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The Effect of Trade Liberalization on Industrial Segregation and Wage Determination: Evidence from Egypt

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Abstract

This study evaluates the impact of trade liberalization and reductions in trade barriers on gender wage inequality in Egypt by using recent Egypt Labor Market Panel Survey (ELMPS 06) and comparing two years representing early stage (1998) and advanced stage in trade liberalization (2006). The analysis focused on private sector workers, and compared workers in tradable sectors (sectors in direct competition with the foreign trade) with workers in non-tradable sectors (not in direct competition with foreign goods). Not only wage discrimination was observed regardless of sector of employment, but also deterioration was detected. Results also indicate that tradable sectors have experienced proportionately higher levels of wage differences between men and women than non-tradable sectors.

I- Introduction:

The 1990s were a period of accelerated structural adjustment and trade liberalization in Egypt. Despite considerable debate regarding these reforms, little empirical work has investigated their wage effects. This paper is among the first attempts to fill this gap through an econometric examination of the link between trade liberalization and industry wage premia.

There is a growing body of evidence relating trade liberalization to economic growth. In fact, one of the major challenges of globalization is the distributive consequences of liberalization of trade. On the one hand, trade liberalization changes the conditions of industry, wages, profits, and alters income distribution. On the other hand, removing trade barriers provides incentives to employ the services of those resources in relative abundance (i.e., labor) in more productive outlets.

The link between inequity and free trade has been developed in Becker's theory of "employer taste for discrimination" (1957). The theory posits that in a noncompetitive market, excess profits allow employers to "purchase" or practice discrimination. Therefore, the least discriminatory firm will hire cheaper, unskilled labor. Free trade brings in competitiveness and exposes firms to a wider market. In this environment, Becker predicts market competition to force out discriminating employers, and increased competition to cut costs, lowers discrimination, and eventually to greater wage equality. One the other hand, Berik *et al.* (2004), suggest an increase in trade can in fact increase gender wage premia in regions where female workers may have lower bargaining power and /or segregated into lower-paying, lower-status jobs.

As wages are considered one of the most important determinants of the economic well being for women, economists have long been interested at researching causes of gendered labor market outcomes, in particular gender wage differentials. Such interest has been partly due to the fact that gender wage inequality induces labor market rigidity, efficiency losses and an inept use of factors of production. Various theories, not necessarily mutually exclusive, resulted out of this debate. Traditionally, the human capital theory (HC) has been embraced to link gender wage differences to differences in human capital characteristics. HC theory suggests that wage gap is due to the fact that women, on average, have lower education, experience, and training than men. These differences result in declined productivity and ultimately, lower wages. Discrimination theorists presume that mechanisms in the labor market are the main source of earnings differentials. They argue that gender wage differences are a direct result of unequal treatment of equal workers of the opposite sex. Advocates of segregation theory propose that gender wage differentials are an outcome of occupational gender segregation. It is the effect of men and women disproportionately employed in different occupations/sectors, with women dominated occupations/sectors typically earning less than men dominated occupations/sectors.

According to Becker, it is expected to see industries or sectors which experienced larger reductions in trade barriers observe greater decline in the wage differentials between men

and women, and lower discrimination. In this study, I use recent developments in trade policies in Egypt since mid 1990s to test whether greater competition and participation in the global market has affected wages of men and women differently; the degree to which women have entered traditionally "male" dominated activities and vice versa; the role of sectoral segregation in explaining the overall gender pay gaps (i.e. how much wage differences is attributed to sectoral crowding of one sex, and how much is due to productivity related factors within sectors). Some of the key questions to be answered in this study are: 1- Does trade liberalization affect sectors and industries that intensively employ one gender or the other differently than it affects other sectors? 2- To what extent tradable sectors, which are directly affected by outside competition, have contributed to a decline (or rise) in wage inequality or discrimination in general.

The rest of this paper is organized as follows. Section II introduces trade liberalization-wage interconnection; an overview of trade reforms in Egypt, and a review of the literature on trade liberalization wages, and gender inequality. Section III overviews the Egyptian economy. Section IV outlines data source, the estimation methodology and wage decomposition model. The main findings of the analysis are reported in Section V. Section VI concludes by summarizing the results and outlining some policy implications.

II. Trade Reforms in Egypt, and Review of the Literature:

According to Dutta (2007), there are at least three outlets through which trade liberalization or protection policies can affect the industrial/sectoral wage structure: 1) A shock to demand on labor, by which the effect of a reduction in industry protection results in a fall in relative wage level in that industry (assuming imperfect labor mobility or rigidity of labor movement between industries). 2) A change in the product market structure; by which a more competitive market reduces distortion and anomaly of the imperfect competition by reducing rents and ultimately relative wages. As Rodrik (1997) argued “trade increases the own price elasticity of labor demand in absolute terms and thus erodes the bargaining power of labor vis-à-vis capital in the sharing of industry rents “. 3) And a change in industry productivity, as recent evidence suggested a positive link between free trade and productivity (Das, 2002).

Egypt became a member of the World Trade Organization (WTO) in 1995 and has pledged to be in full compliance with its trade commitments to the WTO by 2005. Egypt has made progress in liberalizing its tariff structure. In 1998 Egypt reduced the maximum tariff rate for most imports from a high of 50 percent to 40 percent. To further open the Egyptian economy, the new cabinet of 2004 further reduced average unweighted tariff rate from 27% to 20%. Other measure taken by the new cabinet were to: further reduce the number of tariff rate categories from 27 to 12 and eliminate all tariff surcharges (Table A-1, in the Appendix). However, Egypt's tariffs remain relatively high, especially when compared with those of other developing countries with large internal markets and diversified industrial economies. According to the World Bank, these adjustments have improved Egypt’s ranking from the third of countries with the highest weighted average tariff rates (similar to Zambia, Romania, and Venezuela) to being in the middle (as Argentina, Bolivia, and Senegal).

Since mid 1990s, Egypt has signed several multi and unilateral trade agreements: Egypt belongs to the Common Market for Eastern and Southern Africa (COMESA) and the Greater Arab Free Trade Area (GAFTA). It has also signed the Agadir Accord with Tunisia, Morocco and Jordan which liberalized trade among the four countries on January 2005. An association agreement with the EU came into force on January 2004. Egypt also has special relations with the United States under the Trade and Investment Framework Agreement (TIFA) and recently began negotiating with other bilateral partners such as Turkey and Russia. Fearing a crisis in the textile industry after the Multifibre Arrangement quota system ended in January 2005, the government signed other agreements, involving the country's recently-established qualified industrial zones (QIZs). Under the QIZ agreement, products produced in free trade industrial zones could be exported duty- and quota-free to the United States as long as they contain at least 11.7% of raw material from Israel. At the end of 2005, nearly 400 firms were licensed for the QIZs and 250 were already in operation, especially in the textile sector. (African Development Bank, Egypt: Country Strategy Report, multiple years).

