

Wage Differentiation in Tradable and Nontradable Sectors: Evidence from Turkey*

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Abstract

Turkey has undergone various structural transformations with the higher economic integration. With this respect, the economic priority given to domestic production is decreased whereas the production of goods that could compete in the international markets is gained importance. Therefore, the distinction of tradable and nontradable sectors and the determination of their production and employment capacity become an important issue. Main aim of this paper is to determine the sources of potential wage gap between tradable and nontradable sector by using Oaxaca decomposition method for Turkish economy over time. Our results reveal that there exists a wage gap between tradable and nontradable individuals in favor of nontradable individuals for all investigated years. It is seen that the wage differentiation between tradable and nontradable individuals is not only caused by the differences of human capital endowments but also by the sectoral discrimination. Besides, it is concluded that human capital endowments has a dominance role on wage differentiation rather than sectoral discrimination.

Keywords : Wage Differentiation, Tradable and Nontradable Sector, Oaxaca decomposition

JEL Classification: F16, J31

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1. INTRODUCTION

Turkey has undergone various structural transformations towards higher integration with the world economy since the 1980s. With this respect, economic priorities have been changed and new mechanisms have been take place with regards to new priorities. Whereas production of goods that could compete with the world markets has been increasing, in the meantime production for domestic markets loses its priority. This is due to some distributional consequences of economic integration. Economic resources are reallocated from import substituting sectors to export oriented sectors because of the importance given more to produce goods that could compete with world markets. Meanwhile, this situation leads to an increase in employment capacity and income generating process of export oriented sectors while import substituting sectors have been declining.

In this paper we divide all economic activities into two main sectors namely, tradable and nontradable sectors. Tradable sector have two main parts as exportable and importable goods. Since tradable sector is integrated to the world economy, it is influenced from the changing conditions of the world economy. Accordingly, the price conditions of the tradable sector are determined by the world markets and the government has no power on the price level of this sector. On the contrary, nontradable sectors² are not stick to world economy as they produce goods for domestic markets and therefore government has power on this sector and could be able to implement separate (her own) income policies.

Reallocation of economic resources between two main sectors (namely, tradable and nontradable sectors) due to giving more importance to tradable sector is mostly in favor of that sector. Tradable and nontradable sectors exhibit some different features. For example, major characteristics of tradable sectors in developing countries are the presence of high productivity of production factors and the requirement of high skilled workers. Meanwhile, nontradable sectors need relatively low skill requirement and low productivity of production factors. The nontradable sectors have the capability of absorbing more labour than that of the tradable sector due to lower skill requirement. Despite of these differences, overall income policies imposed in both sectors show similar features in many countries.

Therefore, applying non-discriminating income policies may cause problems in the economy. Implementing these policies would not only reward the less

² Nontradable goods are defined as goods whose transportation costs are either high or not feasible or have high tariffs in order to enter into international trade. Nontradable sectors include production of service sectors such as education, health and public services, construction sector and trade facilities. For detailed explanations about the definition of nontradable goods see Harrod (1958), McKinnon (1963), Jones (1974) and Dornbusch et al. (1977).

productive sector with a wage beyond its productivity; and punish the productive one with a wage below its productivity but also would lead to a financial burden to the government. Mainly, since a government has much more power on nontradable sector than she has on the tradable sector (due to the locally determination of demand and supply condition), policies applied into economy mostly target on increasing the demand conditions of nontradable sector to cover the lower marginal productiveness of this sector. As changing the demand conditions of that sector is easier than the changing the conditions of total factor productivity, governments chose to apply income policies in which demand of nontradable sector is targeted. Moreover, other reason of not targeting the total factor productivity, it rely on the fact that total factor productivity could not be changed in the short run, it took a while to improve productivity, and therefore this is not mostly targeted in the income policies.

Many studies in the HOS literature develop their framework without any (tradable versus nontradable) sectoral distinction. That is one of the weak grounds of the HOS model. Needless to say, nontradable goods have a reasonable share of the overall market³. In a real economy, the aggregate demand for nontradable goods not only leads to a decline in production of tradable goods, but also leads to an increase in labor demand for nontradable goods. Nevertheless, with a bi-sectoral framework with only tradable sectors, the model will have limited applicability in the real world in which nontradable sector is large and thus plays a crucial role. A trade model with nontradable sector is first provided by Meade (1956), Salter (1959) and Swan (1960). McDougall (1970) build up a trade model with nontradable goods based on the earlier work of Pearce (1961), Komiya (1967) and, his own work, McDougall (1965). Besides, Gonzalez-Soriano (1990) gives a brief summary about the classification procedure of dividing the economy into tradable and nontradable segments. In all these models production factors are assumed to mobile across sectors within each trading economy and immobile across sectors⁴. Despite those works that especially concerned with the relationship between the nontradable sectors and real wages, we must say that none of them includes the effects of differences (in tradable and non tradable sectors) in terms of productivity and demand conditions.

