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FACTORS OF CAREER MOBILITY
IN EGYPT BY GENDER

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Abstract

The paper focuses on a critical determinant, not only of females participating in the labor market but also of continuing in it: the opportunity cost of women's participation in the labor market. It is believed that the opportunity cost for not working increases if the compensations consist of both wages and secured job conditions. The opportunity cost for not working decreases with the lack of secured conditions. Women with low compensations in terms of wages and secured conditions, their opportunity cost of not working decreases with marriage, which increases the probability of quitting the labor market. The target group in the paper is the males and females in Egypt aged between 18-64 years old, who have an intermediate or above educational degree, and are working as waged workers. The data used is from the 1998 ELMS (Egyptian labor market survey) and 2006 ELMPS (Egyptian Labor Market Panel Survey), using the advantage of having subset panel sample in both years. The career mobility is measured, and the job-to-job turnover by gender is observed in the paper. Career development over eight years and the impact of different factors on the development are analyzed. Probit model with sample selection and Heckman selection model are used in the analyses. The importance of the results increases with the privatization trend in the Egyptian economy. Male and female private sector workers are in a more critical condition, and as the private sector expands and absorbs more of the new entrants, more attention should be paid to them. Those new entrants are challenged by the tradeoff between wages and job security. Those who fail in getting engaged in the public sector of all males and young females have a higher probability of ending up with low secured jobs. Low wages and low job security are the main reasons for a female to quit working, once she gets married.

ملخص

تركز هذه الورقة على عامل حاسم، ليس فقط مشاركة الإناث في سوق العمل ولكن أيضا الاستمرار في ذلك وهو تكلفة الفرصة البديلة لمشاركة الإناث في سوق العمل. ويعتقد أن تكلفة الفرصة البديلة لعدم العمل تزيد إذا كانت التعويضات تتكون من كل من الأجور وظروف العمل الآمنة. تكلفة الفرصة البديلة لعدم العمل تتناقص مع عدم وجود شروط مضمونة. فالإناث ذوات التعويضات المنخفضة من حيث الأجور والظروف الآمنة، تقل تكلفة الفرصة البديلة لعدم العمل لهن مع الزواج، مما يزيد من احتمال انسحابهن من سوق العمل. المجموعة المستهدفة في هذه الورقة هي من الذكور والإناث في مصر والذين تتراوح أعمارهم بين 18 - 64 سنة، والذين لديهم درجة تعليمية متوسطة أو فوق المتوسطة، ويعملون كعمال بأجر. البيانات المستخدمة هي مسح خصائص سوق العمل في مصر عام 1998 و المسح التتبعي لسوق العمل في مصر عام 2006، وذلك باستخدام ميزة وجود عينة مسح تتبعية فرعية في كل سنة. يقاس كل من الحراك الوظيفي، وسرعة التغيير من وظيفة الى وظيفة حسب النوع في هذه الورقة. ويتم تحليل التطوير الوظيفي على مدى ثماني سنوات، وتأثير العوامل المختلفة على التنمية. يتم استخدام نموذج وحدة احتمالية مع اختبار العينة، واختيار النموذج هيكلان في التحليلات. أهمية النتائج تزداد مع اتجاه الخصخصة في الاقتصاد المصري. وتصبح حالة الذكور والإناث العاملين في القطاع الخاص أكثر حرجا، وينبغي إيلاء المزيد من الاهتمام لهم وخاصة بعد توسع القطاع الخاص والذي يمتص الداخلين الجدد. ويواجه هؤلاء الوافدين الجدد تحدى في المفاضلة بين الأجور والأمن الوظيفي. أولئك الذين يفشلون في الحصول على العمل في القطاع العام لجميع الشباب من الذكور والإناث لديهم احتمال أعلى من الانتهاء بالعمل في وظائف ذات شروط غير آمنة. تدني الأجور وانخفاض الأمن الوظيفي هي الأسباب الرئيسية للإناث لإنهاء العمل، بمجرد زواجهن.

1. Introduction

1.1 Quick overview of the Egyptian labor market

Labor force participation rates increased between 1998 and 2006 by about 5% among both males and females, reaching 78.5%, and 26.9% respectively. The share of waged work among females is higher than males, 55% compared to 33% in 2006. Most of the female waged workers are engaged in government or public sector with 38% of the total employed women compared to 28% of the employed men (Assaad R., and Hamidi F 2009). If we restrict the statistics to the intermediate education level and above, the participation rate increases to about 32% among females, 89% of them are engaged in waged work, the governmental (or public) share is equal to about 78% of the waged females.

Although the governmental/public sector is dominating the waged work of educated females, (Figure A1 and Table A1), there is an increasing trend among younger generation to join the private sector despite their lower participation rate. For males, only 76% of those with educational level intermediate and above in the labor force are waged workers, around half of them are government or public sector workers.

Female participation in the labor market has drawn the attention of many researchers in Egypt, in particular gender differences. The gender differences extend from the labor structure to wages and salaries earned. Some studies focused on gender wage differentials. In 1997 Assaad studied wage differentials by gender and sector, one of his findings was that females with intermediate education appeared to face considerable discrimination in the private sector. In 2009 El Haddad used both data sets of 1998 and the ELMP of 2006 to study the wage differential by gender; she concluded there is an existing wage gap in the private sector in favor of men.

Career mobility and job-to-job transition in the Egyptian labor market received even less attention. Ahlburg, D. and Amer, M. (2003) analyzed the employment status mobility of Egyptian youth aged 15-29 between 1988 and 1998 using the ELMS data of 1998. In 2008 Amer, M, and Simonnet, V. analyzed in depth the determinants of employment duration and the number of status changes between 1998 and 2006 using the data of ELMP 2006. The paper indicated the importance of first employment status on the employment duration.

This paper focuses on both the transition and differences in career path during these transitions by gender, analyzing the career development by moving from job to job and the achievements between two fixed times in individual's working life.

1.2 Conceptual Framework and Objectives of the Study

One of the major motivations of this study is the belief of the “systematic” mobility of females in the labor market. The career path of females is pre-determined in the Egyptian culture. Females who complete intermediate or above education enter the labor market via a governmental job. This concept has changed in the recent cohorts as seen in Figure A1 , more females complete intermediate education, few of them decide to work, even fewer are able to get a governmental job, and even fewer keep their jobs. Through their career life it is important to study whether they really move upward and if there are certain factors that determine their mobility within the labor market or even leaving the labor market, and how these determinants differ by gender.

The paper also focuses on a critical determinant, not only of participating in the labor market but also of continuing in it: the opportunity cost of women's participation in the labor market. It is believed that the opportunity cost for not working increases if the compensations consist of both wages and secured job conditions. The opportunity cost for not working decreases with the lack of secured conditions. Women with low compensations in terms of wages and

secured conditions, their opportunity cost of not working decreases by getting married, which increases the probability of quitting of the labor market.

The main objectives are as follows:

- Measuring career mobility in female and male work life, and the effect of the job mobility on their career mobility by studying the job-to-job turnover.
- Observing career development over eight years, and analyzing the impact of different factors on this development by gender.

The analysis in the paper is **descriptive**; it covers the first objective and the description of the career mobility in eight years, and **multivariate**, which analyses the determinants of the career development.

The target group in the paper is the group of males and females in Egypt aged between 18-64 years old, who have an intermediate or above educational degree and are working as waged workers.

1.3 Measuring career development by gender

One of the methods used in judging the career development is the *occupational mobility*, measured by the occupation rank, which is also used as a predictor of the wage change. A rank based on two digits code for the occupation was used in analyzing occupational mobility by Waddoup and Assane (1993), Buchel and Mertens (2000), Maltseva (2005), and Dex et. (2007).

Wage change through time is also considered a measurement of career mobility, which is based on the proposition that upward career mobility is associated with wage increase (Buchel and Mertens, 2000, Welch, 2000).

A third method is considering the *job quality* and its change from the starting point to the ending point. Assad et al. (2009) introduced a job quality index based on working conditions, job security, and income. An upward mobility will be obtained if the index increases. The index was heavily weighted by the job security conditions, which is also considered a measurement of career mobility to move to a more secured job¹.