While the literature documents positive impact of trade liberalization on wages of the disadvantaged in developed countries, it does provide mixed evidence in developing countries. Gaston and Trefler (1994) were one of the pioneers to link trade and wage discrimination in the U.S. manufacturing sector. Their findings proved a significant negative link between tariffs and wage premia. Recent studies on the effect of trade reforms on gender wage gaps suggest no generalization, and evaluates each country according to its state of development and characteristics. Jean and Nicoletti's (2002) reported positive correlation between tariff protection and industry wage premia across 12 OECD countries.

These results were not robust in developing countries. Artecona and Cunningham (2002), and Reilly and Dutta (2005) found no significant effect of trade liberalization on gender pay gaps in Mexico and India respectively, whereas Kumar and Mishra (2006) found increased gender based wage premiums in the Indian manufacturing sector were attributed to trade reforms. Studies on Mexico (Feliciano, 2001); the Philippines (Hasan and Chen, 2003); and Brazil (Pavcnik et al; 2004), found no significant effect. Berik et al (2003) concluded negative impact in Taiwan and Korea, in addition to a loss of female employment and increased wage discrimination. A cross country study by Oostendorp (2004) suggested narrowing gender wage gap within occupations in most cases, with the exception of high skill occupations in poorer countries. A result that was confirmed by Jacob (2007) who conjointly found reduced discrimination in industries that experienced liberalization as well.

Hoekman and Winters (2005) surveyed the literature on trade, employment and wages and came out with some stylized facts: trade and trade reforms can only explain a small fraction of the general increase in wage inequality observed in both developed and developing countries; the magnitude of the effects of greater on wages and inequality are small in both developed and developing countries.

The literature on women's employment recognized the increased share of women in export oriented, labor intensive, industries such as textile and clothing (Joekes, 1987, 1995 and Elson, 1995). Labor-intensive firms are also more likely to hire women because

they can handle women's absences related to maternity and child care well than capital-intensive ones, in addition to being more flexible, cheaper and compliant (Standing, 1989). Recent work, (El-Hamidi and Said, 2007), using household data for years 2000 through 2004 (CAPMAS-LFSS), has focused on gender pay differences and occupational segregation in the private sector. The study found wage discrimination is evident in professionals as well as white and blue collar jobs, and that crowding of women in certain occupations is responsible for depressed wages of women.

III. Overview of the Egyptian Economy 1998-2006

The Egyptian economy embarked on structural adjustment policies by early 1990s and hence a transition towards a private sector-led market economy and largely enjoyed macroeconomic stability.

Between 1998 and 2006, the industrial sector has on average contributed between 25%-30% of real GDP. Overall, the industrial sector grew on average by 10% annually during the period 2001/02 - 2005/06. Whereas services accounted for an average of 50%-60% of real GDP. Because of higher world oil prices and increased natural gas production, oil and gas accounted for 14.6% of GDP in 2005/06 and earned $5.3 billion in export revenue. Industry accounted for 18.2% of GDP in 2005/06, led by agro-food (sugar and beverages), textiles/clothing (cotton and wool yarn) and construction materials. Non-petroleum exports have increased from $2.3 billion in 2001 to $4.2 billion in 2005. In recent years, industrial production in the once-dominant public sector has declined and private-sector production has increased sharply, in response to privatisation and liberalisation initiatives.
According to the foreign trade and industry ministry, by 2004/05 the private sector accounted for some 86% of manufacturing output. Construction was also booming, thanks to domestic demand for infrastructure and housing to accommodate the increased numbers of Iraqi refugees. The services sector contributed 47.4% of GDP in 2005/06. Income from the Suez Canal increased 16% in 2005/06 due to increased world trade, especially with India and China (40% of the canal's revenue comes from ships trading with Southeast Asia), and a 35% rise in Panama Canal charges, which caused commercial traffic to reroute through Suez. Charges for use of the canal were increased 3% in July 2005. Agriculture's share of GDP was around 15% in 2005/06 and this share has been fairly constant since 1999/00. (African Development Bank, Egypt: Country Strategy Report, multiple years).

Although population growth rate modestly dropped from 2.1% in 2000 to 1.9% in 2004[1], and after years of positive GDP growth from 1993 to 2000, Egypt experienced repeated drop in its growth of GDP. According to the IMF[2], the growth of real GDP dropped by 3.8% in 2001, by 8.3% in 2002, by 7% in 2003, and declined by another of 5.3% in 2004. By 2005, there was a turning point to a positive growth of 19% and by another 12% in

[1] (African Development Bank, 2005)
[2] IMF, World Economic Outlook, 2007

2006. Among factors contributing to the change of direction in GDP growth is the exchange rate policy. In 2004, the Egyptian economy was driven by export revenues. The 25% depreciation on the Egyptian pound against the US dollar following the introduction of partial floating exchange rate benefited exports, and resulted in a current account surplus of nearly $3.7 billion at the end of 2003/2004 (IMF, 2007). The depreciation of the Egyptian pound against the dollar, though aided exports levels and the value of the GDP at large, it inflicted a huge burden on the average worker. The depreciation contributed to augmented inflation. Between 2002 and 2003, the CPI grew by 22%, and by 197% between 2003 and 2004. Whereas some economists believe that the Egyptian CPI is heavily weighted by subsidized commodities and price controls and as such, is not a good measure of inflation, the WPI (wholesale price index)-- a less distorted measure-- showed an alarming inflation rate of 10% in 2003 and 22% in 2004 (IMF, 2007). The private sector has been the new engine of growth in the economy. The private sector accounted for 70% of the increased investment from E£12.7 billion in 2004/2005 to E£16.4 billion in 2005/2006 (Euromonitor International, 2007).

By 2006, the labor force was estimated at 22.34 million. It is dominated by men who represent 78% and women making-up the remaining 22%. The labor market is highly segmented, with the government remaining a major source of non-agricultural employment and the informal sector continues to harbor low-productivity and low-skilled labor, especially women. A distinctive feature of the Egyptian labor market has been the mismatch between the skills needed by the labor market and what the educational system is producing. The growth of the economy though far has failed to create sufficient jobs to match the rapid increase in the labor force of 2.7% per year. With about 11% of the labor force unemployed in 2006 and job creation not keeping pace with population and labor force expansion, the problem is intensified. Women indeed are the worst affected with downsizing, privatization, where their unemployment rate estimated at 25% compared to 6.9% for men.

IV. Data Source and Methodology:

This study addresses the question of whether increasing competitive forces from Egypt's trade liberalization policies has affected the wages of male and female workers differently, by looking at two points of time: a period of start of relaxing trade protection policies, 1998 and a period after significant strides towards global integration, 2006. As the economy is gaining momentum in privatization efforts, the focus of this paper is one the effects on private sector workers.