This paper investigate to reveal the effect of human capital endowments and/or sectoral discrimination on the wage gap between tradable and nontradable individuals for Turkey for the years 2002, 2003, 2004, 2005 and 2006. As the main

³ For example, the nontradable ratio in total output is %68 for Chile (Saez, 2005), %71 for US (Tokarick, 2002), whereas it is % 69 for India (Kohli and Mohapatra, 2008).

⁴ There are also several works in the literature that take the tradable and nontradable debate with a specific interest on income inequality. Acharrya and Jones (2001), Ghosh (1980), Beladi and Batra (2004), Tokarick (2002) and Lebow, (1993) are some good examples.

objective of this paper is to investigate the wage gap between tradable and nontradable sector in Turkey we divide overall economic activities into those earning labour income in tradable sector and those earning labour income in nontradable sector. For the empirical analysis, we obtained the required data from Household Expenditure Surveys conducted by Turkish Statistical Institute (TurkStat). We use Oaxaca decomposition method to examine the separate effects of the different factors in the formation of the sectoral wage gap. Oaxaca decomposition reveals whether or not wage gap between two groups are caused by sectoral discrimination or/and human capital differentiation. As their productivity level and the human capital endowments are differ than each other, It is expected that to found a wage gap between tradable and nontradable individuals.

The paper is organized as follows. In the next section we provide the methodology and empirical analysis of sectoral wage gap of Turkey. Finally section 3 provides some concluding remarks and policy discussion.

2. DATA AND EMPIRICAL RESULTS

For this research, we use the Household Expenditure Surveys conducted by Turkish Statistical Institute (TurkStat) in 2002, 2003, 2004, 2005 and 2006. The data set comprises the information collected through a survey conducted within different parts of the country.

The individual level of data is used for investigation and individuals are divided into two main groups: tradable and nontradable⁵. So as to decompose the wage differentiation between tradable and nontradable individuals, only wage workers are taken into consideration⁶.

We first present a brief general descriptive summary of Turkish labour market and tradable and nontradable sectoral share in Turkey based on the survey data and then we examine the sectoral wage differentiation. We employ Oaxaca decomposition technique to examine the separate effects of the different factors in the potential sectoral wage gap. Oaxaca decomposition is used to identify the effect of human capital differentiation or/and market discrimination of wage differentiation. Oaxaca (1973) uses his decomposition analysis to explain the male-female wage differential in terms of productive characteristics (human capital

⁵ Traditional sectoral distinction is aggregated to two main sectors. For details see Appendix.

⁶ Turkish Labour Legislation states that minimum working age of a person is fifteen years old. Therefore, in this investigation, individuals who are bigger and/or at the age of fifteen are taken as a sample.

endowments⁷) and treatment effects (discrimination). According to Oaxaca (1973) if there is not any discrimination, in that case the wage structure of one group and the other group will be the same.

In the literature, there is not any study concerning the issue of decomposing sectoral (namely, tradable and nontradable sectors) wage gap for Turkey. Mainly, in the literature, the Oaxaca decomposition method used to investigate gender or race wage differential and the determinants of gender wage gap for labour market. A well-known study for Turkey is made by Dayıoglu and Kasnakoglu (1997) and they use Oaxaca decomposition in order to identify the effects of the different factors in gender wage gap. It is concluded that there exists gender equality among public sector employees. Tansel (2005) also find out that the gender wage gap is explained by the differences in earnings rather than in the endowments of the education and experience variables. Ilkcaracan and Selim (2007) investigate the gender wage gap of Turkish labor market and conclude that there is gender discrimination in Turkey in favor of male workers.

There are also many international studies which use the Oaxaca decomposition method in order to investigate the wage gap however they mostly questioned the gender or race wage gap. Wage differential between tradable and nontradable sector is not investigated commonly in the literature. Nonetheless, one study close to our investigation is by El-Hamidi (2007) who focuses on the comparison of male/female workers in tradable sectors with male/female workers in non-tradable sectors. She concluded that tradable sectors have experienced proportionately higher levels of wage differences between men and women than non-tradable sectors.

2.1. Methodology

The Oaxaca decomposition reveals the separate effects of discrimination and differences in human capital characteristics to the overall wage differential. The basic idea of this decomposition procedure is that differences in the wage gap could be partially explained by the fact that these groups have different characteristics, while the unexplained part of the gap is explained by discrimination.

