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PUBLIC-PRIVATE EMPLOYMENT CHOICE, WAGE DIFFERENTIALS AND GENDER IN TURKEY

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Abstract:

There is no evidence on the extent of public versus private wage differentials in Turkey. The main objective of this paper is to examine the factors which explain the employment choice and the wage differentials in the public administration, state owned enterprises and the formal private wage sector in Turkey. Selectivity corrected wage equations are estimated for each sector for men and women separately. Oaxaca decomposition of the wage differentials between sectors for men and women are carried out. For this purpose, results of the 1994 Household Expenditure Survey Conducted by the State Institute of Statistics are used. The results indicate that when controlled for observed characteristics and sample selection, for men, public administration wages are at parity or lower than private sector wages in particular at the university level. State Economic Enterprise wages for men are higher than private sector wages except at the university level. Opposite results are obtained for women: their wages are at par or higher in public administration than in the private sector. Further, while men's and women's wages are at parity in the public administration, there is a large gender wage-gap in the private sector. Lower private returns to schooling are found in public than in the private sector.

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1. Introduction

Several studies addressed public-private wage differentials. Gjourko and Tracy (1988), Hartog and Oosterbeck (1993) and Mueller (1998) are recent examples of studies in developed countries and Terrell (1993) and Assaad (1996) are recent examples of studies in developing countries. The issue is believed to be particularly important in developing countries where public sector usually comprises a major part of the wage employment. Therefore, it could influence the wage setting and other employment practices in the rest of the labor market. Furthermore, substantial public employment may mean a large public wage bill in the government budged. This was an important concern of many governments due to recent public sector fiscal problems and the associated budgetary constraints. Such considerations led researchers to investigate public-private wage differentials.

This study examines how individuals are selected into employment in public administration, state owned enterprises (SOE) and formal private sector and the wage determination in these sectors in Turkey. Individual survey data from the 1994 Household Budget Survey are used to assess the sectoral differentials for men and women separately. I distinguish between non-participation, public administration work SOE work, covered private sector work and other employment. Accordingly, five-way multinomial logit model is estimated for sector selection. Mincerian, sectoral wage equations are estimated taking sector selection into account. The central questions addressed are as follows. Do public sector employees earn a premium? Are women discriminated against in the public or in the private sectors? The commonly held beliefs are negative answers to both of these querries. The results indicate that when controlled for observed characteristics and sample selection, for men, public administration wages are at par or lower than private sector wages in particular at the university level, while SOE wages are higher than private sector wages except at the university level. The results are somewhat different for women: Public administration wages are at par or

higher than the private sector wages. Further, while there is parity in wages between sexes in public administration, there is a large gender gap in wages in the private sector. Lower private returns to schooling are found in public than in the private sector.

This paper is organized as follows. Section 2 provides background information about the Turkish labor market and the institutional setting. The conceptual framework and the empirical specification are described in Section 3. Section 4 introduces the data used in this study. Estimation results are presented in Section 5. Conclusions appear in Section 6.

2. Turkish Labor Market

Turkish labor market is characterized by high rates of population and labor force growth, declining rates of participation and exceptionally low levels of female participation in urban areas. Another salient feature of the Turkish labor market is the small share of wage earners in the total work force but, the large share of the public sector in total urban employment. The public sector employees are about 3.4 percent of the total employment and about 30 percent of the wage earners (OECD, 1996). The share of government employment in non-agricultural employment was 17.2 percent in 1988 (Bulutay, 1995). The relative size of the public sector in Turkey is larger than in Haiti but smaller than in Egypt. In Haiti public sector employment accounted 7 percent of all non-agricultural employment and 11 percent of all wage earners (Terrell, 1993). In Egypt, 35 percent of total employment was in the public sector in 1995 (Assaad, 1997).

Public administration employment in Turkey has shown an increasing trend over time except in the 1930s. It grew at the rate of about eight percent per year during the 1960s, about 11 percent per year in the 1970s and by about only two percent per year in the 1980s[1]. In the 1980s there was emphasis in reducing the size of the government as

[1] These percentages are computed using the public administration potential openings provided in Bulutay (1995: 294).

suggested by the structural adjustment and stabilization policies of January 24, 1980. There was a decline in public administration employment in 1990 and a substantial increase in 1994 (SIS, 1997b:318). Privatization of the SOEs was on the agenda of the governments and gained momentum in the late 1980s. Since then, privatized or reformed SOEs dismissed a number of workers (Tansel, 1998a).

There was substantial real wage erosion in the 1980s possibly a larger erosion in the public than in the private sector. By 1988 real wages were half of what they were in 1978 (Bulutay, 1995). In response to wage erosion, moonlighting by public sector workers increased during this period (Tansel, 1996b). After the general election of 1989 both the public and the private sector employees made up the loss in their real wages. The strong bargaining position of the unions in the 1989 wage rounds and the social democratic partner of the newly elected government were responsible for these wage gains. There were further wage gains in the 1991 round of the collective bargaining process which led to large number of dismissals in the private sector. On April 5, 1994 a stabilization program was implemented and the year 1994 (during which the data of this study was collected) was a year of austerity. State Planning Organization (1999: 53) state the following changes: public administration real wages declined by twenty-two percent in 1994 and by five percent in 1995 before registering increases thereafter; SOE workers experienced no change in real wages in 1994 but declines of seventeen and twenty-five percent respectively in 1995 and 1996; real wages of the large establishments of the private sector declined by eighteen percent in 1994 and by eight percent in 1995. Thus, the relationship of real wages among the sectors may not remain the same over time.