The empirical analysis is based on the recent Egypt Labor Market Panel Survey (ELMPS 06), a follow-up survey to the Egypt Labor Market Survey of 1998 (ELMS 98) that was carried out by the Economic Research Forum (ERF) in cooperation with CAPMAS. ELMS 1998 was carried out on a nationally-representative sample of 4,816 households. The ELMPS 2006 sample consists of a total of 8,349 households[3]. The data provide

[3] For more details, see Barsoum, G. 2006. Egypt Labor Market Panel Survey 2006, Final Report. The Population Council, Cairo,. Egypt.

information on monthly earnings, worker characteristics e.g., age, education, gender, marital status, occupation, industry and sector of employment as well as region of residence. The working sample is restricted to private sector workers, between the ages of 15 and 65, who report positive monthly earnings. Hourly real wages are calculated as the sum of wages earned in the reference month from primary jobs, adjusted for average number of work days per month and average hours per day. For comparability purposes, wages of 1998 are inflated to 2006 Egyptian pounds using the consumer price index (inflation factor is 1.43 from 1998 to 2006).

In the absence of hard data on which goods/services are internationally traded, and which goods/services are consumed locally, identifying the basis by which sectors are regarded as tradable and which are non-tradable is fairly subjective. For example, although tourism is consumed domestically, it is highly correlated with trade liberalization, therefore I opted to classify tourism sector as a tradable sector. On the other hand, services is recognized as a non-tradable sector and therefore unlikely to be traded; construction as well are attached physically to some part of the local economy, so it would not be traded. (see Heston et al (1995) for a complete description).

Based on economic sector of employment, workers are divided into two categories: (1) workers in tradable sectors, that are in direct competition with foreign goods, such as manufacturing and tourism; (2) workers in non-tradable sectors, which are not in direct competition with foreign goods, such as construction, electricity, water, finance, transportation, wholesale and trade[4], finance, real estate, education, health and social work). Econometric analysis is limited to both categories, but workers in agriculture, fishing and mining are included in general descriptive statistics.

The model underlying employment segregation and gender pay differences is based on the human capital theory which suggests that pay differences can be explained by differences in workers' endowments of 'human capital': investments in education, training and work experience which tend to increase pay because of their positive impact on productivity. Using the model of human capital earnings function introduced by Mincer (1974), the wage determination equation is identified as follows:

$$\text{Ln}W = \beta_0 + \sum\beta_k \text{Educ}_{ik} + \beta_2 \text{EXP} + \beta_3 \text{EXP}^2 + u \qquad (1)$$

where Educ represents dummies for different levels of education, EXP is experience in years, EXP^2 is experience squared, and u is a random disturbance term. The specification is shown logarithmically in order to interpret β as the rate of returns to schooling.

To adjust the coefficients to make them nationally representative, the regressions use sample weights for the relevant years to correct for the fact that the proportion of individuals and households in each sample differs from the proportion in the true population.

[4] I realize wholesale and trade may be argued as a tradable sector. Another test is needed, along with sufficient data, to determine if the sector counts as as tradable or non-tradable.

Following Mincer (1974), I use levels of education and years of experience *(EXP)* as the main explanatory variables. Levels of education are captured by six dummy variables: Illiterate (base), read and write, primary, middle, secondary and university. Regional differences are captured by five dummies as follows: Metropolitan, lower urban, upper urban, lower rural, upper rural. Experience variables are included in the model since workers with more years of job experience are likely to earn more. (Higher experience is often associated with higher skills and higher productivity.) A firm is likely to use higher wages to induce experienced workers to stay on in their jobs, as the cost of training new workers could be very expensive. The experience squared variable is included to capture the possibility of a non-linear relationship between experience and earnings. A positive sign for experience variable is expected for the reason that working experience is likely to contribute to enhancement of individual's human capital, and negative coefficient of experience square as marginal returns from experience tend to decline over the lifetime.

In this regard, it is important to keep in mind that the wage equation is built on a number of limiting assumptions. For instance, it assumes that workers have equal abilities and confront equal opportunities. Second, there is the problem of "ability" and the associated difficulty of measuring the quality of education. Human capital theory suggests that ability is likely to be positively correlated with schooling. Therefore, neglecting the ability factor from the regression equation may very well result in upward bias in the estimated returns to schooling. As a result, and because the survey data does not include variables that could be used as a proxy of ability, this problem is ignored in the estimations. A large portion of wage differences that cannot be explained by differences in human capital measured by educational attainment and experience highlights the importance of other unobservables such as firm size or firm profitability. A high paying industry (i.e. finance) is high paying because it attracts the most skilled and simply because it pays a premium to its employees. Other high paying industries (i.e. oil and gas) offer high wages merely because the entire industry pays above average wages. Wage equations also disregard direct costs of schooling and overlooks earnings while at school. Besides, it assumes a fixed yearly return of schooling.

A further complexity of the human capital model is that wage equation assumes that education is assigned randomly across the population. As a matter of fact, education is endogenous and estimating wage- education relationship may result in upward or downward bias, depending on how workers form their education preferences. This is significant particularly in rural regions where educating women is considered secondary to that of men.

Since individual and household backgrounds may influence selection into wage employment versus non-wage employment, the Mincerian earnings equations may produce biased estimated because of selectivity bias. Following the literature in labor economics, and to account for bias resulting from observed wages, selection bias issue is addressed by using the popular framework of Heckman's (1979) as two equation selection model is estimated a prior. First the participation equation is estimated through a probit model where individual and household characteristics (i.e. age, region of residence, levels of education, marital status, the presence of children below the age of six, and the size of the household) affect the selection into wage employment (regular or casual) versus non-wage employment (self-employed, unemployed, or out of the labor

force). From the participation equation, a selection variable (the inverse Mills ratio term) is created, which is used in the second step, as an additional regressor in the wage equation, yielding consistent estimates of the coefficients free of censoring bias[5]. This step as well allows for predicting the distribution of women across sectors if they were treated in the same manner as men. In turn, it facilitates decomposing the gender gap into justifiable (in terms of productivity related differences) and unjustifiable components. And to further decompose these gaps into intra-sectoral and inter-sectoral components.

There are two concerns when it comes to examining pay gaps as a result of discrimination: first is pay gap, where women of equal characteristics with men in the same job are paid less; second is job discrimination itself, where women are kept out of higher paying jobs. Empirical analysis is appropriate for measurable differences in characteristics, such as experience, and levels of education, which are commonly named as "explained" components of the wage gap. The remaining of the gap is named "unexplained" portion, which suggests an estimate of gender based discrimination. One important issue remains, that is the unexplained component is providing an upper limit on discrimination, since this measure does not take into account the pre-market or post market factors (i.e. attachment to the labor market, tastes or personality) that may result in higher (lower) payment for males (females).

Two methods of the wage gap decomposition are then utilized. First, the standard Oaxaca-Blinder Oaxaca (1973) and Blinder (1973) decomposition. This methodology depends on identifying characteristics of individuals that affect their productivity and therefore their wages, such that the share of the wage gap not accounted for by such productive factors is the unexplained wage gap, all or some of which may be due to discrimination.

Adopting Oaxaca (1973) and Blinder (1973) methodology, the differences in the logarithmic wages between males and females, is written as:

$$\Delta \ln W = \ln \overline{W}_m - \ln \overline{W}_f \qquad (2)$$

Where *m* refers to male workers and *f* to female workers the operator, Δ represents the mean difference between males and females wages. First, separate selectivity corrected wage equations are estimated for males and females workers. The estimated wage equations are then used to decompose the observed wage differential between males and females workers into components due to personal characteristics, to parameters and to sample selectivity bias.