In order to follow the Oaxaca decomposition method, the first step is to find out the separate wage regression equations. Therefore, in this paper, the model of

⁷ These characteristics are referred to education, experience and job tenure which are introduced by Mincer (1974). Also, in many papers, authors often include job related characteristics like occupation, economic sector, firm size or location of firm, region and urban/rural distinction.

wage discrimination is basically based on Mincer's (1974) human capital theory which states that wage differences could be explained by the workers' human capital endowments whose positive impact on productivity would increase the salary. The wage regression is identified as follows:

$$\ln W = \beta_0 + \beta_1 \sum_{i=1}^k \beta_k \text{edu}_k + \beta_2 e + \beta_3 e^2 + \beta_4 j + \beta_5 \text{male} + u \quad (1)$$

where edu represents dummies for the different level of schooling, e is experience, e² is experience squared, j is job tenure, m is gender dummy for male and ln W is the natural logarithm of wages, stands for annual total salary which includes, payment of wages, bonus and social payments, at last u is random disturbance term. Education levels consist of five main subcategories: primary, high school, technical high school, college and university. Experience variable is a proxy variable that is calculated from age minus the number of years of schooling minus seven⁸.

The wage level is estimated separately for tradable and nontradable individuals in order to decompose the wage gap between these two individual groups. Thereafter, the results of the regression estimations are used in application of the Oaxaca decomposition method. Oaxaca (1973) defines the wage differentiation as follows:

$$(\ln \bar{w}^T - \ln \bar{w}^N) = \sum_{i=1}^n \beta_i^T (\bar{X}_i^T - \bar{X}_i^N) + \sum_{i=1}^n \bar{X}_i^N (\beta_i^T - \beta_i^N) \quad (2)$$

Where superscripts T and N refer to the sectoral (tradable and nontradable, respectively), $\ln \bar{w}^T$ and $\ln \bar{w}^N$ stand for the average natural logarithms of annual wages, β_i^T and β_i^N are vectors of the coefficients of separate regressions and \bar{X}_i^T and \bar{X}_i^N refer to matrixes of the average workers' characteristics for tradable and nontradable individuals, respectively. The right hand side of the equation account for the explained part which represents the portion of the wage differential due to human capital endowment differences in tradable and nontradable individuals. The second term of the right hand side of the equation represents the unexplained part which account for the portion of the wage differential that is not explained by observable sectoral differences in characteristics. This term generally expressed as the portion of the discrimination because it result from the differences in the two groups' coefficients, in other words, this term shows the differences in the rates of return of tradable and nontradable individuals.

⁸ Experience squared variable is included in wage regression in order to see the possible non-linear relationship between experience and salary.

2.2 Empirical Results

Table 1 indicates descriptive statistical reports for the overall sample and also the tradable and nontradable individuals as well, for the each investigated year.

(Table 1 about here)

As seen from Table 1, individual sample sizes in the surveys are slightly equal to each other except the year 2003. This equality makes the estimations more comparable over time. Notwithstanding, the size of the nontradable individuals is higher than the size of tradable individuals over time. This situation points out that the share of the nontradable individuals in overall economic activities is remarkable. This result also gives an evidence about the fact that nontradable sector absorb more labor than tradable sector due to its low-skilled labour requirement. Therefore, these results support our intuition about building up a theoretical ground without the nontradable sector would yield some problems.

Mean salary of tradable and nontradable individuals reveal that, for all years, average wage level of nontradable individuals is higher than the ones. For instance, tradable to nontradable wage ratio is 90,9%, 87,1%, 85,2%, 84,2% and 85% for the years, respectively. Although average wage level is in favor of nontradable individuals wage gap between tradable and nontradable individuals is not wide.

Human capital variables in Table 1 show that, nontradable sector have higher average years of experience and job tenure (20,51 and 7,77 for the year 2002 and 20,77 and 8,00 for the year 2006) on average of the ones in tradable sector for all years (18,37 and 5,82 for the year 2002 and 18,43 and 5,53 for the year 2006). Male worker ratio of tradable sector is also lower than the nontradable sector (77,84% and 82,69% for the year 2002 and 78,20% and 80,30% for the year 2006). Besides, the results reveal that the female workers for both sectors are very low compared to the male workers. This situation leads to a fact of limited accessibility of the females to work for Turkey. Women's mostly get responsibilities of taking household work rather than working at a job⁹. Percentage distribution of education variable for tradable and nontradable individuals shows that, nontradable individuals get higher education than the ones in tradable. Tradable individuals mostly have a primary level of schooling or illiterate (62,1%, 57,75%, 57,9%, 62,76% and 58,27% for all years, respectively) whereas nontradable individuals have higher education level¹⁰.