Since there is no unemployment compensation in Turkey[2] provision of work is considered one of the functions of the government. This function is extensively misused by political patronage (Bulutay, 1995). As a result, there is overstaffing in the public

[2] Limited unemployment compensation is introduced with the recent privatization law in 1994 for the workers dismissed from privatized SOEs.

administration and the SOEs both. Although, there is no guaranteed public employment for graduates in Turkey as there is in Egypt (Assaad, 1997), nonetheless the graduates in Turkey as a pressure group have some power to create public sector jobs for themselves (Bulutay, 1995).

Employment and wage setting processes between the public administration, SOEs and the private sector differ from each other. In the public administration, wages are generated by a non-market process. There is a system of base salary for each education level which are incremented annually according to seniority. There are differentials according to the position occupied also. Performance seems irrelevant in promotions. There are further allowances for working in the disadvantaged parts of the country. The normal hours of work is 40 hours per week. Public administration employees have life time contracts. A recent law granted them the right to organize trade unions. However, they are not allowed to collectively bargain or strike. They are covered by the Retirement Fund (ES) for the purposes of retirement and health benefits. Public administration employees include health and education personnel.

State Owned Enterprise (SOE) workers are subject to the Labor Law as are the private sector employees. SOE employees have open ended contracts which could be canceled with a notice period, notice compensation and severance payment. Their wages are determined by a process of collective bargaining. They have almost 100 percent unionization rates. They are covered by the Social Security Institution (SSK) for the purposes of retirement and health benefits. The normal hours of work is 45 hours per week. In this study, the covered private sector employees are defined as those who are covered by the Social Security Institution in terms of retirement and health benefits. I chose covered private sector wage earners as the comparison group in order to maintain comparability in the nonpecuniary aspects of the public and private sector jobs[3]. In the

[3] Tansel (1998b) examines wage determination in the covered versus uncovered wage sector in Turkey where covered wage earners are those who are covered by the social security program while uncovered wage earners are not covered by any social security program. Uncovered wage earners are found to have much lower wages than covered wage earners.

survey used in this study no information was collected on the kind of contracts of the private sector workers if they have any or on their unionization status. In this paper private sector refers to the SSK covered wage earners in the private sector.

3. The Model

The wage equations are specified according to the traditional human capital framework (Becker, 1975; Mincer, 1958 and 1974). Log wages are explained by human capital characteristics and locational factors as follows:

$$\ln W_j = \beta_{oj} + \beta_j X_j + U_j$$

where W denotes wages, X is a vector of characteristics of workers, β is a vector of unknown parameters with β_o as the intercept term, and U is the random disturbance term; j stands for public administration, SOE or covered private sector.

The distribution of workers among these sectors is not random. In estimating the wage equations, the selection into different sectors for which we observe wages must be taken into account. Potential biases could result from ignoring sample selection (Heckman, 1974). To take this into account, I assume that, individuals face five mutually exclusive choices: not working (j=0), public administration employment (j=1), SOE employment (j=2), covered private sector wage employment (j=3) or other employment (j=4). The sectoral choice depends on the perceived net differentials in the wage and non-wage compensation in each of these sectors. Worker's tastes and preferences as well as human capital and other characteristics will determine the sectoral choice. I assume a conditional logit model for the probability that the individual chooses alternative 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, α_j is a vector of unknown parameters of the alternative j. I adopt the two-step estimation method developed by Lee (1983) and Trost and Lee (1984). In the first stage, I estimate the sectoral choice probabilities by maximum likelihood logit method and construct the selection term for the alternative 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:

$$\ln W_j = \beta_{oj} + X_j\beta_j + \theta_j\lambda_j + \upsilon_j$$

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

Empirical Specification:

The explanatory variables that are included in both the multinomial logit and the wage equations are as follows. Education is represented by the dummy variables for different levels of diplomas achieved. Since it is necessary to be at least primary school graduate for a job in the public administration sector, in the multinomial logit and the public administration wage equations the reference category was primary schooling diploma. In the wage equations of the remaining alternatives the reference category includes illiterate and nongraduate people.

The experience variable is computed as age minus the number of years of schooling minus six, the age of entry into school (Mincer, 1974). A quadratic term in experience is also included. A dummy variable indicates whether the individual resides in

an urban area which is defined as a location with over twenty thousand population. Further, dummy variables for regions of residence are included to control for differentials in the labor market opportunities. Since interviews took place in different months throughout 1994, I included dummy variables representing seasons of the year to control for seasonal factors if any. Winter was the reference category.

The additional variables that are included only in the multinomial logit equation are as follows. Schultz (1990) suggests use of unearned income to explain choices involving labor force participation. Accordingly, I include unearned income of the individual and unearned income of the other household members and the amount of land owned. They are expected to reduce the probability of labor force participation by raising the shadow value of a person's time in nonmarket activities and in self employment. Unearned income includes rental income and the interest income.

4. Data

I use individual level sample data which come from the 1994 Household Expenditure Survey conducted by the State Institute of Statistics of Turkey.[4] I restricted the sample to individuals 15 to 65 years of age who are not employed in agriculture.

Wages are the sum of cash earnings, bonuses and the value of income in kind.[5] Information on wages were collected both for the month of the interview and for the previous year. The survey also asked the usual hours of work per week. I obtained the

[4] 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 (1997a).