If the average observed log wage for type *j* worker is $ln\overline{W}_{ij} = \sum_i lnW_{ij}/n_j$. The average observed characteristics, $\overline{X} = \sum_i X_{ij} / n_j$ and the average sample selectivity

[5] For brevity results are not reported but available in the Appendix.

bias term, $\bar{\lambda} = \sum_i X_{ij} / n_j$ where n_j is the number of individuals in a j group. In this case, j=male (m), female (f).

Suppose that $\hat{\beta}_m$ is the competitive wage and that female workers are compensated at the same wage as male workers. Then, the predicted mean wage for female workers using competitive wages is given by $\hat{\beta}_m \overline{X}_f$. In other terms, the previous equation can be written, including the selection term, as:

$$\ln \overline{W}_m - \ln \overline{W}_f = \sum \hat{\beta}_m \overline{X}_m - \sum \hat{\beta}_m \overline{X}_f + \sum \hat{\beta}_m \overline{X}_f + \sum \hat{\beta}_f \overline{X}_f + \sum \left(\hat{\delta}_m \overline{\lambda}_m - \hat{\delta}_f \overline{\lambda}_f \right)$$

$$= \sum \hat{\beta}_m \left(\overline{X}_m - \overline{X}_f \right) + \sum \left(\hat{\beta}_m - \hat{\beta}_f \right) \overline{X}_f + \sum \left(\hat{\delta}_m \overline{\lambda}_m - \hat{\delta}_f \overline{\lambda}_f \right) \qquad (3)$$

The first term on the right-hand side of the equation is the differences in the endowments of wage-determining characteristics (*X's*) between males and females wages, evaluated according to the male worker pay structure ($\hat{\beta}_m$). This portion can also be interpreted as the wage gain female workers would experience if they had the same characteristics on the average as male workers. The second term on the right-hand side is the portion due to differences in pay structure (coefficients, $\hat{\beta}'s$) between males and females workers. It is the wage gain female workers would experience, given their mean characteristics, if they were compensated as male workers. The last term represents the wage differential attributed to sample selection bias. Accordingly, we run into an index number problem (Oaxaca, 1973; Jones, 1983). The problem arises when heterogeneous group of characteristics (X variables) are summed with two sets of wages (males and female). Following the approach employed by Reimers (1983), which uses an unweighted average of each type of worker's coefficients, the wage differential can be decomposed as:

$$\ln \overline{W}_m - \ln \overline{W}_f = 0.5 \left(\overline{X}_m - \overline{X}_f \right) \left(\hat{\beta}_m + \hat{\beta}_f \right) \overline{X}_f + 0.5 \left(\overline{X}_m + \overline{X}_f \right) \left(\hat{\beta}_m - \hat{\beta}_f \right) + \left(\hat{\delta}_m \overline{\lambda}_m - \hat{\delta}_f \overline{\lambda}_f \right) \qquad (4)$$

Brown et al. (1980) expanded the model and incorporated the distinction between across-occupation and within-occupation wage differences into the analysis of wage differentials.

According to economic theory, an individual's occupational attainment is a function of the employers' willingness to hire that person (labor demand) and the individual's desire to work in a particular occupation or sector (labor supply). Labor demand is determined by the individuals' MPL (Marginal Productivity of Labor), which, in turn, is a function of human capital. Labor supply is derived from an individual's utility function, which includes at least the wage of the occupation, a taste for the work involved, and family size (Brown *et al*., 1980). In this context, wage discrimination may result in one group being paid a wage higher than its MPL, or the other groups being paid a wage lower than its MPL. Likewise, discrimination may occur in occupational attainment when either one

group is allocated to occupations that require better skills than they possess or another group is allocated to occupations that require skills less than what they have.

Their model can be written as follows (Brown et al., 1980; Kidd and Shannon, 1996; Meng, 1998):

$$\overline{\ln W_M} - \overline{\ln W_F} = \underbrace{\frac{\sum_j \overline{\ln W_M}\,(P_j^M - P_j^F)}{QD} + \frac{\sum_j \overline{\ln W_M}\,(P_j^F - P_j^F)}{OD}}_{(Across\,Occupations\,Wage\,Differences)} + \underbrace{\frac{\sum_j P_j^F\,(\alpha_j^M - \alpha_j^F)}{I} + \frac{\sum_j P_j^F\,X_j^F\,(\beta_j^M - \beta_j^F)}{WD} + \frac{\sum_j P_j^F\,\hat{\beta}_j^M\,(X_j^M - X_j^F)}{PD}}_{(Within\,Occupations\,Wage\,Differences)} \quad (5)$$

Where a bar over a variable denotes the mean value, superscripts *M* and *F* refer to male worker and female worker, respectively. P_j^M and P_j^F are the observed proportion of male and female workers in occupation *j*. $\hat{P}^F j$ measures the proportion of the sample of female workers who would be in occupation *j* if female workers were allowed the same occupational choice as male employees.

Overall, the mean log wage difference shown in the previous equation consists of four distinct components. Brown et al. (1980) defined *QD* and *OD* as the explained and unexplained occupational segregation respectively. *I* and *WD* represent the unexplained within-occupation wage differences, while *PD* represents the explained within-occupation wage differences. The 'explained' term refers to wage differentials resulting from gender differences in productivity-related characteristics. The 'unexplained' term refers to wage differentials that cannot be accounted for on the basis of productivity endowments and is commonly interpreted as a measure of labor market discrimination. I use this methodology to test the extent of discrimination in terms of access to certain sectors of the economy, in particular their allocation between tradable vs. non-tradable sectors.

V. FINDINGS:

1. Sample Characteristics:

As acknowledged by Assaad and Elhamidi (2007), education is considered a determinant factor of female paid employment, especially employment in the government sector. This fact is of great significance in light of the downsizing of the employer of the last resort for educated women. As the government has dropped its employment levels of educated

women, the private sector took over and by 2006 had over 50% of all educated women in the market. This trend of hiring in the private sector appeared earlier for men.

According to table (1-Panel A), women were hard hit by the decline in public employment by 6% during 98-06 period, an annual average drop of 0.9% for this period. The private sector (includes private, joint venture, foreign and others) increased its employment of women by an annual average of 3% between 1998 and 2006. That is approximately 2 percentage points less than the increase ensued to men during the same period. Yet, if the private sector is decomposed and separated the agriculture work from the non agriculture work, an even exciting trend emerges. Aside from non wage agricultural workers and its puzzling measurement inaccuracies, according to table (1-Panel B), women appear to have gained employment in the private non agriculture wage sector, at the expense of losing employment in private agriculture wage segment. Private non agriculture jobs are rising by over 10% for females in rural regions and by 8% for females in urban regions.