⁹ Low ratio of female workers for overall sample of Turkey is basically result from getting limited education and some discriminatory treatments in favor of males. Especially, at the eastern part of Turkey, girls could not reach sufficient education only because of their gender which is caused from some religious belief and uneducated families.

¹⁰ Lower average education level of tradable individuals partly because of the large share of agricultural sector in tradable sector. For Turkey, although agricultural production declining over the years, the

This situation also states that, nontradable individuals have higher level of college or university degree than the tradable individuals.

Wage Regressions

Table 2 and Table 3 represent the wage regression results of overall labour earnings and tradable and nontradable sector labour earnings, respectively.

(Table 2 about here)

From Table 2 and 3, it is seen that male dummy is statistically significant for all wage regression except the nontradable wage regression for the year of 2002. All other independent variables are statistically significant for all years. As observed from Table 2, male dummy variable coefficient is 0,282, 0,394, 0,486 and 0,475 for overall sample over the time, respectively. This results shows that male workers earn 32,58%, 48,29%, 53,88% and 60,80% more than women over time, respectively¹¹. This result indicates that being a man will bring higher wage earning than a woman who has the same level of experience, job tenure and education.

Human capital variables of experience and job tenure have positive effect on average wage level. Additional one year experience will bring an individual 7,79%, 7,36%, 7,36%, 8,83% 8,00% increase in wage level whereas additional one year job tenure will bring 3,98%, 3,15%, 2,74%, 2,94% and 3,56% increase over the time, for overall sample. This result is convenient with the expectations because as the workers gain more experience on one job, they will absolutely get more salary than previous situation.

Education variable also has positive effect on average wage level for all subcategories. Primary schooling return to average wage level is 42,62%, 50,98%, 75,42%, 53,57%, 63,56% over time, respectively. For overall sample, primary level brings an advantage to the workers as compared to illiterate ones. The same is true for all other subcategories. The most important return to average wage level is from university level dummy (274,34%, 267,66%, 323,76%, 293,14% and 280,00% over time)¹².

agricultural sector still remains as the most important sectors in terms of employing almost 35 % of total employment in the Turkish economy and mostly, uneducated or low education level of individuals are working at agricultural production (Guncavdi and Bayar, 2005).

¹¹ Calculation procedure of the percentage change: The regression is a semi-logarithmic wage regression, as logarithmic transformation of wage levels are taken as a dependent variable. In order to make comparison, antilogarithmic function of the coefficients is calculated and one is subtract from this number and this result gives the percentage change in the dependent variable.

¹² As human capital characteristics (education, job tenure, experience) are indicators of worker's productivity, in theory it is expected that, an increase in these characteristics would increase the average wage level. Therefore, these results are consistent with the expectations.

Table 3 represents separate wage regression results of tradable and nontradable individuals.

(Table 3 about here)

When tradable and nontradable wage workers are compared for gender differential, results show that in tradable sector, male dummy variable is statistically significant expect the year 2002 for nontradable individuals and male workers get higher returns 91,17%, 89,84%, 106,7%, 112,8% and 114,3% when it is compared to the ones in nontradable sector, 7,03%¹³, 27,00%, 24,98%, 35,12% and 37,7% over time, respectively. This result reveals that not only being a male makes a difference in terms of getting a high salary in both sectors but also male workers at tradable sectors benefit more than the ones in nontradable sectors.

Schooling variables are all statistically significant and positive and it is seen that for all years, return to education variable is greater for tradable individuals. Primary schooling brings 70,57% increase in salary for tradable individuals, whereas it only brings 26,36% increase compared to illiterate workers for nontradable individuals for the year 2002. For 2006, the increase in salary rise to 93,6% for tradable individuals and 37,16% for nontradable individuals. Besides, the biggest contribution to the salary is from college and university graduates for both tradable (%228,05 and %386,95% for the years 2002 and 2006, respectively) and nontradable individuals (%239,06 and 203,74% for the years 2002 and 2006, respectively).

The return of experience¹⁴ for tradable individuals is higher than for nontradable individuals expect the years 2002 and 2003. For instance, additional one year brings 7,36%, 7,46%, %7,25%, 9,31% and 8,76% for tradable individuals and 8,00%, 7,36%, 7,25%, 7,68% and 7,68% for nontradable ones, over time respectively. This result is also consistent with the expectations because the higher requirement of skilled worker in tradable sector than the nontradable ones would give more importance on experience for tradable sector. Therefore, more experience would contribute to salary for tradable individuals more than the nontradable ones.