[5] I considered only the wages on the main job. If the individual is secondarily employed I ignored the earnings from the second job since no information was collected on the hours of work on the second job.

hourly wage by dividing the reported monthly wage by the imputed monthly hours of work. The monthly hours of work is imputed by multiplying the usual hours of work per week by 4.3 since no information was collected on the number of weeks worked during a month. Similarly, no information was collected on the number of weeks worked per year. Therefore, hourly wages could not be computed using the annual wages without further assumption about the number of weeks worked during a year. In the ensuing analysis hourly wage based on monthly wage is used assuming that there may be less errors of measurement in the monthly wage.[6]

The main characteristics of the data are shown in the Appendix Table. The public sector wages are markedly higher than those in the private sector. But, schooling achievements are also higher in the public sector than in the private sector. Public administration and covered private sector log hourly wages differ by 0.61 points for men and 0.89 points for women. Men have four and women have five years more schooling in public administration than their counterparts in the covered private sector. Women in public administration earn more than twice what they earn in the covered private sector. It is also noteworthy that men's hourly wages in the SOEs are higher than those in the public administration.

The facts that public sector workers are better educated than the private sector workers and women are better educated than men are also evident from the distribution of schooling attainment in the Appendix Table. Nearly 90 percent of the female and 70 percent of the male public administration workers hold a high school diploma or above, while the same percentages in the covered private sector are 40 for women and 23 for men. Since SOE male workers are predominantly blue collar workers it is note worthy

[6] Since the households were interviewed at different months throughout 1994 during which the annual rate of inflation was about 90 percent the wages and unearned income figures were deflated by the local monthly consumer price index (CPI). Households in 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 one of the five regions in which they are located according to whether they are 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).

that about 52 percent of them have primary school diploma only. On average both the male and female public sector (public administration and SOE) workers are about six years older than private sector workers. Further, male public administration workers have two years and the male SOE workers have about four years more experience than the private sector workers. In case of females, public administration workers have one extra year of experience and SOE workers have five extra years of experience over private sector workers. In all sectors men have more years of experience than women.

The mean wage data in the Appendix Table show a large gender gap in wages in the SOEs and in the private sector, while there is near parity between male and female wages in the public administration. Log hourly wages between men and women differ by 0.18 points in the SOEs and by 0.26 points in the covered private sector. Thus wage differentials favor men in spite of the higher average years of schooling of women than of men in all three sectors.

Appendix Table also gives information about individual's unearned income, the unearned income of the other household members and land holdings.[7] With regards to the regional distribution of workers, it can be observed that the percentage of female workers in all sectors, are about the same as men's or larger than men's in all regions except in the East and Southeast Anatolia where the percentages of female workers are about half as those of male workers. This can be attributed to the prevailing social norms in the latter two regions adverse to women's market employment.

5. Estimation Results

Multinomial Logit Estimates:

Multinomial logit estimates of sector choice for men and women are shown in Tables 1 and 2 respectively. The tables give the marginal effects of each variable on the

[7] See Note 6 about adjustment of unearned income for inflation.

probability of joining a particular sector calculated at the mean values of the variables and the associated asymptotic t-ratios. The category of "other employment" includes all other employed individuals who are not included in the previous categories. They are, uncovered wage earners, self employed in agricultural or nonagricultural activities, unpaid family workers and employers.

Experience significantly increases the probability of employment in all of the four sectors as compared to nonparticipation. All levels of educational attainment are statistically significant and increase the probability of joining public administration, SOEs and the covered private sector but reduce the probability of participation in the other employment category. In each case, the higher the educational level, the higher its contribution to the participation in a sector. The marginal effects of experience and education terms are much larger for men than for women. For men, the probability of joining public administration is highest, for university graduates while for women highest probabilities are observed for joining the private sector. Other researchers also found that higher levels of education are associated with greater probability of public employment (Terrell, 1993).

Income effects on participation are measured by the unearned income of the individual and of the other household members. For men, both of these terms are negative (except for household unearned income for private sector participation) and statistically significant. For women, both of these terms are statistically significant but seem to increase the probability of participation in all sectors of work except in other employment. For men, the amount of land owned significantly reduces the probability of participation in all of the sectors except in the other employment category. While for women the amount of land owned significantly increases the probability of participation in all sectors except in SOEs. The unexpected positive effects of the amounts of unearned incomes and land owned in case of women could possibly be explained with the indirect and positive effect of these factors on schooling and the positive impact of schooling on women's participation. As for the regional factors: For men the

probabilities of working in the public administration or in the SOEs are higher in all regions as compared to the Marmara region. However, the probability of working in the covered private sector is lower in all regions as compared to the Marmara region. Similar regional patterns hold for women also.

The Wage Equations:

Selectivity corrected estimates of the sectoral wage equations for men and women are given in Tables 3 and 4 respectively. All of the wage equations are over all statistically significant. However, in case of women the SOE wage equation has a poor fit and none of individual coefficients are statistically significant. This may possibly be due to the small number of observations in this case. Therefore, in the ensuing discussion, women in SOEs will be ignored.

Linear and quadratic terms in experience have the expected positive and negative signs respectively in all sectors. However, they are statistically insignificant for women in the public administration. For men, the curvature of the wage experience profile is steeper in the SOEs and the covered private sector than in the public administration implying a lower impact for an additional year of experience in public than in the private sector. Terrell (1993) also finds steeper wage experience profile in the private than in the public sector. For men, wages peak at 32 years of experience in the public administration and 33 years of experience in the SOEs and the covered private sector. For women, wages peak at 34 years of experience in public administration and 23 years of experience in the covered private sector. In all sectors for both men and women the coefficient estimates of the educational attainment terms are all statistically significant. The coefficient estimates for regions indicate that there are some regional wage differentials for men in all sectors while there are no regional wage differentials for women. In all cases, wages are higher in urban areas.