Table (1): Annual Rate of Growth by Sector of Employment and Gender, 1998-2006

Panel A

Sector	Males	Female	Total
Government	1.184	2.698	1.667
Public	-0.148	-0.951	-0.242
Private	5.649	3.175	4.646
Total	4.197	3.025	3.761

Panel B

Sector	Males	Females
Agriculture	0.81	0.74
Agriculture Non Wage	5.92	24.81
Agriculture_ Wage	4.50	6.47
Private Agric Wage	0.34	-1.33
Gov work	1.14	2.61
Pub Entr	-0.14	-0.92
Prv Non Agr	6.30	8.79
Non Wage Work	5.67	2.57

Source: Author's own Calculation

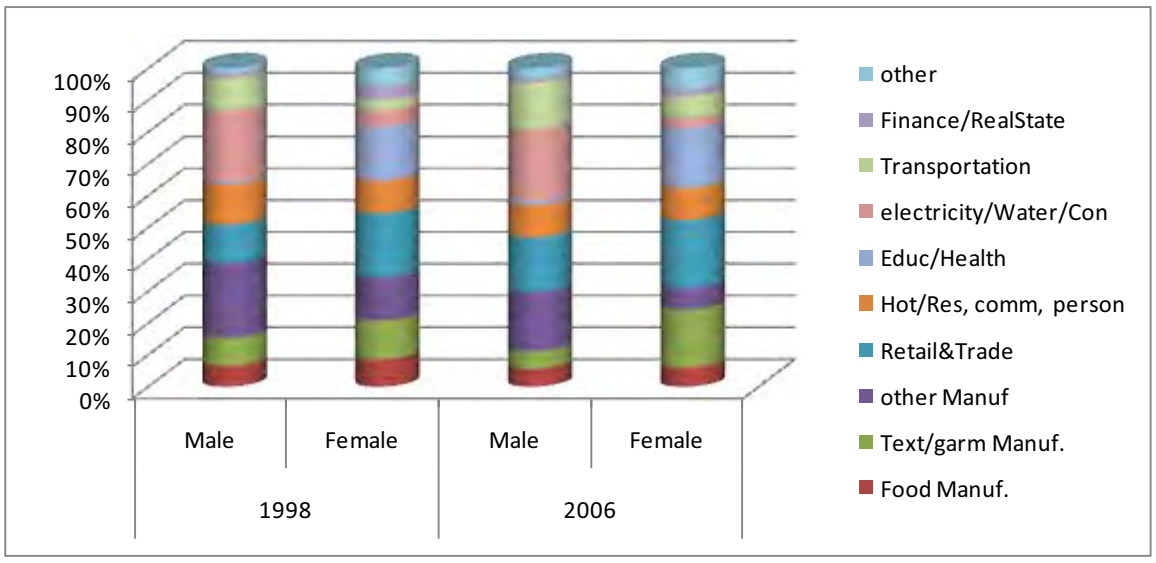
Further breakdown reveals the annual growth of the formal private non agriculture sector reached an average of 32% for urban women, 12% for rural women, 7% and 11% for urban and rural males respectively. Women working in the urban informal private sector surprisingly experienced a drop of 19% annually, whereas their counterparts in rural regions gained an average of 3% annually.

Evidently there is a shift in the structure of economic activity by gender in terms of sector of employment. The private sector had shouldered some of the surplus labor in the last seven years. Besides, despite an increase in informal employment between 1998 and 2006, the growth of formal employment has accelerated considerably, especially for women in urban regions. The private sector is then considered the next engine of growth in employment opportunities, assuming favorable conditions and stable economy.

Figure (1) displays employment distribution by economic sector and gender. Up until late 1990s, ERSAP policies resulted in increased employment of men in non-tradable sectors such as transportation, utilities, and education and health (an annual growth rate of 5%, 3% and 4% respectively). These same sectors observed an even greater increase in the new millennium (10%, 5% and 12% in that order).

The figure, as well, portrays women's share in the textile and garments industry increased by an annual growth of 6% between 1998 and 2006, in the same time men lost their employment at almost the same rate in that sector. Furthermore, retail and trade, as well as transportation and education and health experienced dramatic increase. The last three sectors represented the highest growth in male employment between 1998 and 2006.

Figure (1): Distribution of Sector of Employment of Non Government Wage Workers



Source: Author's own Calculation

A further interesting point is the replacement of women in education and health sectors with men. In 1998, although women accounted for as many as three times as men in both sectors, annual growth rate of employment of men in both sectors is almost four times that of women (7% and 2% respectively). By and large, services are absorbing the bulk of private employment as opposed to goods production sectors.

Table (2): Distribution of Females by Economic Activity; and Contribution of Each Economic Activity in Total Female Employment, Private sector

	1998		2006	
Economic Activity	% Female Share of Each Economic Activity	% Females in Overall Emp.	% Female Share of Each Economic Activity	% Females in Overall Emp.
Agriculture	8.6	14.4	7.8	9.5
Food Manuf.	13.4	7.4	13.4	6.6
Text/garm Manuf.	14.1	10.5	30.2	18.5
other Manuf	6.4	11.7	4.5	6.7
Retail&Trade	16.4	17.4	14.3	21.9
Hot/Res, comm, personal serv	8.6	8.7	11.4	10.0
Educ/Health	71.6	14.6	68.0	19.1
electricity/Water/Construction	2.6	4.4	1.8	3.2
Transportation	3.3	2.6	5.7	6.9
Finance/RealState	25.9	3.7	18.9	2.4
other	28.5	4.9	22.1	6.5

Source: Author's own Calculation

Table (2) asserts the increased participation of women in the private sector, from 10% of total work force in 1998 to 11.1% in 2006. More importantly, the table shows how females are highly represented in health and education sectors with an average of 68% of total workers being women. Ironically, this sector represents only 19% of all female employment (Table (2)-column 5). Other sectors with lower barriers to women's entrance are retail and trade (22% of total employment) and textile and garment manufacturing (19%).

Regrouping private sector workers into 2 categories: tradable sector, and non-tradable sector, table (3) presents selective characteristics of workers. The table maintains that while males on average have more years of education than females, women on the other hand enjoy more years of experience. Furthermore, while women represented a fraction of total employment in both sectors, their annual rate of growth in tradables was almost nine times that of men, between 1998 and 2006 (4.7 vs. 0.5). Meantime, while non-tradables recorded a higher concentration for women in 1998 (at 53%), tradable sectors absorbed 59% of total female employment in 2006 (Table 4). A trend that is not repeated for males.

A closer look at tables 3 and 5 shows women's earnings are lower than their men counterparts regardless of their sector of employment. Women also endured greater deterioration in their real wages than men. Table (5) reveals that between 1998 and 2006, the wage gap (women wages/men wages), widened only for tradable sectors' workers — remember, it has been just established that tradable sectors have gained higher concentration of women by 2006, relative to non-tradable sectors.