Besides, job tenure variable is higher for tradable individuals expect the year of 2003 and 2004. The return of additional one year of job tenure to salary is 4,92%, 3,98%, 2,02%, 2,22% and 3,98% for tradable individuals and 3,77%, 2,84%, 3,25%, 3,46% and 3,67% for nontradable individuals over time. This result indicates that working at the same workplace is more meaningful for the tradable individuals for

¹³ It should be reminded that for the year 2002, male dummy variable is not statistically significant.

¹⁴ As it is said before, experience variable is calculated by the formula of $expiience = age - 7 - schooling$

increasing productivity on their job whereas for nontradable individuals it is not important as tradable ones. As tradable sector require high-level of skilled worker, continuous working at the same workplace is relatively more meaningful than nontradable sector.

The Oaxaca Decomposition

We examine the sectoral wage gap and the decomposition of wage differential for Turkey over a period of 2002 to 2006. We employ the Oaxaca decomposition method in order to decompose the wage differential into various components. The Oaxaca decomposition results are given in Table 4. Columns of the table report the findings of the each year. Table 4 consists of three major block. The first block represents the effect of human capital differences on total wage gap whereas second block reveals the results of the effect of sectoral discrimination on total wage gap. At last, third block of the table shows the total effect of the various components on wage differential.

(Table 4 about here)

For the year 2002, the mean of the log wage levels is 21,42 for nontradable individuals and 21,26 for tradable individuals, yielding a wage gap of 0.16 log points. This result states that average nontradable individuals wage level 18% higher than the one in tradable individuals. Decomposing the wage gap into differences in the human capital characteristics (explained difference) and sectoral discrimination (unexplained difference)¹⁵, results that human capital differences is responsible for increase of 0,300 log points of wage differential whereas unexplained component is responsible for decrease of 0,08 log points of wage differential. This indicates that differences in endowments account for about 182% of wage gap while the sectoral discrimination account for 48% of wage gap in negative terms¹⁶. It is observed from these results that differences in human capital characteristics of workers have positive effect on sectoral wage differential. It is quite interesting that sectoral discrimination has reducing effect on wage differential. This brings us a conclusion

¹⁵ In the literature, unexplained part of the Oaxaca decomposition mostly interpreted as the difference that cause by discrimination between two groups (in our investigation these two groups are tradable and nontradable sectors). However, Commor (1988) pointed out that the unexplained part also includes the errors which are caused by the omitted variables (unobserved characteristics). Actually, while the results of the Oaxaca decomposition are explained, this situation has to be kept into mind. In order to get only the effect of sectoral discrimination, all of the components which determine the wage levels have to included (in some investigations limitations of the dataset avoid this situation).

¹⁶ There is also another component called interaction component. This term measures the simultaneous effect of differences in endowments (explained part) and discrimination (unexplained part or coefficients). This component also has a reducing effect on wage differential. It is accounted for reducing -%33 of total wage gap.

about an important fact that sectoral discrimination provides a wage advantage for tradable individuals. As a result, it could be said that wage differentiation between tradable and nontradable individuals is mainly result from human capital endowments not from sectoral discrimination¹⁷.

The same result is true for the year 2003. The wage gap between tradable and nontradable individuals is 0,264 log points. Therefore, the average wage level of nontradable individuals is 30% higher than the one of tradable individuals. The difference in human capital endowment widen the wage gap about 133% while sectoral discrimination closes the wage gap 5%. Similarly, for this year, sectoral discrimination has negative effect on wage gap and this factor provides a wage advantage for tradable sector¹⁸.

For the years of 2004, 2005 and 2006 the results yields a different situation. Both difference in human capital endowment and sectoral discrimination has positive effect on wage gap. The wage differential between two sectors is 0,31, 0,304 and 0,301 log points respectively. Average wage level of nontradable individuals, again, higher than the one of tradable individuals (36%, 35,5% and 35%, respectively). While 103%, 107%, 110% of the wage differential is due to human capital endowment, 7%, 10%, 1% of differential is due to sectoral discrimination, respectively¹⁹. They both helps to widening the wage differential between tradable and nontradable individuals²⁰.

Another striking point of the Oaxaca decomposition method is the fact of all results show that there is a huge dominance of human capital endowment on widening the wage gap. The wage differential between tradable and nontradable individuals is mainly caused by the differences of human capital endowment. Their role on wage differentiation is much more higher than the sectoral discrimination.

