	1.06
University	1.5583	22.0	1.3527	10.8	0.7876	5.17
Urban Location	0.0068	0.16	0.0493	1.56	0.1422	3.17
Owner	-	-	-	-	-0.0029	0.08
Regions:						
Aegean	-0.2327	7.00	-0.1129	2.72	0.0912	1.37
Mediterranean	-0.0960	2.12	-0.1596	4.40	0.1051	1.69
Central Anatolia	-0.1045	2.63	-0.1456	3.84	0.0211	0.34
Black Sea	-0.1690	3.44	-0.2168	5.24	0.0523	0.83
East Anatolia	0.0343	0.50	-0.1208	2.87	0.1608	2.51
Southeast Anatolia	-0.0707	1.12	-0.1370	3.69	-0.0371	0.56
Seasons:						
Spring	-0.2045	6.92	-0.1777	6.02	-0.1888	4.00
Summer	-0.2187	7.39	-0.1401	4.77	-0.1153	2.43
Fall	-0.3090	10.6	-0.2186	7.46	-0.2192	4.71
Selection Term	-0.2939	4.05	-0.3137	5.21	-0.0191	0.18
R-Square	0.3254		0.1982		0.0685	
F (K, N-K-1)	103.7		66.28		9.06	
SER	0.6356		0.7057		0.8050	
Sample Size	3,889		4,846		2,359	

Notes: a) Absolute value of the asymptotic t-ratios. They are corrected for the use of the estimated selection term as a regressor.
K is the number of independent variables, N is the sample size.

Table 5: Selectivity Corrected Estimates of Wage Equations of Women, Turkey, 1994.

Variables:	Covered Wage Earners		Uncovered Wage Earners		Self-Employed	
	Coefficient	t-Ratio ^a	Coefficient	t-Ratio ^a	Coefficient	t-Ratio ^a
Constant	0.8410	1.36	0.8655	2.21	-1.0760	0.44
Experience	0.0606	8.84	0.0376	4.44	0.0905	1.92
Experience Square(x10 ⁻³)	-1.3098	72.3	-0.5622	4.29	-1.6346	1.96

Educational Attainment:						
Primary School	0.1157	1.14	0.2000	2.31	-0.0753	0.48
Middle School	0.1801	1.52	0.5220	3.16	0.2132	0.79
High School	0.5376	3.26	0.4776	3.47	0.4051	1.45
Voc-High School	0.7963	4.05	0.9820	3.01	0.5081	1.02
University	1.4064	7.56	1.3318	6.36	-0.7576	0.91
Urban Location	0.0255	0.22	0.2501	3.75	0.2219	0.97
Owner	-	-	-		-0.4314	2.63
Regions:						
Aegean	-0.2313	4.04	-0.0938	1.19	-0.2952	1.41
Mediterranean	-0.2572	2.26	0.0291	0.39	0.0271	0.13
Central Anatolia	-0.1295	0.83	0.0916	0.87	0.0290	0.14
Black Sea	-0.2104	1.42	-0.1492	1.75	-0.0836	0.49
East Anatolia	-0.3643	1.27	0.0464	0.29	-0.1483	0.48
Southeast Anatolia	0.4454	1.47	0.4619	2.87	0.2071	0.51
Seasons:						
Spring	-0.2027	3.37	-0.2168	2.92	-0.2056	1.19
Summer	-0.1726	2.87	-0.1773	2.37	-0.0355	0.22
Fall	-0.1711	2.81	-0.1746	2.33	-0.2187	1.39
Selection Term	-0.0364	0.14	-0.3618	1.70	0.5055	0.72
R-Square	0.3553		0.1081		0.0796	
F (K, N-K-I)	22.35		7.12		1.67	
SER	0.5803		0.7670		1.0823	
Sample Size	749		1,077		387	

Notes: See Table 3.

Table 6: Expected Wages per Hour in T.L. by Sector and Gender, Turkey, 1994.

Variables	Men			Women		
	Covered Wage Earner	Uncovered Wage Earner	Self-Employed	Covered Wage Earner	Uncovered Wage Earner	Self-Employed
<u>Experience:</u>						
Five Years	3.91	2.55	1.90	3.43	3.70	0.36
Ten Years	5.33	3.46	2.35	4.21	4.28	0.51

Fifteen Years	6.83	4.41	2.78	4.84	4.82	0.65
Twenty Years	8.24	5.26	3.14	5.21	5.26	0.77
Twentyfive Years	9.35	5.86	3.41	5.25	5.60	0.83
Thirty Years	9.99	6.12	3.54	4.96	5.79	0.84
Thirtyfive Years	10.05	5.98	3.52	4.38	5.82	0.77
<u>Educational Attainment:</u>	5.08	3.30	2.48	2.73	3.61	0.66
Nongraduate	5.60	3.76	2.91	3.07	4.40	0.62
Primary School	6.99	4.78	3.33	3.27	6.08	0.82
Middle School	10.50	6.07	4.09	4.67	5.81	0.99
High School	10.96	6.50	2.70	6.05	9.63	1.10
Voc. High School	23.54	10.29	4.51	11.14	13.66	0.31
University						
Sampe Size	3,889	4,846	2,359	749	1,077	387

Source: Author's calculations based on wage equation estimates in Tables 4 and 5.

Notes: In the computation of the expected wages the selection terms are ignored. Therefore, they represent the expected wages in each sector for a randomly drawn individual from the population. For each category the expected wages are computed at the means of the variables. The results for self-employed women are not reliable due to poor wage equation estimates for this group.