The coefficient estimate of the selection term for men in public administration is statistically significant and positive which implies that men who select public administration have higher productivity than the average. Thus, unobserved characteristics that increase probability of public administration employment have a positive impact on wages. The term for selection into SOEs is statistically insignificant. The term for selection into covered private sector is statistically significant and negative implying that men who select into private sector have lower productivity than the average. These results seem counterintuitive however, their statistical significance should not be exagerated. In case of women all of the selection terms are statistically insignificant.

Table 5 shows the expected wages for different levels of experience and educational attainment. For men, at different levels of experience, highest wages are achieved at the SOEs. At different levels of education highest wages are achieved again at the SOEs except at the university level where highest wages are achieved in the covered private sector[8]. Higher wages at low levels of education and lower wages at the university level in the SOEs than in the private sector give credence to the wage compression hypothesis in the SOEs. Comparing public administration and the private sector, we observe that at low levels of experience, wages are at par while at higher levels of experience, public administration wages are lower than in the covered private sector. This too supports the wage compression hypothesis in public administration. At different levels of education public administration wages are lower than private sector wages. The differential is in particular large at the university level. At this level concern is sometimes expressed that graduates choose private over public sector. I also note that in the public administration and the SOEs after 20 years of experience and in the private sector after 25 years of experience, there are no more substantial wage gains from working more years.

[8] Tansel (1998a) compares the earnings of a group of SOE workers before and after they lost their jobs due to privatization. For most of the workers the dismissals meant a movement to the informal sector. Therefore, their earnings were much lower in the private sector than when in the SOEs.

For women, at all levels of experience wages are higher in the public administration than in the private sector although public administration expected values are insignificant. In the private sector after twenty-five years of experience there is a declining tendency in wages. At different levels of education, public administration wages are at par or higher than the private sector wages. Kanellopoulos (1997) found that in Greece for men, wages were lower in the public than in the private sector at low levels of education while the opposite was true at high levels of education. Assaad (1997) found that government wages were at par or higher than private sector wages in Egypt. Stelcner et al. (1989) in Peru and van der Gaag and Vijverberg (1988) in Côte d'lvoire found lower public sector wages than private sector wages.

Comparing wages of men and women in public administration we observe that at different levels of experience, a comparison can not be made due to insignificant expected values for women. However, at different levels of education there is near parity between the wages of men and women. This is expected since in the public sector wages are set by law irrespective of gender. In the covered private sector, there is a large gender gap in wages at all levels of experience and education. This finding suggests that women may be facing discrimination in the private sector. Assaad (1997) in Egypt and Lassibille (1998) in Spain found that male-female wage differential is larger in the private than in the public sector.

Oaxaca-Blinder Decomposition:

Table 7 shows the decomposition of wage differentials between sectors for men and women which is due to Oaxaca (1973) and Blinder (1974). I decompose the total mean log wage differential between public administration and private sector and between SOE and the private sector into four components including the differentials caused by the selectivity bias (Idson and Feaster, 1990) as follows:

$$\ln W_j - \ln W_i = (\beta_{oj} - \beta_{oi}) + 0.5\,(\beta_j + \beta_i)\,(X_j - X_i) + 0.5\,(X_j + X_i)\,(\beta_j - \beta_i) + \theta_j\,\lambda_j - \theta_i\lambda_i$$

where bar denotes the mean of the variables; j denotes public administration or SOE and i denotes the private sector. 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 the 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 first and the third components are often referred to as the unexplained differentials. All the components are evaluated at the sample means of the variables. The decomposition in Table 7 indicates that the positive public-private wage differential in favor of the public sector is partly due to higher levels of human capital endowments of public sector workers and partly due to the large positive selection differential in all cases. The total unexplained differential is large and negative in case of public administration versus private sector differential for men. This differential is mostly due to the differential in coefficients which results from higher returns to worker characteristics in the private sector. In the case of SOE versus private wage differential for men the total unexplained differential is positive and small while in the case of public administration versus private sector differential for women, it is negative and small. In the latter two cases the differentials in the coefficients indicate higher returns to worker characteristics in the public sector. Thus we can talk about positive rents only in the case of men in the SOEs. Terrell (1993) found in Haiti that the public administration workers especially SOE workers earn a sizable rent. Similarly, Lindauer and Sabot (1983) suggested that the SOEs may be distributing monopoly rents in Tanzania.

Covered and Uncovered Private Sectors:

In this paper I choose only those private sector workers which are covered by Social Security Administration (SSK) in order to maintain comparability to the public administration workers who are covered by Retirement Fund (ES) and SOE workers who are covered by SSK. This provides comparability in terms of the retirement and

health benefits coverage. However, it is well known that the retirement and health benefits of SSK are much inferior to those provided by the ES. Thus, the two sets of benefits are not exactly comparable. Further, the three sectors considered also differ in terms of other nonpecuniary job attributes such as job security, work effort and others which may include subsidized lunch, housing and transportation, heating fuel and other allowances.Such nonpecuniary aspects are not considered in this paper.