In this paper the scarcity of observations for females' two digits occupations was an obstacle in studying the occupation mobility, therefore it is not considered. The two career measurements considered in this paper are the hourly wage mobility between 1998 and 2006, and the job quality measured only by the job "security" or "formality", separating the two concepts in order to study the coincidence of mobility of the these measurements.

1.4 Data

This paper is using the data of 1998 ELMS (Egyptian labor market survey) and 2006 ELMPS (Egyptian Labor Market Panel Survey), using the advantage of having subset panel sample in both years.

The data set provides information for the job history, first, second, third, and current jobs. While current job has detailed information including wages, the information provided for the job history include only the job characteristics of employment status, stability, occupation, economic activity, availability of contract and social security. The panel part provides detailed information, about the job occupied in 1998 and 2006 including wages. The number of observations in each data set is listed in Table 1.

¹ It might also be considered as moving to a formal job.

Wage:

The hourly wage variable is constructed based only on the primary job in the previous 3 months for both data sets of 1998 and 2006. For the data of 1998, only the longest primary job is considered. The real hourly wage for 1998 is computed and compared with that of 2006 by gender. The comparisons include the change between 1998 and 2006 in general, and the change for those who were waged workers in 1998 and continued as waged workers in 2006.

Job Quality (Secured Job Index):

Stability and security of work are important dimensions of a “decent” work (Anker 2002). The variables used in conducting the job security index are based on social protection and stability. Social protection is measured by the presence of a contract, social security, paid leave of absence, medical insurance, and membership in Unions. Stability is measured in addition to the job stability, by the job’s requirements for skills, promotions and the workplace itself, since promotions and skills requirements might be reasons to maintain a job.

Job security index is computed twice²:

First: based on the pooled sample of 1998 and 2006³ waged workers aged 18-64 in order to impute the job security factor scores in the both years based on the same variables weights. These scores are used in comparing the job security mobility between 1998 and 2006.

Second: based on the 2006 sample of waged workers aged 18-64, the index scores are used to impute the job security for the first, second and third jobs based on the job characteristics of these jobs (Assaad et al. 2009, Assaad, et al. 2010). These indices are used to study the impact of the job mobility on job security.

2. Descriptive Analysis

2.1 Job to Job Mobility

Assaad et al. (2010) observed that only 28% of the youth males (15-34) first employment is a “good” job, a secured, stable, and formal position, but they have to wait longer time to obtain this high quality job. Those who start with regular and irregular informal work have higher rates of transiting to a second job (Assaad et al. 2010).

Comparing job turnovers between females and males (Table 2), females have lower job turnover than males by about half, reflecting the fact that they start with a higher quality jobs than males, and therefore are less likely to switch. Among older age groups the turnover is higher for both, males and female.

2.1.1 Who makes the move?

Tables 3, 4 and 5 calculate the average job security of the first, second, and third jobs respectively, clarifying the impact of job security on the transition. For younger age groups, both females and males, who transit to 2 or more jobs, had low quality jobs to start with. They hope to improve their job security by job transition. Those who start with a very low job security do not stop at the second job; they keep transiting to a third job in order to increase their job security. The job security increases smoothly for older females, partly due to career promotions. As for older males, those who keep transiting have significantly lower job security than those who maintain one job.

² As most of the variables are binary or at least ordinal, the polychoric correlation was used to construct an index for job quality (security).

Both techniques factor analysis and polychoric correlation are applied and compared based on the scores distribution and classification. As there was only slight difference between both techniques factor analysis is used.

³ Computations were based on the whole samples, and comparisons were done for the panel part.

2.1.2 Movement Directions?

As previously explained, those with lower job security try to improve their condition by transiting to a second job. Generally almost half of the movers were able to improve their work conditions, with slight differences between gender and age groups. The upward movers in the young ages were those with the least job security index in their first job. A higher percentage of young females (27%) than males (21%) moved downward with bigger magnitude (0.41 down vs. 0.32 for males). The downward movers decrease within older females, with almost no impact of job security index on the direction of transition among older groups.

Sector transition

Since the public sector represents the more formal and secured sector in terms of the availability of a contract/social security/paid leave of absence/and medical insurance, the waged workers in the public sector have lower turnover than those in the private sector. The numbers in the tables reflect the same conclusions that females are more likely to be engaged in the public sector with higher percentage among older age groups. The sector distribution among waged workers remains almost the same in the first and second jobs in all groups; indicating the fact that the increasing share of the private sector among young age groups remains even after changing jobs.

2.1.3 The Impact of First Job Security Index on the Current Status

Assaad et al. (2010) showed that duration of getting a job among younger males is decreasing as they start with a less secure job instead of waiting for the “good” job. Table (10) ensures the findings as we notice that the quality of the first job among the older group is higher than the younger group for both females and males. About one fourth of young males who started with a wage job end up as unwaged labor, motivated by the low job security they started with. Young females who start with a low secured job are more likely to end up as unwaged, unemployed, or even quit the labor market to become housewives.

2.2 Career mobility over eight years

One of the main advantages of the data set is the availability of a panel subset that allows us to follow up the individual over eight years. The follow up permits the in depth studying of the intra-generational mobility of individuals in their career life in Egypt. What do the educated waged workers accomplish in their career life in terms of quality and money? How do these achievements differ according to gender?

This section observes the career mobility in Egypt between two eras 1998 and 2006 and gives a brief description of the movements that occur to the whole group in their career in terms of job security and wage between 1998 and 2006. The target group is individuals who were 18 years and above in 1998 and didn't exceed 64 years in 2006, have an intermediate or above degree, and were waged workers in 1998 or 2006.

2.2.1 Status Mobility between 1998 and 2006

Tables 11 and 12 display the status of the panel group between 1998 and 2006, it is clear that the employment status distribution did not differ between 1998 and 2006, among both males and females. The females are less likely to remain waged workers than males (81.5% vs. 86.9%), with a probability of quitting the labor force around 10%, excluding the retirement option.

This percentage increases among unwaged females to around 45%, i.e. females are more likely to quit a unwaged job than quitting a waged one. By analyzing the initial wages and job security index of females who remain waged workers and who become unwaged workers,

unemployed, or housewives⁴, as seen in Figure 2 they had lower job security jobs at the beginning and hence, they had higher chances of quitting work or even losing their jobs, than those who had high job security index.

Figure 3 displays the wages in 1998 for those who remained waged workers and those who transitioned to other statuses; the initial wages of females who left the waged market were lower than those who remained waged workers. The wage differences among males are not as huge as those among females.

2.2.2 Job Security mobility⁵ between 1998 and 2006

Mobility Direction

For those who were waged workers in 1998 and maintained their waged status in 2006, there is a slight improvement in job security distribution in general, with a slightly higher improvement among females aged 26-40 and 41-64 than males of the same age groups as shown in Figures 3 and 4.

About one third of the target population, both males and females suffered from an absolute decrease in the job security index between 1998 and 2006 (Table 13).

To study the position improvement in the target population, the quartile rank was computed in 1998 among all those aged 18-56 (even if not within the panel) and in 2006 among those aged 26-64 (even if not within the panel).⁶

In Tables 14 and 15 the percentage of females in the lowest quartiles compared to males is low, indicating again the preferences among females to quit the labor market than maintaining an unsecured job. Figure 5 indicates that those with low job security are more likely to move upward, those with high job security maintain their secured jobs, and those in the middle are at risk of losing some of their job security.

Generally, there are more individuals who move upward and improve their positions than those who move downward or worsen their positions.⁷

2.2.3 Wage mobility between 1998 and 2006

Mobility Direction

Since 1998 only about one fifth of the waged workers were not able to gain real increase in their hourly wages, most of them gained higher wages by 2006. As seen in the quartile transition Table 17, females have a higher probability of staying in the lowest quartile of wages than they do in a low secured job. Comparing the quartile distributions in 1998 and 2006, the conclusion that those in the first wage or job security quartile are more likely to quit the waged status is confirmed.

The increase was mainly concentrated among the older group, and those working in public sector. Only young females working in private sector suffered from a downward mobility, but they represent only about 7% of the waged females.

2.2.4 Wage/Security Tradeoff

This part investigates the choice between wage and job security among males and females. More individuals were able to improve their wages, than job security. Slight differences

⁴ Retired individuals were excluded as they are expected to have high wage and job security.

⁵ Job Security indices were based on the same variables mentioned before and was calculated for the pooled sample in order to have same variable weights in both years.