Table (3): Selected Characteristics of Private Sector Workers

	Tradables	Non-Tradables
Males, 1998		
Real Wage	2.04	2.20
Yrs Schooling	6.93	6.95
Experience	15.76	15.98
Females, 1998		
Real Wage	1.65	1.71
Yrs Schooling	3.76	6.05
Experience	21.42	24.13
Males, 2006		
Real Wage	1.98	1.65
Yrs Schooling	8.48	8.40
Experience	16.14	16.06
Females, 2006		
Real Wage	0.73	1.31
Yrs Schooling	5.56	7.26
Experience	19.44	23.74

Source: Author's own Calculation

Table (4): Employment Distribution of Private Sector Workers by Sectors and Gender

	1998			2006		
Sector	Male	Female	Total	Male	Female	Total
Tradables	34.04	8.18	42.22	35.35	11.46	46.81
Non-Tradables	48.55	9.23	57.78	45.16	8.03	53.19
Total	82.59	17.41	100.00	80.51	19.49	100.00

Source: Author's own Calculation

Table (5): Wage Gap (Female Wages/ Male Wages)

Sector	1998	2006
Tradables	0.81	0.37
Non-Tradables	0.78	0.79

Source: Author's own Calculation

2. Empirical Findings: Gender Wage Gap Decompositions

The previous part of this section offered conventional and unrefined type of analysis which returned several conclusions. These key results however, are not informative about the actual sectoral and gender differentials as they do not take account of differences in individual and job characteristics. In order to obtain such differentials I begin the

empirical analysis by applying the sample selection procedure, estimating the wage equation and carrying out wage decomposition detailed in the methodology in section IV.

The empirical analysis proceeds at two levels. First, determinants of sector of employment are estimated separately for males and females of private sector workers for years 1998 and 2006. This step allows for predicting the distribution of women across sectors if they were treated in the same way as men. Second, wage equations are estimated separately for males and females including selection terms obtained from the first step. This methodology further facilitates decomposing the gender pay gap in the second step into justifiable (in terms of productivity related differences) and unjustifiable components (Oaxaca, 1973); and further decomposing gender pay differences into intra and inter- sectoral components (Brown, 1980). The analysis is done separately for males and females across the two sectors: tradable sectors and non-tradable sectors. This allows for differences in wage setting in the two aggregate sectors and for differences in parameter estimates by gender. For brevity, results of selection and regression equations are provided in the appendix.

In what follows I look at the effect of a period of structural adjustment on wage inequality in tradable sectors and non-tradable sectors. I follow the literature and use the methodology detailed earlier to sort out the differences in wages between male and female workers that are due to endowments and those that are due to discrimination, i.e. the explained from the unexplained. I grouped differences due to discrimination and differences due to selection bias in one "unexplained" factor. The unexplained term may include a problem of omitted variables, including attachment to the labor force, lack of specific training, tastes, personality and/or interrupted careers.

Table (6) presents wage decompositions for males and females by sector of employment, which separate the justifiable (i.e. explained) and unjustifiable (i.e. unexplained or pure premium) components. The table also provides the predicted wage women would receive if they were treated fairly (i.e. as men). The positive sign in the explained column indicates men enjoy a productivity wage advantage over women by the amount indicated. In other words, men have higher levels of education and/or experience, in addition to residing in regions of high demand on their labor than women, therefore the difference in the wage gap is justified in accordance to human capital differences. Conversely, a negative sign in the explained portion indicates the labor market exhibits some favoritism towards men vis-à-vis women. In other words, women on average have higher endowments in terms of levels of education and/or experience, and should have earned more than what they are currently paid[6]. Large components of decomposition results are not unique to this study. Considerable figures have been reported for cases in developing countries which results from omitted variables problems and distortions in the labor markets. Moreover, the unexplained components include the selection errors (resulted

[6] To clarify this point, recall the first term on the right hand side of equation (3), $\sum \hat{\beta}_m \left(\overline{X}_m - \overline{X}_f\right)$. Given $\hat{\beta}_m$ is a positive term, the negative sign results from the term $\left(\overline{X}_m - \overline{X}_f\right)$, which points to advanced levels of education for women over men. When the negative difference is multiplied by higher male returns it results in lower values of the wage gap, due to endowments.

from sectoral selection module). Lower probability of employment in a typical sector contributes to the overall discrimination. Therefore, a large contribution of sample selection to wage differentials may offset other factors that work to narrow the wage gap.

The table confirms that schooling and years of experience are not treated similarly. It seems that years of schooling are more valued in the labor market than years of experience. Table (3) previously pointed to the fact that women, on average, have more years of experience but lower years of schooling.

Table (6): Decomposition of Wage Differentials by Gender and Sector of Employment — Standard Decomposition—Method A

Economic Sector	Male Wage	Female Wage	Raw Wage Difference	Wage Gap as % of Fem Wage	% Explained	% Unexplained	Predicted Female Wages at Male's B
Tradables							
1998	2.04	1.65	0.40	24%	-13%	113%	1.76
2006	1.98	0.73	1.25	171%	-62%	162%	1.46
Non-Tradables							
1998	2.20	1.71	0.49	28%	-74%	174%	1.84
2006	1.65	1.31	0.34	26%	-42%	142%	1.52

Source: Author's own Calculation

Using the standard decomposition (Method A), it is evident from the table that higher male wages are not justified according to human capital theory predictions for both sectors of employment and especially in tradable sectors. Recall workers' characteristics in table (3), male workers in general are more educated, but have less years of experience than their women counterparts. Decomposition figures in table (6) support the argument that years of schooling are valued in labor market, especially tradable sectors, than experience. It is also clear from Table (6) that the part of the wage gap that is due to pure premium, or discrimination, has increased considerably between 1998 and 2006 in tradable sectors. Inequality in wages in non-tradable sectors, on the other hand, have declined considerably between 1998 and 2006. Finally, the last column of table (6) conveys the following message: by 2006, if the two groups had been treated equally according to their personal endowments, women in tradable sectors would have received twice as much remuneration as men do.

Previous outcomes are indicative of the presence of a relatively high unexplained wage differential when the differences in endowments are taken into account in both sectors but is more pronounced and wider in tradable than in non tradable sectors. In terms of type of endowments that is most valued, the Egyptian labor market credits years of schooling at the expense of years of experience.

Advancing the previous estimation by adding sectoral distribution into the decomposition assessment (Method B) further breaks down the wage gap into a portion that is due to differences between sectors and a portion due to differences within sectors.

Table (7): Decomposition of Wage Differentials by Gender and Sector Between and Within Sectors—Method B

	Inter Sector		Intra Sector	
Economic Activities	% Wage Gap Due to Endowments	Discrimination	% Wage Gap Due to Endowments	Discrimination
Tradables				
1998	5.64	-0.65	19.51	75.50
2006	7.14	-5.94	-7.71	106.50
Non-Tradables				
1998	6.78	-0.68	-29.23	123.12
2006	19.73	-17.99	-65.76	164.03

Source: Author's own Calculation

Table (7) shows wage decomposition taking into account within and between sectoral allocations. There may appear some differences between results of this methodology and the standard methodology of decomposition above (Table 6). The reason for the different findings is that, using Method A, average male workers are compared with average female workers regardless of their sector of employment. Carrying Method B, average male workers are compared with average female workers within and across economic sectors.