About 30 percent of the private sector wage workers were not covered by the SSK and they constitute part of the informal sector. Tansel (1998b) examines the wages of the covered versus uncovered sector wage workers. covered wage earners are found to have two and a halftimes higher wages than private sector wage earners who are not covered by SSK. Thus, if we compare the wages of the public sector workers with those of the total, of covered and uncovered private sector workers we would find that both the public administration and SOE workers, men and women alike earn substantial premiums.

Returns to Schooling:

Table 8 presents the private rates of return to schooling computed using the wage equation estimates. Returns to schooling are observed to increase with level of schooling in all sectors for both men and women. There are not much gender differences in returns to schooling both in public administration and in the covered private sector. Small gender differences in private returns to schooling were also observed in other Turkish studies (Tansel, 1994 and 1996a).

As for the public versus private sector differentials, the figures indicate that for men, returns in the public administration and the SOEs are lower than in the private sector. Similarly, for women returns are lower in the public administration than in the private sector. Psacharopoulos (1994) reported lower returns in the noncompetitive public sector than in the competitive private sector for a group of countries. This was

hypothesized to be due to the wage compression in the public sector. Assaad (1997) found higher returns in public than in private sector at the primary, and secondary levels of schooling but lower returns in public than in private at the university and post-graduate levels in Egypt. Terrell (1993) in Haiti, Kanellopoulos (1997) in Greece and Lassibille (1998) in Spain also found lower returns to schooling in public than in the private sector.

6. Conclusion

This paper examines the factors which explain the employment sector choice and the wage differentials in public administration, state owned enterprises and the private wage sector in Turkey in 1994. Private sector includes only those wage earners who are covered by the social security program in terms of retirement and health benefits. Employment sector choice is explained with a five-way logit model with nonparticipation as the base choice. Selectivity corrected sectoral wage equations are estimated for men and women separately. One of the main findings is that when controlled for observed characteristics and sample selection, for men, public administration wages are at parity or lower than covered private sector in particular at the university level wages while SOE wages are higher than covered private sector wages except at the university level. There is evidencen that there is wage compression in the SOEs. SOE rents may be due to several factors such as unionization, monopoly market power in some cases or purely public sector factor. For women, public administration wages are at par or higher than the private sector wages. Further, men's and women's wages are at parity in the public administration however there is a large gender gap in wages in the covered private sector. This finding suggests that women may be facing discrimination in the private sector. As it was found in many other studies, the private returns to schooling are lower in the noncompetitive public sector than in the competitive private sector.

The private sector workers considered in this paper were covered by SSK. Uncovered workers are known to have considerably lower wages than covered ones.

Thus, a comparison of the wages of public sector workers with those of the total private sector would lead to a conclusion that public sector workers earn substantial premiums. Data on labor turnover indirectly attest attractiveness of the public sector jobs. The quit rate was strikingly low among SOE workers as compared with private firm workers over the 1992-1995 period (OECD, 1996). Another indirect evidence on the desirability of public sector jobs is the enormous number of qualified applicants when a few public position openings are announced. Recently, there were fifty thousand applicants for a thousand openings all over the country for positions at the Ministry of Village Affairs (Cumhuriyet, 1999). Analysis in this paper does not take into account the nonpecuniary aspects of the public sector jobs. A number of nonpecuniary factors may render a public sector job preferable over a private sector job. These factors may include job security, work effort, work hours and various fringe benefits. Given these nonpecuniary benefits workers may prefer public sector even if public sector wages are lower than private sector wages. Nonpecuniary aspects of the public sector jobs provide attractive employment opportunities which are difficult to come by in the private sector. Further research is needed to quantify the nonpecuniary benefits.

References

Assaad, R. (1997) The Effects of Public Sector Hiring and Compensation Policies on the Egyptian Labor Market, ***World Bank Economic Review***, 11(1):85-118.

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

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

Bulutay, T. (1995) ***Employment, Unemployment and Wages in Turkey***, Ankara: International Labor Office and the State Institute of Statistics.

Cumhuriyet, January 17, 1999: 19.

Gjourko, J., J. Tracy (1988) an Analysis of Public and Private Sector Wages Allowing for Endogenous Choices of both Government and Union Status, ***Journal of Labor Economics***, 6(2): 229-251.

Hartog, J. and H. Oosterbeek (1993) Public and Private Sector Wages in Netherlands, ***European Economic Review***, 37: 97-114.

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

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

Kanellopoulos, C.N. (1997) Public-Private Wage Differentials in Greece, ***Applied Economics***, 29 ( ): 1023-1032.

Lassibille, G. (1998) Wage Gaps Between the Public and Private Sectors in Spain, ***Economics of Education Review***, 17(1): 83-92.

Lee, L.F. (1982) Some Approaches to the Correction of Selectivity Bias, *Review of Economic Studies*, 49: 355-372.

Lee, L.F. (1983) Generalized Econometric Models With Selectivity, ***Econometrica***, 51: 507-512.

Lindauer, D.L. and R.H. Sabot (1983) The Public-Private Wage Differential in a Poor Urban Economy, ***Journal of Development Economics***, 12(3): 137-157.

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.

Mueller, R.E. (1998) Public-Private Sector Wage Differentials in Canada: Evidence from Quantile Regressions, ***Economics Letters,*** 60(2): 229-235.

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

Organization for Economic Cooperation and Development (OECD) (1996) ***OECD Economic Surveys: Turkey, 1996***, Paris: OECD.

Psacharopoulos, G. (1994) Returns to Investment in Education: A Global Update, ***World Development***, 22(9): 1325-1343.

Schultz, T.P. (1990) Testing the Neoclassical Model of Family Labor Supply and Fertility, ***Journal of Human Resources***, 25: 599-634.