⁶ The reasons for that are to avoid the effect of youth insertion in 2006 and to observe the normal career path.

⁷ Note that the quartile's values were based on the whole sample in each year; therefore the percentages are not 25%.

appear by gender, while higher percentage of females than males increased their wages, higher percentage of males than females improved their job security. Only around half of both males and females improved their career, in terms of wage and job security together. Almost one fifth of the males and females succeeded in increasing their wages but worsened their job security in return. A smaller percentage improved their job security (16.6% males, 13.4% females), but their hourly wages got worse. Studying sector transitions might explain this tradeoff between job security and wage. Around 8% of males and females failed in achieving any progress within 8 years, the majority experienced worsened conditions, financially or in terms of job security.

3. Determining the Main Factors of Career Mobility by Gender

Multivariate analysis

For the second objective, multivariate analyses is applied separately for females and males. A bivariate probit model with double selection is suggested for females (Winship and Mare 1992, Bonnie 2008), considering that two decisions are taken, the *first* is entering the waged work career and the *second* is continuing in the waged work career, where decisions are subject to self-selection.

The main difference between males and females is that choices of females are mainly being a waged worker or a housewife, as the unwaged workers represent only around 2.2% of the target females in 1998 (Table (12)). In addition to the first choice, the status that females switch to when they transit from waged status is again housewife; very few women leave waged work to become unwaged (0.6%, see Table (12)). For males, around 5.7% of the waged workers switched to unwaged work. Hence the determinants of first and second choices should differ by gender.

Several actions are taken in the analysis to determine these factors:

- Students in 1998 are excluded from the analysis since the main determinant of not working should be studying.
- The analysis is restricted to age 45 in order to eliminate the probability of transiting to retirement status, which has different determinants on one hand, and to focus on early career mobility instead of life mobility on the other.⁸
- Finally the bivariate probit model with double selection is replaced with Heckman model with a univariate probit selection equation. The main reason is the low number of those who quit the waged status, which prevents the convergence of the bivariate model with double selection.

3.1 Methodology

The wage or job security index change is observed only for those who joined the waged market in 1998 and decided to continue in it until 2006. Therefore it is assumed that there exists an underlying regression relationship (Greene, 2008).

$$y_i = x_i\beta + u_i$$

where the y_i is the change of the log hourly wage (job security) and it is only observed if

⁸ Reducing the age to 40 caused problems in convergence because of the small number of observations.

$$w^* = z_i\gamma + u_{2i} > 0$$

$$u_{1i} \sim N(0, \sigma)$$

$$u_{2i} \sim N(0, 1)$$

$$\text{corr}(u_1, u_2) = \rho$$

Where in our case the w^* represents the utility of working as a worker from 1998 till 2006 and y is observed only if w^* is greater than 0; i.e. the individual becomes a waged worker. The z is a vector of factors that influence the decision of becoming a waged worker.

If the $\rho \neq 0$ then applying the ordinary least square regression will yield to biased estimates.

Since only one decision is taken here, the model is applied twice, once if only the decision of working for a salary in 1998 is considered, i.e. regardless of whether continued or not.

The second model is applied only on those who started working in 1998 as a waged worker and the selection equation was based on the decision to continue as a waged worker till 2006.

In order to identify whether both decisions, working as a waged worker and continuing the waged status, are interrelated or not, a probit model with sample selection is applied as follows:

$$y_{1i}^* = x_{1i}\beta_1 + u_{1i}$$

$$y_{2i}^* = x_{2i}\beta_2 + u_{2i}$$

where the y_1^* and y_2^* are not observed and only the binary dependent variables are observed if

$$y_j = \begin{cases} 1 & y_j^* > 0 \\ 0 & y_j^* \leq 0 \end{cases} \text{ for } j = 1, 2$$

if the two error terms are independent, two separate probit models can be applied, otherwise a probit with selection is preferable.

3.2 Covariates

Individuals Characteristics:

Education and age are categorized. Age is divided into four categories with five years intervals starting 26-45. Education categories are intermediate level, above intermediate, and university and above.

Life events:

There are two major events in a woman's life that might influence the working decisions or career mobility, getting married and having children.

To avoid endogeneity, those variables are not considered in males' analysis. For females the marital status of 98 is expected to affect the first working decision, while getting married between 1998 and 2006 might effect the decision to continue working. As for having children, it is investigated whether taking maternity leave will hinder a woman's career. The variable is investigated only in case of wage mobility and not job security mobility because of endogeneity. The maternity leave variable is a binary, takes value 0 if no or less than three months is taken, and 1 for maternity leave longer than three months.

Job Mobility and Job characteristics:

One of the important factors that might be of interest is the effect of changing jobs on wage mobility (Petricara, M. 2002, Davia, M. 2005, Pavlopoulos et al. 2007, Balzquez, M. 2008). This is investigated through studying the effect of job change in 1998 on the wage and job security index.

Experience is measured by time since first joining the labor market is included as a quadratic function, in order to see the impact of early entry to the labor market on wage and job security change.

Other job characteristics of 1998 were also considered:

The occupation: Professional, managerial, technicians were combined, clerks, and sales were combined, and finally agriculture, fishing, and craft workers were combined. For females, only the first two categories were considered, as there are almost no observations in the third category.

The sector: Being in the public or private sector in 1998 is considered as a factor of deciding to keep work as a waged worker or not. Comparing the wage mobility by sector is considered by adding the 2006 sector in the equation of wage change.

Quality of the 1998 Job: The impact of the job quality in 1998 on deciding to continue as a waged worker or not is studied. Job quality in terms of job security index value and wage value of 1998 were added as covariate in continuing waged work equations.⁹

In order to investigate which group is more likely to gain higher wage or security increase, the ranks of job security index and wage of 1998 were added as covariates in the equations of wage and job security index change.

Family Characteristics:

Only *father occupation* and *education* were considered. Education variables are intermediate and above education or university and above versus low and no education as reference category.

Occupation is categorized into four groups: Professionals, Managers, and Technicians combined, clerks and sales combined, agriculture and fishing combined, and craft, trading, and elementary jobs are combined.

Family Project 1998: Having a family project is investigated as a factor that may influence the decision of working for wages.

Wealth of 1998: Value of wealth index¹⁰ is tested for having an effect on the decision of working for wages.

4. Results

4.1 To Continue or not as a waged worker

This part preliminary investigates the factors of changing the waged status for females and males using the probit model with selection. While females mainly choose between working and staying home, males choose between waged employee and being a self-employed or employer (less than 3% among working females vs. 17% among working males). Hence factors of taken decision may differ.

⁹ Variables are added as continues rather than ranks in order to decrease the number of covariates in these equations, because of the low number of observations, who are dropped out of waged status.

¹⁰ Wealth index was constructed by the population council group and was used as it is.

Table 21 shows the marginal effect of the considered variable and the coefficients, the main interest at this point is recognizing the significant variable and its direction and not measuring the effect magnitude.

Older single, and higher educated females have a higher probability of joining the waged market. If there is a family project, that will decrease the probability, either to work for the family as unpaid, or not working at all. High wealth index has a slight indication (p-value=0.15) of a decreasing waged work probability in the first model, but it is significant in the remaining models for females.

Richer older males have higher probability of being waged workers. Having a family project or father who worked in agriculture or fishing decreases this probability vs. working as unwaged.

Conditional on being waged worker in 1998, three major factors influence a female's decision to quit the waged status: poor wage in 1998, poor job security in 1998, and finally getting married within this period.

For males, a low job security index and being a clerk or in sales decrease the probability of being kept on the waged work.

Applying the probit model with selection implies that there is no correlation between the error terms of the two equations and the rho is not significantly different from 0, i.e. the two decisions are taken separately.

4.3 Factors of Wage Increase

Heckman selection model is used twice for both males and females. Tables 23 and 24 show the results of applying the model when the selection equation is being waged worker in 1998 or not. Tables 25 and 26 show the results when the selection equation is whether or not males/females continue as waged workers until 2006.

Comparing the significance of the correlation coefficient of the error terms shows that for males only the equations of the first model are significantly correlated, while in the second model they are not.

For females the correlation coefficient was significant in both models with moderate stability in covariates significant. The conclusions are restricted to the first model, since it has more observations, quick, and stable convergence in case of females, and the correlation coefficient is not significant in case of males in the second model.¹¹

Age

There is a significant linear relationship between age and the wage increase for both males and females; older employees gain higher wage increase.