Once more, the negative sign in the endowment (explained) column indicates that, if women had been treated the same as men within each occupation, their earnings would have been higher than normal, possibly due to unobserved attributes. Conversely, the positive sign in the explained column indicates men have higher levels of education and/or experience, than women, and therefore the difference in the wage gap is justified in accordance to human capital theory predictions.

The table in general reveals the fact that the observed gap between men and women's wages is almost exclusively due to intra-sectoral differences in wages (i.e. pure discrimination). Across sectors, differences between genders in their sectoral allocation are justified. The additional years of education for men in both sectors are well rewarded in the labor market, persistent, and well observed in non-tradable when compared with tradable sectors. Once women are employed in a tradable sector, they are exposed to greater discrimination as indicated by the positive then negative sign in explained terms. Women in non-tradable sectors as well experienced greater discrimination in 2006. The large contribution of the intra-sectoral differences in wages is not unique to this study. Studying occupational wage differences, Kidd and Shannon (1994) reported comparable results for Canadian labor force, with 102% intra occupational wage differentials.

Taking into account the sectoral distributional effect (using Method B) leads to a significant drop in the explained portion of the earnings gap found in the Method A. The contribution of the explained component of the wage difference for workers in tradable sectors dropped from -62% (using standard decomposition) to -8% (using Method B), and increased discrimination for workers in non-tradable sectors from -42% (Method A) to -66% (Method B).

Still, the table points to a drop in sectoral segregation effect and a decline in pure wage discrimination resulting from between sector effect (this is indicated by the negative sign

of the unexplained portion between sectors which acted in the interest of women, narrowing the wage gap by 6% and 18% in both sectors respectively).

Comparing the two decomposition results indicates that, the rise in the unexplained portion is due to intra occupational earnings differences and discrimination in favor of men and against women, and to the unequal treatment of males and females productivity related characteristics. Simply put, much of the differences in the overall gender wage gap in Egypt cannot be explained by the differences in workers' productivity-related characteristics. The differences are due to labor market discrimination resulting from women crowded in few tradable sectors. This is contrary to what found in Mexico, where trade liberalization has lead to a decrease in wage discrimination in industries that were forced to become competitive due to trade liberalization (Artecona and Cunningham, 2002). The increased competition resulted from trade liberalization in Egypt was accompanied by increased wage discrimination in both sectors, but it is more pronounced in non-tradable vs. tradable sectors.

Finally, it is worth taking into consideration the fact that although we may arrive at a better measure of wage difference decomposition by incorporating sectoral distribution, we are still unable to account for pre-labor market and extra-labor market factors (such as delayed or interrupted participation and women's tastes for certain for jobs).

VI. Conclusion and Policy Implications

Using the standard decomposition (Method A), higher male wages were not justified according to human capital theory predictions for both sectors of employment and especially so in tradable sectors. The part of the wage gap that is due to pure discrimination, has increased considerably between 1998 and 2006 in tradable sectors and declined in non-tradable sectors. Taking into account the sectoral distributional effect (Method B) lead to significant drop in the explained portion of the earnings gap found in the standard decomposition (Method A). The observed gender wage gap is almost exclusively due to sectoral distribution (within sectors). Wage differences across sectors of employment are justified (e.g. the added years of education for men are well rewarded in the labor market), especially so in non-tradable sectors. The contribution of the explained component of the wage difference for workers in tradable sectors dropped from -62% (using Method A) to -8% (using Method B), and increased discrimination for workers in non-tradable sectors from -42% (using Method A) to -66% (using Method B). Furthermore, there has been a drop in sectoral segregation effect and a decline in pure wage discrimination resulting from between sector effect, which acted in the interest of women, narrowing the wage gap in both sectors. By and large, the increased competition resulted from trade liberalization in Egypt was accompanied by increased wage discrimination in both sectors, but it is more pronounced in non-tradable vs. tradable sectors.

Identifying the genesis of gender remuneration differentials influenced by recent free trade practices and regulations in Egypt improves our understanding of the dynamics of

labor market and its interconnection with economic development. Policy analysts may find the results of this study useful. On the one side, results may determine whether the focus should be directed towards enforcements of pay equality within export oriented sectors or to redistribute women between sectors. On the other hand, skill acquisition and providing social protection for the poor and low wage workers may be deemed necessary in certain cases.

Furthermore, as trade policies normally center on the macroeconomic level and on particular products that are traded on national or international markets, they tend to overlook micro economic factors and social changes that directly affect the underprivileged women and men. The inclusion of gender as an analytical tool in the study of economics expands its boundaries and perspectives

Besides, downturns affecting one sector of the economy would be less problematic if job seekers can move unhindered between sectors. In response to declining wages resulting from trade reforms, restraint movement, lack of transferable skills or other barriers prevent labor from free movements between industries and sectors of the economy. This requires increased flexibility in the labor market through institutional reforms or providing adequate social protection in order to minimize the short term adjustment costs. These adjustments would be more difficult when sectors are sex segregated.

Policy recommendations centering on education and training as keys to a more equitable access to the job market may be inadequate. Policy instruments need to deal with dynamics of the labor market (e.g. the within and between sectors and jobs). Proposals for equal access to schooling, on the job training, as well as informational network monitoring the changes in wage rates and gender pay differentials are just few policies that have proved successful in countries such as Japan and Scandinavia.
In short, like other structural adjustment policies, trade liberalization can have the potential of enhancing the efficiency and competitiveness of host economies, but at the risk of creating or worsening inequities for the poor and for women. Women's education and skill accumulation are central factors determining the impact of trade on women's employment and the gender wage gap. As long as women remain less qualified than men, they are likely to remain in lower paid, less secure jobs, even if better-paid jobs become available through trade liberalization. Education and skills would provide greater flexibility and empower the disadvantaged to negotiate wages and work conditions.

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APPENDIX

Table (A-1)

Comparison of the New and Old Tariff Codes

	Old Tariffs	New Tariffs
Number of Tariff Lines	6924	5728
Unweighted Tariff Rate (all Commodoties)	26.5%	20.3%
Unweighted Tariff Rate (Excluding Cars, Alcohol, Poultry)	19.8	12.4
Weighted Average Tariff Rates 2003 USD Value Weights	13.4	8.9
Number of Different Tariff Rates	27	12

Source: USAID, Egyptian Trade Reforms, September 2004.