In order to investigate the Oaxaca decomposition results more detail, the contribution of each component to wage gap is given at the first and second block of the Table 4. The education variable shows a quite interesting results for all years. While the distribution of education yields a widening on wage gap (0,163, 0,227, 0,207, 0,234 and 0,182 log points for all years, respectively), the return of discrimination closes the wage gap (-0,325, -0,201, -0,269, -0,200 and -0,366 log points for all years, respectively). The negative effect of discrimination on wage gap

¹⁷ The dominance of the human capital endowment could not be covered with sectoral discrimination and therefore there exists are wage gap between tradable and nontradable individuals infavor of nontradable ones.

¹⁸ Interaction term portion on wage gap of the year is 2003 is %28. It is negative and therefore, helps to closing wage gap.

¹⁹ Similar to the results of the years 2002 and 2003, interaction term is responsible for 10%, 17%, 11% of wage differential, negatively, which helps to closing the wage gap.

²⁰ This conclusion is consistent with our statement that the fact of government's income policies support on nontradable sector, by providing them a wage level beyond their productivity.

points out that additional years of education is an advantage for tradable individuals.

The experience variable is one of remarkable component of the wage gap. Its effect on the wage gap is mainly due to the sectoral discrimination (0,085, 0,078 and 0,071 points for the years 2002, 2003 and 2004, respectively), but the tradable-nontradable individuals differences in the average level of experience (0,005, 0,0014, 0,021 points for the years 2002, 2003 and 2004, respectively) is also play a role in the wage gap. Besides, job tenure variable also has a remarkable role on the wage gap. The results of the job tenure variable indicates that tradable-nontradable difference in the average levels of working at the same workplace (0,094, 0,085, 0,042, 0,042, 0,097 for all years, respectively) widen the wage gap. However, differential return (sectoral discrimination) of job tenure helps to close the wage gap (-0,061, -0,063, 0,082, 0,072 and 0,020 for all years, respectively), which means that it gives an advantage to tradable sector for closing the wage gap.

The male dummy variable has opposite effect on wage gap. While being a male widen the wage gap (0,038, 0,026, 0,049, 0,021 and 0,016 for all years, respectively), tradable male individuals get higher returns (-0,452, -0,310, -0,369, -0,346 and -0,349) which result in closing it.

3. CONCLUSION

The purpose of this paper was to examine the sectoral wage differentials among tradable and nontradable sectors in Turkish economy. The main objective was to determine the sources of the observed gap and to measure their relative importance. In order to reveal the effects of human capital endowment and/or sectoral discrimination on the overall wage gap the Oaxaca decomposition method is presented.

From separate wage regression results indicate that university dummy variable is the most important variable that contributes the average wage level to increase for both tradable and nontradable individuals. Besides, experience variable also have a crucial role on earning higher salary for both two groups. In addition, additional one year working at the same workplace has positive effect on average wage level for both two groups of individuals.

It is shown that there exists a wage differentiation between tradable and nontradable individuals over time. The wage gap between two groups of individuals is in favor of nontradable ones for the whole sample years. Although, wage gap is not

so widen between two groups individuals, average wage level of nontradable individuals is higher than the one for tradable individuals.

The main findings of this investigation reveal that differences in human capital endowment between two group of individuals in Turkey has the substantial portion of the wage gap whereas sectoral discrimination account for only a small part of the wage differential for all years. These results show that the productive and job related characteristics especially experience and job tenure variables have a crucial role on the wage gap.

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Table 1: Descriptive Statistics