Education

For females getting an above intermediate or university degree will result in a higher raise than having only intermediate degree. For males the significant difference appears only if they have a university degree or higher.

Occupation

Neither the occupation nor the sector the workers remain with in 2006 have a significant effect on the wage increase.

¹¹ Limdep 0.9 was used in the bivariate probit with double selection model, but due to the small set of observations quitting the waged market the results, the model failed to converge.

Job security and wage ranks in 1998

Individuals with lower wages quartile gain higher wage increase, than those in a higher quartile.

As for the job security, females with higher rank of job security gain higher raise. For males, those who are in the third quartile gain higher raise compared to those of first quartile. It must be noted here that significance and direction of the effect of the job security or wage rank among females do not differ in first and second models.

Changing jobs

The effect of the job mobility on the wage change is studied by analyzing whether having the same job since 1998 has a negative or positive effect on wage change. No significant effect for changing jobs on wage change appears in the analyses.

Experience

There is an indication of significant quadratic relationship between years of experience since the first job and wage change indicating a high raise will be reached after a while, close to the end of the 20 years working life.

Place of residence:

Males in urban areas gain higher wage increase than males in rural areas. As for females there is no significant effect for the place of residence.

Finally, having maternity leave during this period has a negative impact on women's wage increase, which raises the question of whether children hold back women's career path and to what extent?

4.4 Factors of job security increase

Applying Heckman selection model, either using selection equation based on being a waged worker in 1998 or continuing to be so till 2006, implied that none of the error terms are correlated in any model. Hence, results are shown only for the case of the selection based on being a waged worker in 1998. Results show only one relevant conclusion; those who did not have job security gain more.

5. Conclusions

This paper examines the career mobility and development of waged workers with an intermediate and above educational degree in the Egyptian market.

The analysis explores the job-to-job transition and the search for increasing job security through job turnover for both males and females. The wage increase achieved after eight years is analyzed by gender and the factors of that increase are studied.

The main conclusions of the analyses are as follows:

- Youth start their working career with less secured jobs in order to improve the quality of their jobs by moving to another job. Females start with a higher secured job than males, but males and females who are at the bottom, keep trying to improve their working security conditions by moving to a second and third job and from private to public sector.
- Young males and females who fail in getting engaged in the public sector end up with low secured jobs.
- Low wages and low job security are the main reasons for a female to quit working, once she gets married.
- Taking maternity leave for more than three months has a negative impact on the wage increase for women.

- There is a tradeoff between wage and job security among younger age youth.

The waged workers transitions in Egypt, especially those in the public sector, have a property of a systematic upward movement with well-defined promotions and wage increase. Hence around 90% of the waged females are in the public sector; they have the same property in their career path. Those who are in the private sector are in worse condition, males and females, and since the private sector is expanding and is absorbing more of the new entrants, more studies should be conducted to observe the early career mobility in the private sector and to observe the tradeoff between wages and job security among those new entrants.

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Figure 1: Job Security Index Distribution of Waged Workers in 1998 by Current Status, by Gender, Age 26-64

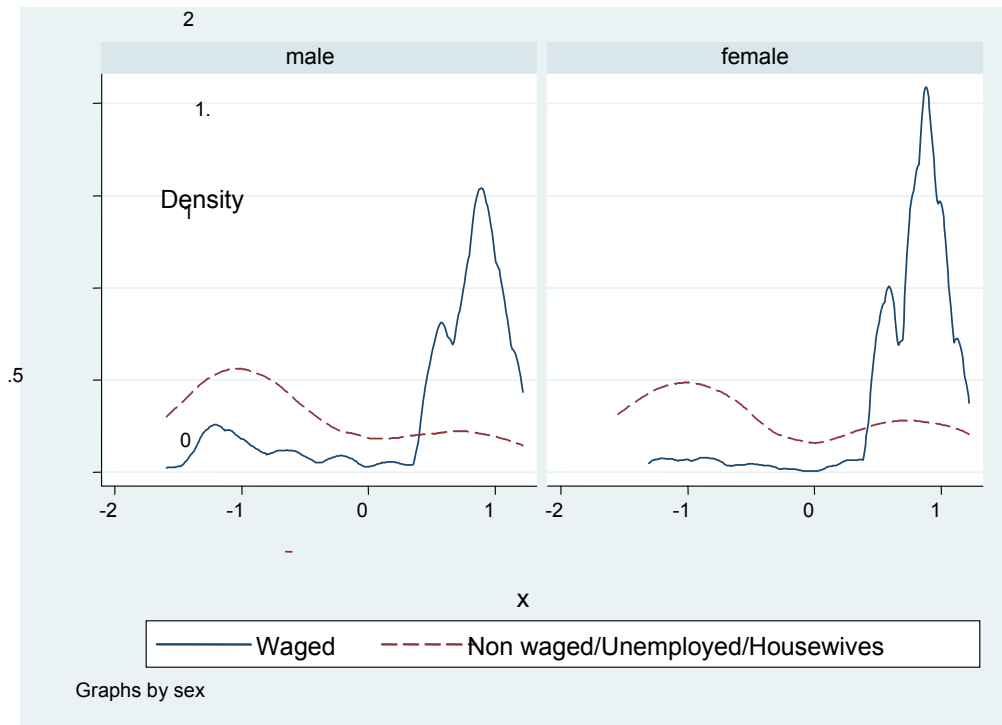
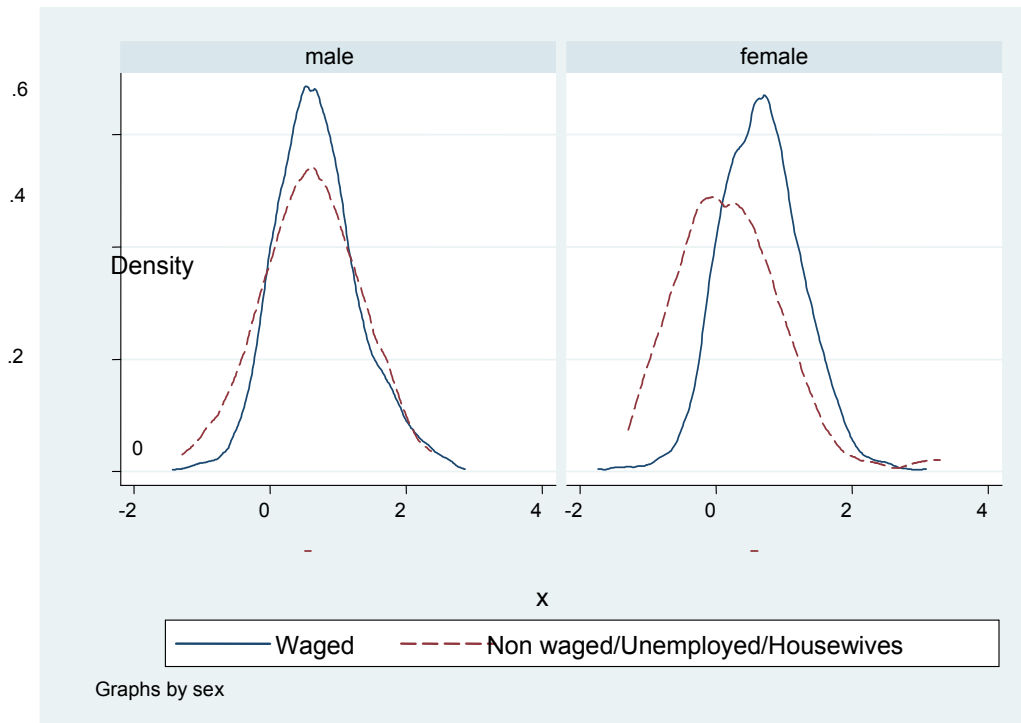


Figure 2: Log of Hourly Wage Distribution of Waged Workers in 1998 by Current Status, by Gender, Age 26-64