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

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

State Institute of Statistics (SIS) (1997b) ***Labor Statistics, 1996***, Ankara: SIS.

State Planning Organization (SPO) (1999) **Program for 1999,** Ankara: SPO.

Stelcner, M. J., van der Gaag and W. Vijverberg (1989) A Switching Regression Model of Public-Private Sector Wage Differentials in Peru: 1985-1986, ***Journal of Human Resources***, 24(3): 545-559.

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. (1996a) 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. (1996b) Wage Earners and Moonlighting in Turkey, ***Research in Middle East Economics***, I: 1-25.

Tansel, A. (1998a) Earnings of Turkish Workers Before and After Dismissal Due to Privatization. Processed, Ankara: Department of Economics, Middle East Technical University.

Tansel, A. (1998b) Formal versus Informal Sector Choice of Wage Earners and their Wages in Turkey. Processed, Ankara: Department of Economics, Middle East Technical University.

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.

Van der Gaag, J. and W. Vijverberg (1988) A Switching Regression Model for Wage Determinants in the Public and Private Sectors of a Developing Country, ***Review of Economics and Statistics***, 70(2): 244-252.

Table 1

Maximum Likelihood Multinomial Logit Estimates of Employment Sector Choice of Men, Turkey, 1994

Variables	Public Administration		State Owned Enterprises		Covered Private Sector Wage Earners		Other Employment	
	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]
Constant	-0.1402	54.9	-0.2210	53.0	-0.1373	30.6	0.2924	16.7
Experience	0.0069	70.5	0.0128	70.5	0.0112	54.7	0.0164	18.2
Experience Square ($x10^{-3}$)	-0.1285	69.6	-0.2371	69.6	-0.2772	63.1	-0.2357	15.0
Educational Attainment:								
Middle School	0.0403	41.8	0.0260	20.2	-0.0106	4.62	-0.1854	15.7
High School	0.0676	51.5	0.0475	31.2	0.0076	2.97	-0.1301	10.5
Voc. High School	0.0745	35.7	0.0672	20.2	0.0524	8.17	-0.1865	6.14
University	0.0998	49.8	0.0522	21.4	0.0175	3.75	-0.1063	4.78
Unearned Income ($x10^{-5}$)	-0.7569	11.7	-0.2794	2.54	-1.3580	5.90	-2.6144	2.40
Unearned HH Income ($x10^{-5}$)	-1.8396	19.9	-2.3742	14.9	1.4595	5.68	-1.5669	1.19
Land ($x\ 10^{-3}$)	-0.2062	27,7	-0.1013	8.34	-0.4318	16.8	1.1111	9.40
Urban Location	-0.0043	8.65	0.1220	11.7	0.0738	28.3	-0.2226	22.2
Regions:								
Aegean	0.0091	10.7	0.0001	0.07	-0.0067	2.09	0.0351	2.33
Mediterranean	0.0093	12.2	-0.0016	1.12	-0.0775	24.7	0.0649	4.78
Central Anatolia	0.0202	24.9	0.0147	10.6	-0.0523	18.1	-0.0348	2.63
Black Sea	0.0174	21.9	0.0266	18.4	-0.0834	26.2	0.0434	3.21
East Anatolia	0.0314	36.9	0.0287	19.9	-0.1349	36.8	0.0525	3.87
Southeast Anatolia	0.0104	13.6	0.0109	7.73	-0.1258	35.2	0.0617	4.54
-Log Likelihod			37,890					
Chi-Squared (76)			19,536					
Sample Size			35,267					

Notes: a: The absolute value of the asymptotic t-ratios associated with the marginal effects. The equations also included dummy variables for different seasons of the year in which the interviews were implemented. They are not reported for brevity.

Table 2

Maximum Likelihood Multinomial Logit Estimates of Employment Sector Choice of Women, Turkey, 1994

Variables	Public Administration		State Owned Enterprises		Covered, Private Sector Wage Earners		Other Employment	
	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]	Marginal Effect	t-Ratio[a]
Constant	-0.0048	155	-0.0200	157	-0.0250	159	-0.0384	5.84
Experience ($x10^{-3}$)	0.1751	158	0.4486	160	0.1384	42.6	2.5184	6.47
Experience Square ($x10^{-5}$)	-0.4729	155	-0.8265	159	-1.0773	141	-3.8522	5.91
Educational Attainment:								
Middle School	0.0017	117	0.0049	94.2	0.0021	25.7	-0.0714	8.54
High School	0.0028	136	0.0091	124	1.0617	92.5	-0.0372	4.88
Voc. High School	0.0034	115	0.0081	74.6	1.1161	43.4	-0.0922	3.66
University	0.0043	156	0.0131	149	2.0172	123	0.0761	4.99
Unearned Income ($x10^{-5}$)	0.0212	17.8	0.0944	14.4	0.0883	4.92	-2.4663	1.28
Unearned HH Income ($x10^{-5}$)	0.0044	15.4	0.1658	60.7	-0.0972	18.4	-6.7714	5.20
Land ($x\ 10^{-5}$)	0.2137	64.2	-0.4992	33.2	1.8132	57.9	37.84	9.00
Urban Location ($x10^{-3}$)	-0.2592	43.0	-0.4396	11.0	4.5338	30.8	213.8	14.9
Regions ($x10^{-3}$):								
Aegean	0.3142	96.4	0.1615	8.74	1.5514	31.6	37.49	6.49
Mediterranean	0.1423	45.7	0.5073	30.0	-7.9683	110	5.703	1.15
Central Anatolia	0.1853	48.6	-1.1762	68.9	-11.717	151	-31.64	5.77
Black Sea	0.5313	162	1.6585	103	-10.010	92.8	59.06	9.52
East Anatolia	0.4787	115	-0.3366	19.4	-21.853	138	7.769	1.55
Southeast Anatolia	0.1812	39.7	-2.3656	127	-24.837	172	-61.27	8.92
-Log Likelihod			20,709					
Chi-Squared (76)			15,823					
Sample Size			37,625					

Notes: See Table 1.