	2002	2003	2004	2005	2006
Total					
Sample Size	40675	107614	35388	35498	34939
Labour Earnings Size	7937	16645	5875	6193	6473
Mean salary (in YTL)	3430	5370	6170	6686,9	7845,5
Women	2740	4320	4840	5060,1	5825,8
Men	3590	5640	6540	7147,3	8361,9
Logarithmic mean salary	21,37	22,02	22,14	8,39	8,54
Experience	19,87	20,08	20,41	20,01	20,03
Job Tenure	7,18	7,64	7,76	7,20	7,22
Male (%)	81,93	79,9	77,94	77,94	79,64
Education (%)					
Illiterate	6,35	4,69	5,75	5,94	5,41
Primary	44,54	40,62	39,99	43	42,23
High School	28,18	32,23	30,3	28,44	26,53
Technical High School	8,1	6,73	8,17	7,53	9,89
College	3,92	3,94	4,46	4,49	4,93
University	8,91	11,78	11,34	10,61	11,02
Tradable Individuals					
Sample Size	5135	17567	5488	5727	5400
Labour Earnings Size	2383	5166	1929	2079	2046
Mean salary (in YTL)	3210	4880	5520	5967,4	6999,6
Women	1740	2780	3270	3174,6	3567,7
Men	3630	5500	6340	6844,8	7956,3
Logarithmic mean salary	21,26	21,83	21,94	8,19	8,33
Experience	18,37	19,11	19,58	19,08	18,43
Job Tenure	5,82	6,12	6,31	5,96	5,53
Male (%)	77,84	77,08	73,41	76,09	78,20
Education (%)					
Illiterate	6,71	6,06	8,19	7,69	7,58
Primary	55,39	51,64	49,77	55,07	50,69
High School	24,12	29,27	26,91	24,82	23,9
Technical High School	9,07	7,1	8,96	7,12	12,02
College	1,43	2,01	1,97	2,02	2,64
University (College)	3,28	3,91	4,2	3,27	3,18
Nontradable Individuals					
Sample Size	35540	89957	29900	29771	29539
Labour Earnings Size	5554	11479	3946	4114	4427
Mean salary (in YTL)	3530	5600	6480	7050,5	8236,4
Women	3320	5170	5860	6138,5	6980,6
Men	3570	5700	6630	7294,7	8544,4
Logarithmic mean salary	21,42	22,10	22,25	8,50	8,63
Experience	20,51	20,51	20,82	20,48	20,77
Job Tenure	7,77	8,32	8,47	7,83	8,00
Male (%)	83,69	81,17	80,16	78,88	80,30
Education (%)					
Illiterate	6,19	4,07	4,56	5,06	4,4
Primary	39,88	35,66	35,2	36,9	38,34
High School	29,92	33,58	31,95	30,27	27,74
Technical High School	7,69	6,57	7,78	7,73	8,9
College	4,99	4,81	5,68	5,74	5,99
University	11,33	15,31	14,82	14,31	14,64

Source: Authors calculations from the data set of TurkStat for the years 2002, 2003, 2004, 2005, 2006

Table 2: Wage Regression for Overall Sample

	2002	2003	2004	2005	2006
Dependent variable: log wage					
Constant	19,519* (0,000)	19,96* (0,000)	19,93* (0,000)	6,242* (0,000)	6,295* (0,000)
Experience	0,075* (0,000)	0,071* (0,000)	0,071* (0,000)	0,080* (0,000)	0,077* (0,000)
Experience ²	-0,002* (0,000)	-0,002* (0,000)	-0,001* (0,000)	-0,002* (0,000)	-0,002* (0,000)
Job Tenure	0,039* (0,000)	0,031* (0,000)	0,027* (0,000)	0,029* (0,000)	0,035* (0,000)
Male	0,282* (0,000)	0,394* (0,000)	0,431* (0,000)	0,486* (0,000)	0,475* (0,000)
Primary	0,355* (0,000)	0,412* (0,000)	0,562* (0,000)	0,429* (0,000)	0,492* (0,000)
High School	0,788* (0,000)	0,915* (0,000)	1,077* (0,000)	0,876* (0,000)	0,937* (0,000)
Technical High School	1,001* (0,000)	1,044* (0,000)	1,206* (0,000)	1,086* (0,000)	1,100* (0,000)
College	1,320* (0,000)	1,302* (0,000)	1,444* (0,000)	1,369* (0,000)	1,335* (0,000)
University	1,678* (0,000)	1,622* (0,000)	1,720* (0,000)	1,562* (0,000)	1,687* (0,000)
Adjusted R ²	0,249	0,374	0,338	0,343	0,355
Observation	7937	16645	5875	6193	6473

Source: Authors calculations from the data set of TurkStat for the years 2002, 2003, 2004, 2005, 2006

*: statistically significant at %1 significance level.