Source : Based on author's calculations from ELMS and ELMPS

Figure 3: Job Security Index Distribution in 1998 and 2006 by Gender, Age 26-40

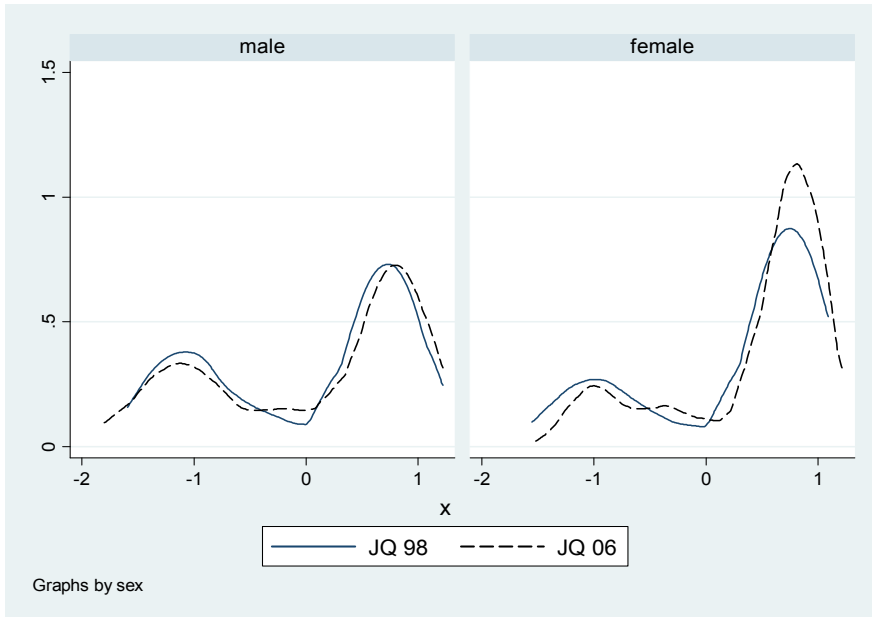
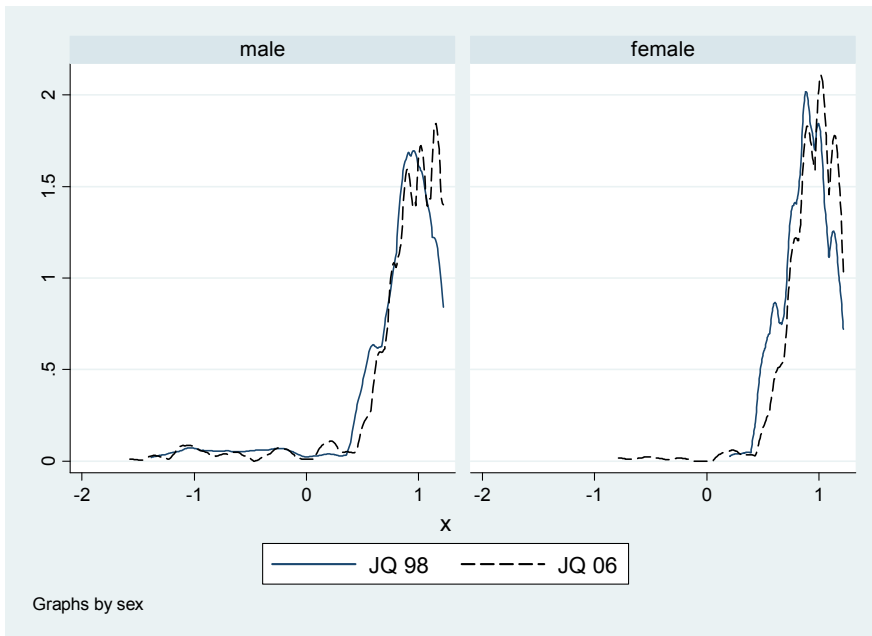
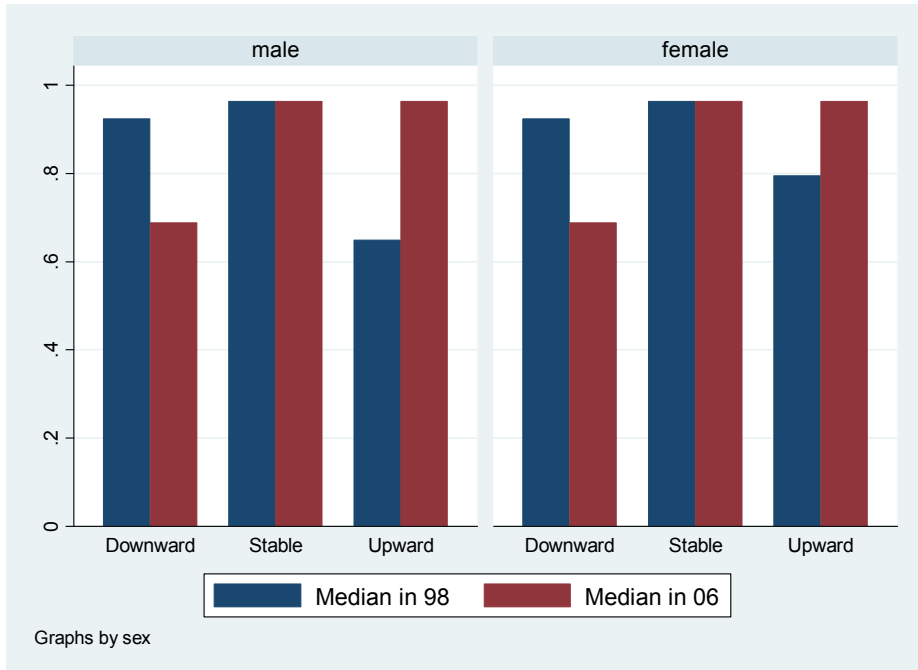


Figure 4: Job Security Index Distribution in 1998 and 2006 by Gender, Age 41-64



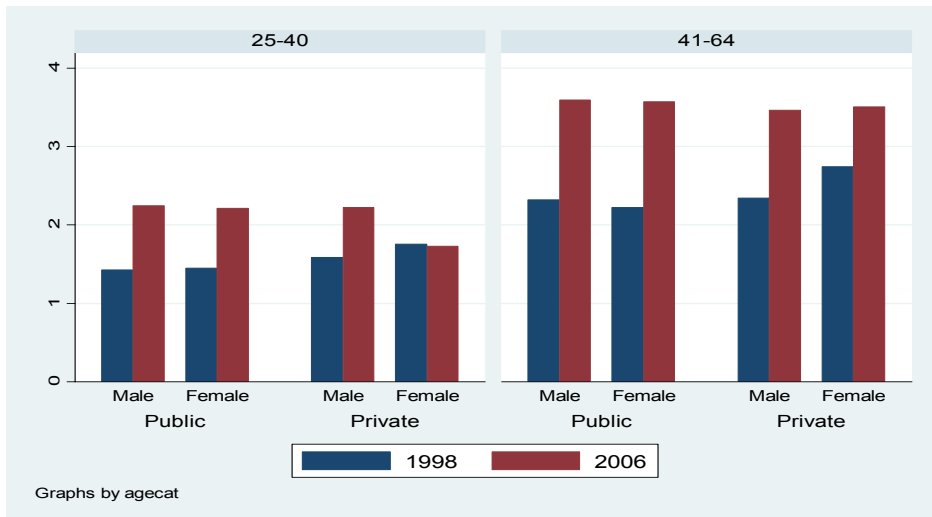
Source: Based on author's calculations from ELMS and ELMPS

Figure 5: Median of Job Security Index by Transition Direction in 1998 and 2006, by Gender, Aged 26-64



Source: Based on author's calculations from ELMS and ELMPS

Figure 6: Median of Real Hourly Wages of 1998 and 2006, by Sector of 2006, Gender, and Age



Source: Based on author's calculations from ELMS and ELMPS

Table 1: Sample Size in 1998 ELMS and 2006 ELMPS

	Males	Females
Individuals 26-64	2111	1540
Employed 26-64 in 1998 or 2006	2053	1028
Waged 26-64 in 1998 or 2006	1681	761
Waged 26-64 in 1998 and 2006	1100	515

Notes: Based on 2006 age criteria

Source: Based on author's calculations from ELMS and ELMPS

Table 2: Number of Job Turnover by Gender and Age

Number of Jobs	Male		Female	
	18-40	41-64	18-40	41-64
One Job	45.6%	26.5%	69.9%	49.9%
2 Jobs	41.0%	44.9%	26.1%	38.0%
3 or More	13.5%	28.6%	4.0%	12.1%
Totals	3417	1349	1170	673