Table 7: Decomposition of Sector of Work Wage Differentials by Gender, Turkey, 1994.

	Men Log Wage Differential Between Covered and Uncovered Wage Earners (%)	Mean Log Wage Differential Between Covered Wage Earners and Self-Employed(%)	Mean Log Wage Differential Between Uncovered Wage Earners and Self-Employed (%)

Wage Differential	Men	Women	Men	Women	Men	Women
Total Mean Differential	40.68	58.17	-20.34	43.03	-61.03	-15.14
Component Attributable to:						
Constant Term	40.59	-2.45	87.55	191.7	46.96	194.1
Endowments	21.43	21.56	-3.27	10.27	-17.97	-3.75
Coefficients	-7.36	-31.78	-1.47	-24.01	-0.85	0.22
Selection	-13.98	70.84	-103.2	-134.9	-89.17	-205.8
Unexplained Differential	33.24	-34.23	86.08	167.7	46.11	194.3

Source: Author's calculations based on the wage equation estimates in Tables 4 and 5. Each of the components are evaluated at the sample means of the variables.

Notes: Results for self-employed women are not reliable due to poor wage equation estimates.

Table 8: Decomposition of Male-Female Wage Differentials by Sector of Work, Turkey, 1994.

	Mean Log Wage Differential Between Male and Female Workers (%)
--	---

Wage Differential	Covered Wage Earners	Uncovered Wage Earners	Self Employed
Total Mean Differential	26.59	44.08	89.97
Components Attributable to:			
Constant Term	11.11	-31.93	115.3
Endowments	7.39	12.29	3.87
Coefficients	36.62	7.42	31.13
Selection	-28.53	56.29	-60.29
Unexplained Differential	47.73	-24.50	146.4

Source : Author's calculations based on the wage equation estimates in Tables 4 and 5.

Each of the components are evaluated at the sample means of the variables.

Notes: Results for self-employed women are not reliable due to poor wage equation estimates.

Appendix Table

Means and Standard Deviations of Variables by Sector and Gender, Turkey, 1994

Variables	Men			Women		
	Covered Wage Earners	Uncovered Wage Earners	Self-Employed	Covered Wager Earners	Uncovered Wage Earners	Self-Employed
Hourly Wage ^a	6.785 (8.57)	4.627 (7.32)	8.835 (14.9)	5.016 (5.56)	3.092 (5.39)	4.506 (8.22)
Log Hourly Wage	1.568 (0.77)	1.161 (0.79)	1.771 (0.83)	1.302 (0.71)	0.720 (0.81)	0.871 (1.10)

Age	32.33 (9.58)	31.02 (12.3)	39.47 (11.8)	27.59 (9.02)	29.41 (12.5)	35.45 (9.81)
Years of Schooling	6.740 (3.20)	5.325 (2.78)	5.600 (2.97)	7.802 (3.89)	4.755 (3.59)	4.680 (3.06)
Experience	18.59 (10.4)	18.70 (13.4)	26.87 (12.9)	12.79 (10.5)	17.65 (14.5)	23.78 (11.2)
Experience Squared	454.6 (491)	528.7 (672)	889.1 (779)	273.7 (410)	521.7 (708)	691.0 (629)
Educational Attainment ^b :						
Nongraduate	0.048	0.142	0.140	0.072	0.285	0.264
Primary School	0.601	0.660	0.624	0.413	0.514	0.548
Middle School	0.126	0.100	0.102	0.116	0.070	0.109
High School	0.143	0.077	0.107	0.272	0.104	0.062
Voc. High School	0.032	0.009	0.012	0.032	0.007	0.013
University	0.050	0.011	0.015	0.095	0.020	0.005
Unearned Income ^a	43.17 (362)	14.56 (186)	60.66 (492)	15.59 (80.4)	2.140 (20.6)	11.57 (75.0)
Unearned HH Income ^a	3020 (186631)	34.91 (416)	13.90 (96.2)	103.1 (533)	42.67 (191)	69.15 (448)
Land (dekars) ^c	3.570 (30.8)	3.466 (21.8)	4.027 (21.1)	6.461 (80.9)	3.273 (18.7)	2.232 (13.2)
Urban Location ^b	0.844	0.785	0.772	0.866	0.765	0.840
Weekly Hours of Work	52.25 (14.5)	51.75 (18.2)	53.19 (20.4)	49.16 (12.6)	43.69 (18.2)	34.53 (22.8)
Casual Worker ^b	0.147	0.593	-	0.039	0.515	-
Owner ^b	-	-	0.702	-	-	0.866
Regions ^b :						
Marmara	0.276	0.150	0.134	0.324	0.197	0.199
Aegean	0.184	0.099	0.120	0.275	0.182	0.121
Mediterranean	0.127	0.187	0.164	0.144	0.226	0.137
Central Anatolia	0.170	0.143	0.141	0.104	0.129	0.163
Black Sea	0.118	0.111	0.144	0.112	0.153	0.251
East Anatolia	0.058	0.104	0.153	0.024	0.056	0.083
Southeast Anatolia	0.067	0.206	0.144	0.016	0.058	0.047
Selection Term	1.510 (0.37)	1.453 (0.35)	1.837 (0.24)	2.099 (0.43)	2.169 (0.28)	2.518 (0.27)
Sample Size	3,889	4,846	2,359	749	1,077	387

Notes: a: Measured in 1987 Turkish Liras(TL).

b: These are dummy variables. Their standard deviation(sd) are not reported for brevity but may be computed from their reported means (m) as $sd=(m(1-m))^{1/2}$

c: One dekar is thousand square meters or 0.247 acres.