Table 3

Selectivity Corrected Estimates of Wage Equations of Men,

Turkey, 1994

Variables	Public Administration		State Owned Enterprises		Covered, Private Wage Earners	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Constant	0.8338	3.11	0.9402	2.71	0.9630	5.26
Experience	0.0420	5.12	0.0760	6.57	0.0797	15.2
Experience Square ($x10^{-3}$)	-0.6587	4.21	-1.1688	5.31	-1.2047	9.28
Educational Attainment:						
Primary School	-	-	0.0459	0.72	0.1092	2.15
Middle School	0.1640	2.89	0.1556	2.07	0.3376	5.62
High School	0.4967	5.89	0.4112	5.28	0.7445	12.4
Voc. High School	0.6513	7.00	0.5794	5.71	0.7971	9.93
University	1.1386	9.47	0.7393	9.00	1.5542	21.3
Urban Location	0.1537	6.70	0.3016	9.04	0.0264	0.55
Regions:						
Aegean	0.0723	1.80	-0.0879	1.72	-0.2369	7.15
Mediterranean	0.0325	0.82	-0.0990	2.10	-0.1160	2.25
Central Anatolia	0.1221	2.86	0.0238	0.52	-0.1144	2.62
Black Sea	0.0205	0.50	-0.0228	0.44	-0.1888	3.34
East Anatolia	0.1945	3.65	0.1012	1.95	-0.0150	0.19
Southeast Anatolia	0.0587	1.33	0.0126	0.25	-0.0929	1.26
Selection Term	0.2154	2.98	0.0390	0.38	-0.2530	2.71
R-Square	0.3395		0.1974		0.3262	
F(K, N-K-1)	91.20		35.32		103.17	
SER	0.5890		0.5939		0.6332	
Sample Size	3,035		2,603		3,855	

Notes: K is the number of independent variables, N is the sample size. The equations also included dummy variables for the different seasons of the year in which the interviews were implemented. They are not reported for brevity.

a: absolute value of the asymptotic t-ratios. They are corrected for the use of estimated selection term.

Table 4

Selectivity Corrected Estimates of Wage Equations of Women,

Turkey, 1994

Variables	Public Administration		State Owned Enterprises		Covered, Private Wage Earners	
	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]	Coefficient	t-Ratio[a]
Constant	0.8373	0.88	2.8880	1.63	0.9451	1.45
Experience	0.0314	1.21	0.0297	1.23	0.0605	8.83
Experience Square ($x10^{-3}$)	-0.4682	0.69	-0.4663	1.04	-1.3068	7.03
Educational Attainment:						
Primary School	-	-	0.0775	0.85	0.1002	0.99
Middle School	0.4508	2.23	-0.2189	0.73	0.1557	1.32
High School	0.7157	1.86	-0.0415	0.09	0.4989	3.08
Voc. High School	0.9332	1.91	-0.1506	0.35	0.7833	4.04
University	1.4301	2.38	0.1760	0.32	1.3606	6.91
Urban Location	0.0743	1.52	0.1084	1.17	0.0109	0.09
Regions:						
Aegean	0.0538	0.76	-0.1345	0.99	-0.2360	4.03
Mediterranean	-0.0335	0.52	-0.1504	1.25	-0.2359	1.90
Central Anatolia	-0.0072	0.10	-0.0271	0.19	-0.1047	0.61
Black Sea	-0.0070	0.07	-0.1144	0.77	-0.1906	1.21
East Anatolia	0.0803	0.73	-0.0745	0.54	-0.3345	1.08
Southeast Anatolia	0.0205	0.23	0.0869	0.42	0.6826	1.98
Selection Term	0.1417	0.65	-0.3677	0.78	-0.0651	0.23
R-Square	0.3891		0.1844		0.3595	
F(K, N-K-1)	34.59		3.47		22.39	
SER	0.4246		0.6053		0.5799	
Sample Size	941		295		737	

Notes: See Notes in Table 3.

Table 5

Expected Wages by Sector of Employment and Gender, Turkey, 1994[b]

(Turkish Lira per hour)

Variables	Public Administration		State Owned Enterprises[a]	Covered Private Sector	
	Men	Women	Men	Men	Women
Experience:					
Five years	4.86	6.44*	4.48	3.98	3.67
Ten years	5.71	7.27*	6.00	5.42	4.50
Fifteen years	6.48	8.05*	7.58	6.94	5.17
Twenty years	7.13	8.64*	9.04	8.38	5.56
Twenty-five years	7.58	9.05*	10.16	9.52	5.61
Thirty years	7.81	9.36*	10.77	10.18	5.29
Thirty-five years	7.78	9.41*	10.77	10.25	4.69
Educational Attainment:					
Non graduate	3.96	3.09	7.27	5.12	2.98
Primary School	-	-	7.62	5.70	3.30
Middle School	4.49	4.15	8.50	7.16	3.49
High School	6.27	5.40	10.97	10.75	4.92
Voc. High School	7.32	6.72	12.98	11.33	6.53
University	11.91	11.04	15.23	24.16	11.64
Sample Size	3,035	941	2,603	3,855	737

Source: Author's calculations based on wage equation estimates in Tables 3 and 4.
Notes:

a. Expected wages for women SOE workers are not presented since wage equation estimates for this group was unsatisfactory due to small number of observations.

b. 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.