Source: Based on author's calculations from ELMPS

Table 3: The Mean Job Security Index of First Job-by-Job Turnover, Gender, and Age

Number of Jobs	Female		Male	
	18-40	41-64	18-40	41-64
One	0.15	0.87	-0.07	0.86
	(0.89)	(0.29)	(0.95)	(0.31)
Two	750	290	1051	281
	-0.04	0.80	-0.60	0.54
Three or more	(0.83)	(0.42)	(0.88)	(0.74)
	284	238	849	443
Three or more	-0.17	0.79	-0.69	0.31
	(0.87)	(0.42)	(0.81)	(0.87)
	48	78	283	250

Notes: Number between brackets is the standard deviation

Source: Based on author's calculations from ELMPS

Table 4: The Mean of Job Security Index of Second Job-by-Job Turnover, Gender, and Age

Number of Jobs	Female		Male	
	18-40	41-64	18-40	41-64
Second	0.23	0.96	-0.13	0.84
	(0.81)	(0.19)	(0.94)	(0.41)
Third	280	233	887	466
	-0.21	0.85	-0.56	0.33
Third	(0.88)	(0.36)	(0.85)	(0.88)
	49	74	304	240

Notes: Number between brackets is the standard deviation

Source: Based on author's calculations from ELMPS

Table 5: The Mean Job Security Index of Third Job

The Job Security Index of Third Job	Female		Male	
	18-40	41-64	18-40	41-64
Third	0.33	0.95	0.07	0.74
	(0.85)	(0.35)	(0.90)	(0.58)
	47	73	331	251

Notes: Number between brackets is the standard deviation

Source: Based on author's calculations from ELMPS

Table 6: Transition Direction and Magnitude of Job Security Index from First to Second Job by Gender, Age Category 18-40

Mobility Direction	Male			Female		
	%	Quality of first Job (median)	Average change	%	Quality of first Job (median)	Average change
Down	20.9% (188)	-0.61	-0.32	27.1% (81)	0.26	-0.41
No Change	22.6% (206)	-0.82	0.00	22.4% (73)	0.90	0.00
Up	56.6% (487)	-1.11	0.78	50.5% (152)	-0.68	0.68

Notes: Numbers between brackets are observation numbers
Source: Based on author's calculations from ELMPS

Table 7: Transition Direction and Magnitude of Job Security Index from First to Second Job by Gender, Age Category 41-64

Mobility Direction	Male			Female		
	%	Quality of first Job (median)	Average change	%	Quality of first Job (median)	Average change
Down	19.9% (112)	0.90	-0.28	13.1% (44)	0.92	-0.11
No Change	25.2% (156)	0.90	0.00	34.7% (100)	0.93	0.00
Up	55% (349)	0.89	0.48	52.3% (177)	0.92	0.27

Notes: Numbers between brackets are observation numbers
Source: Based on author's calculations from ELMPS

Table 8: Sector Transition from First to Second Job by Gender, Age 18-40

Second Job First Job	Male 18-40				Female 18-40			
	G/Pub	Priv.	Didn't transit	Total	G/Pub	Priv.	Didn't transit	Total
Government/Public	29.2%	7.1%	63.7%	100% (25)	26.4%	1.7%	71.9%	100% (57.4)
Private Sector of the 2 nd Job (waged)	8.2%	53.1%	38.7%	100% (75)	6.6%	27.0%	66.5%	100% (42.6)
	27.6%	72.4%			59%	41%		

Notes: Numbers between brackets are sector distributions of first job
Source: Based on author's calculations from ELMPS

Table 9: Sector Transition from First to Second Job by Gender, Age 41-64

Second Job First Job	Male 41-64				Female 41-64			
	G/Pub	Priv.	Didn't transit	Total	G/Pub	Priv.	Didn't transit	Total
Government/Public	53.8%	10.2%	36%	100% (69.8)	47.2%	1.7%	51.1%	100% (92.2)
Private Sector of the 2 nd Job (waged)	30.8%	60.5%	8.7%	100% (30.2)	22%	34.4%	43.6%	100% (7.8)
	70.9%	28.1%			93.2%	6.8%		

Notes: Numbers between brackets are sector distributions of first job
Source: Based on author's calculations from ELMPS

Table 10: The Mean of Job Security Index of First Job by Current Status, Gender, and Age

Status in 2006	Age 18-40				Age 41-64			
	Male		Female		Male		Female	
	Quality of First Job	% of Current Status	Quality of First Job	% of Current Status	Quality of First Job	% of Current Status	Quality of First Job	% of Current Status
Waged	-0.31	71.68	0.22	66.32	0.57	76.82	0.85	79.19
Non Waged	-0.92	26.18	-0.60	11.86	0.01	14.84	0.27	3.58
Unemployed	-0.93	2.04	-0.80	4.69	-0.31	0.53	.	-
Housewife	-	-	-0.55	14.28	-	-	0.57	6.6
Leave for	-	-	0.87	2.85	-	-	0.98	0.61
Retired	-	<0.5	-	-	0.87	7.77	0.83	9.87

Source: Based on author's calculations from ELMPS

Table 11: Employment Status Transitions between 1998 and 2006, Males Aged 26-64 in 2006 and 18-56 in 1998

Status 06 Status 98	Waged	Non Waged	Unemployed	Retired	Other	Row Totals	Distribution in 1998
Waged	86.9	5.68	0.85	5.81	0.72	100%	72.77
Non Waged	25.56	68.13	1.16	2.66	2.5	100%	17.66
Unemployed	60.81	22.03	5.79	2.01	9.36	100%	1.6
Retired	6.37	0	0	84.58	9.05	100%	4.55
Student	66.19	17.67	1.34	0	14.8	100%	3.39
Distr. in 06	72.82	17.39	1.39	4.8	3.58		100

Source: Based on author's calculations from ELMS and ELMPS

Table 12: Employment Status Transitions between 1998 and 2006, Female Aged 26-64 in 2006 and 18-56 in 1998

Status2006 Status98	Waged	Non Waged	Unempl oyed	House wife	Leave	Retired	Other	Row Totals	Distribution in 1998
Waged	81.51	0.56	1.02	7.48	0.97	6.3	2.16	100%	41.73
Non Waged	15.87	39.51	0	38.42	0	0	6.19	100%	2.24
Unemployed	13.77	2.49	2.04	63.66	0.94	0	17.09	100%	0.95
Housewife	8.87	3.36	0.54	77.18	0.31	1.34	8.39	100%	42.42
Leave	61.85	0	0	30.35	7.8	0	0	100%	0.88
Retired	0	0	0	36.95	0	63.05	0	100%	3.05
Student	29.72	0.26	0.31	46.18	1.01	0	22.51	100%	8.72
Distr. in 06	41.71	2.27	0.96	42.34	0.89	3.08	8.75		100

Source: Based on author's calculations from ELMS and ELMPS

Table 13: Job Security Index Value Transition between 1998 and 2006, Aged 26-64

Job Security	Male	Female	Total
Downward	30.7	28.1	29.8
Stable	11.1	11.4	11.2
Upward	58.2	60.5	59.0
Col Total	100	100	100

Table 14: Job Security Index Rank Transition between 1998 and 2006, Males Aged 26-64

1998 Quartile	2006 Quartile				Row Total	Dist. In 1998
	1	2	3	4		
1	51.3	26.3	10.0	12.4	100	21.4%
2	4.6	30.6	22.8	42.0	100	28.1%
3	1.4	26.6	24.7	47.3	100	20.6%
4	1.8	10.7	20.0	67.5	100	29.9%
Dist.in 2006	13.1	22.9	19.6	44.4	100	

Table 15: Job Security Index Rank Transition between 1998 and 2006, Females Aged 26-64

1998 Quartile	2006 Quartile				Row Total	Dist. In 1998
	1	2	3	4		
1	52.0	24.9	17.0	6.1	100	9.5%
2	0.6	34.0	23.2	42.2	100	36.0%
3	0.9	29.2	20.1	49.9	100	23.5%
4	0.5	12.4	19.3	67.8	100	31.0%
Dist. In 2006	5.6	25.3	20.7	48.5	100	