Table 3: Wage Regression for Tradable and Nontradable Sectors

	2002	2003	2004	2005	2006
Dependent variable: log wage					
Tradable Individuals					
Constant	19,107* (0,000)	19,689* (0,000)	19,715* (0,000)	5,922* (0,000)	5,841* (0,000)
Experience	0,071* (0,000)	0,072* (0,000)	0,070* (0,000)	0,089* (0,000)	0,084* (0,000)
Experience ²	-0,002* (0,000)	-0,002* (0,000)	-0,001* (0,000)	-0,002* (0,000)	-0,002* (0,000)
Job Tenure	0,048* (0,000)	0,039* (0,000)	0,020* (0,000)	0,022* (0,000)	0,039* (0,000)
Male	0,648* (0,000)	0,641* (0,000)	0,726* (0,000)	0,755* (0,000)	0,762* (0,000)
Primary	0,534* (0,000)	0,493* (0,000)	0,659* (0,000)	0,468* (0,000)	0,661* (0,000)
High School	1,058* (0,000)	1,025* (0,000)	1,206* (0,000)	0,984* (0,000)	1,202* (0,000)
Technical High School	1,253* (0,000)	1,102* (0,000)	1,341* (0,000)	1,299* (0,000)	1,294* (0,000)
College	1,188* (0,000)	1,496* (0,000)	1,448* (0,000)	1,392* (0,000)	1,583* (0,000)
University	1,978* (0,000)	1,982* (0,000)	1,925* (0,000)	1,862* (0,000)	1,790* (0,000)
Adjusted R ²	0,285	0,379	0,3022	0,322	0,345
Observation	2383	5166	1929	2079	2046
Nontradable Individuals					
Constant	19,780* (0,000)	20,170* (0,000)	20,220* (0,000)	6,567* (0,000)	6,641* (0,000)
Experience	0,077* (0,000)	0,071* (0,000)	0,072* (0,000)	0,074* (0,000)	0,074* (0,000)
Experience ²	-0,002* (0,000)	-0,002* (0,000)	-0,001* (0,000)	-0,001* (0,000)	-0,001* (0,000)
Job Tenure	0,037* (0,000)	0,028* (0,000)	0,032* (0,000)	0,034* (0,000)	0,036* (0,000)
Male	0,068 (0,112)	0,239* (0,000)	0,223* (0,000)	0,301* (0,000)	0,315* (0,000)
Primary	0,234* (0,001)	0,311* (0,000)	0,403* (0,000)	0,326* (0,000)	0,316* (0,000)
High School	0,628* (0,000)	0,795* (0,000)	0,882* (0,000)	0,710* (0,000)	0,704* (0,000)
Technical High School	0,804* (0,000)	0,925* (0,000)	0,980* (0,000)	0,844* (0,000)	0,879* (0,000)
College	1,221* (0,000)	1,157* (0,000)	1,249* (0,000)	1,180* (0,000)	1,111* (0,000)
University	1,515* (0,000)	1,469* (0,000)	1,485* (0,000)	1,343* (0,000)	1,473* (0,000)
Adjusted R ²	0,244	0,372	0,364	0,357	0,359
Observation	5554	11479	3946	4114	4427

Source: Authors calculations from the data set of TurkStat for the years 2002, 2003, 2004, 2005, 2006

*: statistically significant at %1 significance level.

Table 4: Oaxaca Decomposition of wage differentiation

	2002	2003	2004	2005	2006
<i>Explained Difference</i>					
Experience	0,005	0,014	0,021	0,029	0,036
Job Tenure	0,094	0,085	0,042	0,042	0,097
Male	0,038	0,026	0,049	0,021	0,016
Education	0,163	0,227	0,207	0,234	0,182
Subtotal Explained Difference	0,300	0,352	0,319	0,326	0,331
<i>Unexplained Difference</i>					
Experience	0,085	0,078	0,071	-0,142	-0,063
Job Tenure	-0,061	-0,063	0,082	0,072	-0,020
Male	-0,452	-0,310	-0,369	-0,346	-0,349
Education	-0,325	-0,201	-0,269	-0,200	-0,366
Constant Difference	0,673	0,484	0,506	0,645	0,800
Subtotal Unexplained Difference	-0,080	-0,012	0,021	0,029	0,002
<i>Total Difference</i>					
Experience	0,090	0,092	0,092	-0,113	-0,027
Job Tenure	0,033	0,022	0,124	0,114	0,077
Male	-0,414	-0,284	-0,320	-0,325	-0,333
Education	-0,162	0,026	-0,062	0,034	-0,184
Constant Difference	0,673	0,484	0,506	0,645	0,800
Subtotal Difference	0,220	0,340	0,340	0,355	0,333
<i>Interaction</i>	-0,055	-0,076	-0,030	-0,051	-0,032
Total Difference	0,165	0,264	0,310	0,304	0,301

Source: Authors calculations from the data set of TurkStat for the years 2002, 2003, 2004, 2005, 2006

Appendix

Traditional Sector Distinction	
Tradable sectors	1. Agriculture, hunting and forestry
	2. Fishing
	3. Mining and quarrying
	4. Manufacturing
Nontradable Sectors	5. Electricity, gas and water supply
	6. Construction
	7. Wholesale and retail trade
	8. Hotels and Restaurants
	9. Transport, storage and communication
	10. Financial intermediation activities
	11. Real estate, renting and business activities
	12. Public administration and defense; compulsory social security
	13. Education
	14. Health and social work
	15. Other community, social and personnel service activities
	16. Private household with employed persons
	17. International organizations and agencies