*. Indicates Statistical insignificance at five percent level.

Table 6

Decomposition of Public-Private Wage Differentials by Sector of Work and Gender, Turkey, 1994

Wage Differential	Mean Log Wage Differential Between Public Administration and Covered Private Sector Workers (%)		Mean Log Wage Differential Between State Owned Enterprises and Covered Private Sector Worker (%)[a]
	Men	Women	Men
Total mean Differential	61.48	88.61	67.52
Component Attributable to:			
Constant Term	-12.92	-10.78	-2.28
Endowments	53.26	68.33	19.67
Coefficients	-43.78	1.70	5.49
Selection	64.93	29.36	44.64
Total unexplained Differential	-56.70	-9.09	3.21

Source: Author's calculations based on the wage equation estimates in Tables 3 and 4. Each of the components are evaluated at the sample means of the variables.

Notes: a: Results for women are not presented due to poor wage equation estimates for women in the SOEs.

Table 7

Private Rates of Return to Schooling by Sector of Work and Gender, Turkey, 1994 (Percent)

Schooling Attainment	Men			Women[c]	
	Public Adm.	State Owned Enterprises	Covered Private Sector	Public Adm.	Covered Private Sector
Primary School	-	0.92*	2.18	-	2.00*
Middle School	2.05	3.66	7.61	5.64	1.85*
High School	11.09	8.52	13.56	8.83	11.44
Voc. High School	16.25	14.13	15.33	16.08	20.92
University[a]	16.05	8.20	20.24	17.86	21.54
University[b]	12.18	4.00	18.93	12.42	14.43

Source: Author's calculations based on wage equation estimates in Tables 3 and 4.

Notes: a: For university education after high school.
b: For university education after vocational high school.
c: Rates of return are not reported since the wage equation estimates was not satisfactory for women in SOEs.
*: Indicates insignificance at five percent level.

Appendix Table

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

	Public Administration		State Owned Enterprises		Covered, Private Wage Earners	
Variables:	Men	Women	Men	Women	Men	Women
Hourly Wage[a]	10.87	10.67	11.85	9.75	6.75	5.06
	(10.3)	(8.70)	(11.8)	(8.23)	(8.35)	(5.59)
Log Hourly Wage	2.18	2.20	2.24	2.06	1.57	1.31
	(0.59)	(0.54)	(0.66)	(0.65)	(0.77)	(0.72)
Age	38.05	33.55	37.43	33.53	32.32	27.68
	(7.97)	(6.70)	(8.07)	(9.16)	(9.56)	(9.01)
Years of Schooling	10.77	12.73	7.28	9.01	6.73	7.85
	(3.66)	(2.56)	(3.34)	(4.13)	(3.19)	(3.88)
Experience	20.29	13.82	23.16	17.52	18.59	12.83
	(9.17)	(7.00)	(9.52)	(11.3)	(10.4)	(10.5)
Experience Square	495.7	240.1	626.8	434.7	454.3	274.8
	(424)	(225)	(480)	(500)	(491)	(411)
Educational Attainment:[b]						
Nongraduate	0.010	0.003	0.040	0.085	0.048	0.069
Primary School	0.169	0.020	0.524	0.227	0.602	0.410
Middle School	0.135	0.043	0.148	0.119	0.126	0.118
High School	0.317	0.329	0.190	0.383	0.143	0.275
Voc. High School	0.051	0.105	0.037	0.034	0.032	0.031
University	0.318	0.500	0.062	0.153	0.050	0.096
Unearned Income[a]	96.53	54.93	73.98	38.17	43.44	15.83
	(250)	(144)	(163)	(77.3)	(364)	(81.0)
Unearned HH. Income[a]	21.94	12502	14.72	85.70	3046	104.7
	(145)	(37903)	(121)	(203)	(18703)	(537)
Land (dekars)[c]	2.673	2.000	4.884	3.418	3.594	6.54
	(20.65)	(16.46)	(105)	(27.6)	(30.8)	(81.6)
Urban Location[b]	0.805	0.893	0.796	0.854	0.844	0.868
Regions:[b]						
Marmara	0.088	0.105	0.119	0.153	0.276	0.328
Aegean	0.097	0.147	0.086	0.119	0.184	0.275
Mediterranean	0.130	0.152	0.116	0.193	0.128	0.143
Central Anatolia	0.197	0.181	0.168	0.119	0.170	0.103
Black Sea	0.178	0.236	0.215	0.271	0.119	0.113
East Anatolia	0.231	0.131	0.179	0.105	0.058	0.024
Southeast Anatolia	0.078	0.049	0.117	0.041	0.066	0.014
Selection Term	1.209	1.111	1.672	2.372	1.521	2.074
	(0.38)	(0.40)	(0.32)	(0.43)	(0.37)	(0.45)
Sample Size	3,035	941	2,603	295	3,855	737

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

b. These are dummy variables. Their standard deviation are not reported for brevity but may be computed from their reported means (m) as $sd=(m\ (1-m))^{½}$.

c. One dekar is thousand square meters or .247 acres.