Source: Based on author's calculations from ELMS and ELMPS

Table 16: Wage Transition Direction between 1998 and 2006 by Gender, Aged 26-64

Wage Mobility	Male	Female	Total
Downward	19.0	15.7	18.0
Stable ¹²	3.6	3.4	3.5
Upward	77.4	80.8	78.5

Source: Based on author's calculations from ELMS and ELMPS

Table 17: Hourly Wage Rank Transition between 1998 and 2006, Males Aged 26-64

1998 Quartile	2006 Quartile				Row Total	Dist. In 1998
	1	2	3	4		
1	35.7	34.5	17.9	11.9	100	26.7%
2	14.6	25.5	41.9	18.1	100	27.1%
3	7.1	26.5	30.3	36.1	100	23.4%
4	6.0	6.8	19.7	67.5	100	22.8%
Total	16.5	23.9	27.7	31.9	100	

Table 18: Hourly Wage Rank Transition between 1998 and 2006, Females Aged 26-64

1998 Quartile	2006 Quartile				Row Total	Dist. In 1998
	1	2	3	4		
1	33.7	33.8	16.6	15.8	100	27.6%
2	12.9	27.4	33.6	26.1	100	25.7%
3	3.7	17.0	43.9	35.5	100	25.9%
4	2.2	10.7	24.3	62.9	100	20.9%
Total	14.0	23.0	29.6	33.4	100	

Source: Based on author's calculations from ELMS and ELMPS

Table 19: Wage / Security Tradeoff, Males Aged 26-45, Cell/ Total Percentage

Male 26-45 Real Hourly Wage	Job Security			Total
	Worse	Stable	Better	
Worse	5.96	1.11	9.55	16.62
Stable	0.74	0.09	2.1	2.93
Better	20.78	8.98	50.69	80.45
Total	27.48	10.18	62.34	100

Table 20: Wage / Security Tradeoff, Females Aged 26-45, Cell/ Total Percentage

Female 26-45 Real Hourly Wage	Job Security			Total
	Worse	Stable	Better	
Worse	4.71	1.29	7.41	13.42
Stable	0.73	0.7	2.08	3.51
Better	21.79	10.48	50.8	83.07
Total	27.23	12.48	60.29	100

¹² Stable status is defined for wage differences within 0.5 of the standard error of the difference.

Table 21: Marginal Effects of Probit with Selection Model, for Females Continued to Be Waged Workers in 2006, Conditional on Being Waged Workers in 1998

VARIABLES	(1) Marginal effect wagecont wage98	(2) Coef wagecont	(3) Coef wage98	(4) athrho
agecat2	0.0287 (0.110)	0.0998 (0.355)	0.637*** (0.154)	
agecat3	0.173 (0.193)	0.698 (0.489)	1.422*** (0.178)	
agecat4	0.238 (0.239)	1.061* (0.591)	2.029*** (0.191)	
edu982	0.0636 (0.116)	0.232 (0.363)	0.671*** (0.135)	
edu983	0.00437 (0.111)	0.0150 (0.376)	0.832*** (0.132)	
pubpriv98	-0.0479 (0.101)	-0.164 (0.342)		
marr9806	-0.151* (0.0913)	-0.472 (0.364)		
rlnhw98	0.140** (0.0699)	0.477** (0.235)		
fact98	0.155** (0.0746)	0.530** (0.218)		
expljob	-0.00437 (0.00400)	-0.0149 (0.0134)		
marr98	0 (0)		-0.798*** (0.139)	
wealth	0 (0)		-0.141 (0.0979)	
proj98	0 (0)		-0.572*** (0.110)	
urban98	0 (0)		-0.194 (0.124)	
fathedu063	0 (0)		-0.0707 (0.173)	
fathedu064	0 (0)		-0.178 (0.178)	
fathocc4gr1	0 (0)		0.0216 (0.141)	
fathocc4gr2	0 (0)		-0.140 (0.148)	
fathocc4gr3	0 (0)		0.0133 (0.162)	
Constant		0.226 (1.072)	-0.802*** (0.164)	0.546 (0.543)
Observations	927	927	927	927
Model Chi2 test	77.00			
p-value	0			
Chi2 test for comparison	0.915			
p-value	0.339			
rho	0.497			
Censored Observations	609			

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

Table 22: Marginal Effects of Probit With Selection Model, for Males Continued to Be Waged Workers in 2006, Conditional on Being Waged Workers in 1998

VARIABLES	(1) Marginal effect Wage cont wage98	(2) Coef Wage cont	(3) Coef Wage 98	(4) athrho
agecat2	0.0164 (0.0301)	0.178 (0.310)	0.789*** (0.119)	
agecat3	-0.000826 (0.0379)	-0.00839 (0.385)	1.211*** (0.132)	
agecat4	-0.0105 (0.0483)	-0.102 (0.468)	1.699*** (0.144)	
edu982	-0.0241 (0.0313)	-0.216 (0.246)	0.155 (0.138)	
edu983	-0.00735 (0.0280)	-0.0728 (0.270)	0.112 (0.118)	
pubpriv98	0.0518 (0.0327)	0.528* (0.276)		
prof2	-0.0469* (0.0279)	-0.479* (0.256)		
prof3	-0.0420 (0.0315)	-0.429 (0.295)		
rlnhw98	-0.00927 (0.0148)	-0.0946 (0.149)		
fact98	0.0299* (0.0170)	0.305* (0.157)		
expljob	0.000400 (0.00215)	0.00408 (0.0221)		
wealth	0 (0)		0.121* (0.0720)	
prj98	0 (0)		-1.010*** (0.0965)	
urban98	0 (0)		-0.170 (0.116)	
fathedu3	0 (0)		-0.156 (0.149)	
fathedu4	0 (0)		0.0294 (0.194)	
fathoccg1	0 (0)		-0.236* (0.130)	
fathoccg2	0 (0)		-0.110 (0.137)	
fathoccg3	0 (0)		-0.165 (0.145)	
Constant		1.620*** (0.464)	-0.0233 (0.150)	-0.260 (0.338)
Observations	1010			
Model Chi2 test	39.38			
p-value	4.57e-05			
Chi2 test for comparison	0.648			
p-value	0.421			
rho	-0.254			
Censored Observations	430			

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

Table 23: Heckman Selection Model for Log Wage Difference for Females, Conditional on Being Waged Workers in 1998

VARIABLES	(1) dy/dx diffhwage	(2) coef. wage98	(3) athrho	(4) lnsigma
agecat2	0.362* (0.199)	0.403** (0.157)		
agecat3	1.170*** (0.196)	1.200*** (0.160)		
agecat4	1.638*** (0.214)	1.718*** (0.165)		
edu982	0.720*** (0.151)	0.742*** (0.129)		
edu983	0.794*** (0.147)	0.698*** (0.118)		
preginterr	-0.227* (0.122)			
pubpriv06	-0.0979 (0.144)			
prof2	0.0307 (0.0843)			
js982	0.359** (0.147)			
js983	0.397** (0.162)			
js984	0.553*** (0.196)			
wa982	-0.395*** (0.0855)			
wa983	-0.619*** (0.111)			
wa984	-1.168*** (0.143)			
samejob	-0.0594 (0.114)			
expljob	-0.0447 (0.0281)			
expljob2	0.00282* (0.00145)			
urban98	-0.135 (0.139)	-0.141 (0.118)		
marr98		-0.226** (0.0977)		
wealth		-0.153*** (0.0542)		
proj98		-0.0799 (0.0641)		
fathedu063		-0.0910 (0.106)		
fathedu064		0.0418 (0.108)		
fathocc4gr1		-0.0871 (0.0804)		
fathocc4gr2		-0.217** (0.0899)		
fathocc4gr3		-0.107 (0.104)		
Constant	-1.502*** (0.271)	-1.229*** (0.151)	2.619*** (0.340)	0.145** (0.0577)
Observations	886			
Model Chi2 test	190.5			
p-value	0			
Chi2 test for comparison	72.43			
p-value	0			
rho	0.989			
Censored Observations	609			

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

Table 24: Heckman Selection Model for Log Wage Difference for Males, Conditional on Being Waged Workers in 1998