Table (A-2): Heckman Selection Model; Wage and Participation Equations

	Females, 1998		Females, 2006		Males, 1998		Males, 2006	
COEFFICIENT	Log Wage	Participation	Log Wage	Participation	Log Wage	Participation	Log Wage	Participation
exp	0.095***		0.061**		0.019**		0.005	
	(0.021)		(0.026)		(0.010)		(0.011)	
exp2	-0.191***		-0.089*		-0.073***		0.004	
	(0.044)		(0.052)		(0.025)		(0.029)	
region2	-0.295***	-0.249	-0.190**	-0.403*	0.029	0.214	0.016	0.215
	(0.083)	(0.257)	(0.094)	(0.224)	(0.033)	(0.000)	(0.036)	(0.000)
region3	-0.313***	-1.167***	-0.164*	-1.427***	-0.123***	-5.112***	-0.129***	-4.804*
	(0.076)	(0.172)	(0.096)	(0.181)	(0.031)	(1.176)	(0.035)	(2.894)
region4	-0.420***	-1.338***	0.020	-0.969***	-0.145***	-5.044***	-0.075**	-6.040**
	(0.086)	(0.181)	(0.087)	(0.187)	(0.030)	(1.168)	(0.032)	(2.932)
region5	-0.695***	-1.717***	0.174*	-1.990***	-0.132***	-4.933***	-0.182***	-6.530**
	(0.077)	(0.152)	(0.104)	(0.170)	(0.029)	(1.207)	(0.031)	(2.928)
region6	-0.887***	-2.029***	-0.153	-2.026***	-0.185***	-4.791***	-0.166***	-6.595**
	(0.106)	(0.163)	(0.134)	(0.178)	(0.033)	(1.150)	(0.033)	(2.930)
edu2	-0.323**	0.003	-0.327	0.424***	0.061*	-5.750***	0.085**	-2.541***
	(0.160)	(0.158)	(0.213)	(0.138)	(0.036)	(0.425)	(0.042)	(0.595)
edu3	0.168	0.074	0.106	0.276**	0.126***	-5.791***	0.037	-3.163***
	(0.125)	(0.122)	(0.168)	(0.111)	(0.034)	(0.323)	(0.035)	(0.616)
edu4	0.509***	1.423***	0.556***	1.398***	0.235***	-6.026	0.098***	-1.905**
	(0.112)	(0.095)	(0.142)	(0.077)	(0.038)	(0.000)	(0.037)	(0.801)
edu5	0.855***	2.450***	0.637***	1.893***	0.342***	-1.300	0.281***	0.221
	(0.134)	(0.179)	(0.176)	(0.159)	(0.050)	(0.000)	(0.054)	(0.000)
edu6	1.035***	2.336***	0.661***	2.154***	0.622***	-1.801	0.511***	-0.065
	(0.128)	(0.168)	(0.159)	(0.107)	(0.045)	(0.000)	(0.045)	(0.000)
age		0.089***		0.120***	0.039***	0.273***		0.005
		(0.018)		(0.015)	(0.005)	(0.065)		(0.396)
age2		-0.134***		-0.142***	-0.028***	-0.346***		1.626
		(0.025)		(0.020)	(0.006)	(0.083)		(1.328)
married		-0.797***		-0.644***		7.527		4.337
		(0.095)		(0.077)		(0.000)		(0.000)
dch06		0.175**		-0.061		-0.339		0.335
		(0.078)		(0.067)		(0.301)		(0.230)
hhsize		-0.082***		-0.057***		0.035		-0.160***
		(0.015)		(0.013)		(0.058)		(0.052)
lambda	0.410		0.000		0.066		-0.452***	
	(0.062)		(0.086)		(0.275)		(0.088)	
Constant	-1.081***	-0.174	-0.496	-1.075***	-0.623***	8.712	0.645***	6.521
	(0.225)	(0.318)	(0.319)	(0.303)	(0.113)	(0.000)	(0.089)	(0.000)
Observations	2740	2740	3777	3777	3805	3805	6109	6109

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table (A-3): Selectivity Corrected Regression Equations

	1998- Tradables		2006-Tradables		1998- Non-Tradables		2006-Non-Tradables	
COEFFICIENT	Females	Males	Females	Males	Females	Males	Females	Males
exp	-0.058	-0.014	0.162**	-0.019	0.049	-0.029	-0.002	0.014
	(0.068)	(0.027)	(0.069)	(0.023)	(0.052)	(0.035)	(0.044)	(0.018)
exp2	0.101	0.032	-0.252*	0.083	-0.079	0.101	0.013	-0.049
	(0.149)	(0.073)	(0.135)	(0.063)	(0.099)	(0.102)	(0.078)	(0.051)
region2	0.018	-0.050	-0.324	0.015	-0.607**	0.017	-0.045	-0.003
	(0.268)	(0.086)	(0.243)	(0.068)	(0.253)	(0.097)	(0.189)	(0.066)
region3	-0.227	-0.013	-0.729**	-0.192***	-0.579**	-0.030	-0.991***	-0.022
	(0.312)	(0.085)	(0.325)	(0.068)	(0.247)	(0.090)	(0.225)	(0.066)
region4	-0.525	-0.071	-0.490	-0.014	-1.055***	-0.165	0.049	0.025
	(0.403)	(0.119)	(0.328)	(0.063)	(0.312)	(0.103)	(0.183)	(0.061)
region5	-0.211	-0.196***	-0.977**	-0.266***	-1.442***	-0.059	-0.710**	-0.012
	(0.469)	(0.064)	(0.390)	(0.053)	(0.300)	(0.073)	(0.316)	(0.055)
region6	-0.056	-0.099	-1.206**	-0.094	-0.902**	-0.139*	-0.440	0.075
	(0.505)	(0.078)	(0.538)	(0.059)	(0.378)	(0.073)	(0.391)	(0.057)
edu2	0.351	0.456***	-0.212	0.086	-0.544*	0.166**	-0.606	0.134*
	(0.536)	(0.080)	(0.343)	(0.079)	(0.321)	(0.084)	(0.398)	(0.071)
edu3	0.187	0.392***	0.245	0.084	0.247	-0.058	-0.355	0.012
	(0.247)	(0.082)	(0.309)	(0.062)	(0.365)	(0.079)	(0.240)	(0.058)
edu4	0.595	0.352***	0.179	0.018	0.053	0.053	0.087	-0.024
	(0.429)	(0.095)	(0.351)	(0.067)	(0.316)	(0.095)	(0.320)	(0.060)
edu5	0.973	0.315**	0.035	-0.007	0.286	0.210	0.646	0.172*
	(0.599)	(0.144)	(0.527)	(0.111)	(0.387)	(0.151)	(0.411)	(0.101)
edu6	1.673***	0.757***	0.798*	0.450***	0.856**	0.388***	0.657*	0.570***
	(0.487)	(0.137)	(0.421)	(0.092)	(0.345)	(0.132)	(0.356)	(0.081)
Lambda	0.164	-4.751***	0.939***	-0.805***	0.546*	-2.001***	0.404	-0.729***
	(0.390)	(0.709)	(0.349)	(0.147)	(0.278)	(0.505)	(0.334)	(0.138)
Constant	0.286	0.431**	-2.227**	0.795***	-0.569	0.752***	0.198	0.512***
	(0.695)	(0.217)	(0.870)	(0.184)	(0.586)	(0.271)	(0.709)	(0.149)
Observations	76	689	172	1420	110	795	228	1566
R-squared	0.37	0.17	0.18	0.12	0.50	0.29	0.23	0.25

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1