VARIABLES	(1) dy/dx diffhwage	(2) coef. wage98	(3) athrho	(4) lnsigma
agecat2	0.782*** (0.136)	0.803*** (0.121)		
agecat3	1.081*** (0.156)	1.165*** (0.132)		
agecat4	1.221*** (0.177)	1.561*** (0.143)		
edu982	0.121 (0.114)	0.0533 (0.131)		
edu983	0.287*** (0.106)	0.172 (0.108)		
pubpriv06	-0.0790 (0.0916)			
prof2	0.0766 (0.0889)			
prof3	-0.0225 (0.115)			
js982	0.104 (0.103)			
js983	0.261** (0.118)			
js984	0.135 (0.132)			
wg982	-0.283*** (0.0738)			
wg983	-0.566*** (0.0847)			
wg984	-1.091*** (0.108)			
samejob	-0.00100 (0.0745)			
expljob	-0.0386** (0.0172)			
expljob2	0.00175*** (0.000635)			
urban98	0.265*** (0.0840)	-0.0283 (0.107)		
wealth		-0.0127 (0.0554)		
prj98		-0.606*** (0.0897)		
fathedu3		-0.139 (0.116)		
fathedu4		0.249* (0.143)		
fathoccg1		-0.233** (0.0996)		
fathoccg2		-0.0117 (0.105)		
fathoccg3		-0.152 (0.111)		
Constant	-0.724*** (0.191)	-0.395*** (0.140)	1.591*** (0.148)	-0.0359 (0.0399)
Observations	958			
Model Chi2 test	224.8			
p-value	0			
Chi2 test for comparison	35.62			
p-value	2.40e-09			
rho	0.920			
Censored Observations	430			

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

Table 25: Heckman Selection Model for Log Wage Difference for Females, Conditional on Continuing As Waged Workers in 2006

VARIABLES	(1) dy/dx diffhlwage	(2)coef. wagecont	(3) athrho	(4) lnsigma
agecat2	-0.0827 (0.186)	0.194 (0.320)		
agecat3	0.440** (0.189)	0.459 (0.394)		
agecat4	0.506** (0.212)	0.846** (0.404)		
edu982	0.346** (0.138)	0.0676 (0.310)		
edu983	0.210 (0.142)	-0.524*** (0.179)		
preginterr	-0.193 (0.167)			
prof2	-0.0201 (0.107)			
js982	0.543*** (0.154)			
js983	0.540*** (0.163)			
js984	0.642*** (0.205)			
wa982	-0.329*** (0.116)			
wa983	-0.518*** (0.138)			
wa984	-0.875*** (0.183)			
samejob	-0.141 (0.108)			
expljob	0.00580 (0.0172)			
expljob2	2.20e-05 (0.000174)			
urban98	-0.255** (0.129)	-0.0688 (0.202)		
marr9806		-0.533* (0.273)		
rlnhw98		0.352*** (0.124)		
fact98		0.127 (0.128)		
Constant	0.164 (0.211)	0.757*** (0.292)	18.37 (432.5)	-0.156*** (0.0417)
Observations	357			
Model Chi2 test	96.32			
p-value	0			
Chi2 test for comparison	45.20			
p-value	0			
rho	1			
Censored Observations	50			

Table 26: Heckman Selection Model for Log Wage Difference for Males, Conditional on Continuing As Waged Workers in 2006

VARIABLES	(1) dy/dx diffhwage	(2) coef. wagecont	(3) athrho	(4) lnsigma
agecat2	0.0819 (0.122)	0.365* (0.221)		
agecat3	0.207 (0.146)	0.271 (0.245)		
agecat4	0.158 (0.170)	0.183 (0.259)		
edu982	-0.0256 (0.0974)	-0.136 (0.237)		
edu983	0.144 (0.0984)	0.153 (0.221)		
pubpriv06	-0.148 (0.0979)			
prof2	0.0535 (0.0913)	-0.219 (0.175)		
prof3	-0.0334 (0.117)			
js982	0.143 (0.110)			
js983	0.343*** (0.125)			
js984	0.238* (0.139)			
wg982	-0.346*** (0.0800)			
wg983	-0.608*** (0.0916)			
wg984	-1.062*** (0.117)			
samejob	-0.0523 (0.0804)			
expljob	-0.0591*** (0.0199)			
expljob2	0.00255*** (0.000737)			
urban98	0.203*** (0.0744)	-0.350* (0.203)		
rlnhw98		-0.203 (0.145)		
fact98		0.643*** (0.104)		
Constant	0.844*** (0.162)	1.656*** (0.250)	-0.181 (0.148)	-0.262*** (0.0301)
Observations	627	627	627	627
Model Chi2 test	125.7	125.7	125.7	125.7
p-value	0	0.335	0	0.335
Chi2 test for comparison	0.928	0.928	0.928	0.928
p-value	0.335	0	0.335	0
rho	-0.179	-0.179	-0.179	-0.179
Censored Observations	54	54	54	54

Table 27: Heckman Selection Model for Job Security Change for Females, Conditional on Being Waged Workers in 1998

VARIABLES	(1) dy/dx jsdiff	(2)coef. wage98	(3) athrho	(4) lnsigma
prof2	0.0374 (0.0571)			
agecat2	-0.0766 (0.0971)	0.609*** (0.172)		
agecat3	0.0824 (0.108)	1.526*** (0.189)		
agecat4	0.141 (0.124)	2.153*** (0.200)		
edu982	0.000400 (0.0669)	0.757*** (0.142)		
edu983	0.0996 (0.0726)	0.891*** (0.139)		
js982	-0.543*** (0.0762)			
js983	-0.718*** (0.0835)			
js984	-0.866*** (0.0945)			
wa982	0.0693 (0.0529)			
wa983	0.0667 (0.0648)			
wa984	-0.0638 (0.0850)			
samejob	-0.0741 (0.0580)			
expljob	0.00209 (0.0173)			
expljob2	-0.000179 (0.000907)			
urban98	0.0122 (0.0558)	-0.0977 (0.133)		
marr98		-0.589*** (0.148)		
wealth		-0.286*** (0.0933)		
proj98		-0.476*** (0.114)		
fathedu063		-0.0699 (0.183)		
fathedu064		-0.139 (0.188)		
fathocc4gr1		0.0311 (0.153)		
fathocc4gr2		-0.202 (0.158)		
fathocc4gr3		-0.0767 (0.172)		
Constant	0.605*** (0.153)	-1.156*** (0.181)	0.0520 (0.183)	-1.065*** (0.0428)
Observations	887	887	887	887
Model Chi2 test	127.0	127.0	127.0	127.0
p-value	0	0	0.781	0.781
Chi2 test for comparison	0.0771	0.0771	0.0771	0.0771
p-value	0.781	0.781	0	0
rho	0.0519	0.0519	0.0519	0.0519
Censored Observations	609	609	609	609

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

Table 28: Heckman Selection Model for Job Security Change for Males, Conditional On Being Waged Workers in 1998

VARIABLES	(1) dy/dx jsdiff	(2) coef. wage98	(3) athrho	(4) lnsigma
agecat2	0.0785 (0.102)	0.895*** (0.126)		
agecat3	0.0932 (0.123)	1.347*** (0.140)		
agecat4	0.168 (0.144)	1.856*** (0.151)		
edu982	0.0605 (0.0675)	0.163 (0.143)		
edu983	0.200*** (0.0672)	0.190 (0.120)		
prof2	0.0342 (0.0625)			
prof3	-0.113 (0.0807)			
js982	-0.605*** (0.0656)			
js983	-0.852*** (0.0776)			
js984	-0.948*** (0.0853)			
wg982	0.0209 (0.0552)			
wg983	0.0722 (0.0630)			
wg984	-0.0838 (0.0799)			
samejob	-0.0146 (0.0561)			
expljob	-0.0188 (0.0136)			
expljob2	0.000664 (0.000499)			
urban98	-0.0810 (0.0511)	-0.187 (0.121)		
wealth		0.0797 (0.0738)		
prj98		-1.073*** (0.101)		
fathedu3		-0.177 (0.154)		
fathedu4		0.111 (0.198)		
fathoccg1		-0.277** (0.136)		
fathoccg2		-0.0660 (0.142)		
fathoccg3		-0.208 (0.152)		
Constant	0.791*** (0.152)	-0.163 (0.159)	-0.201 (0.146)	-0.668*** (0.0332)
Observations	958	958	958	958
Model Chi2 test	219.4	219.4	219.4	219.4
p-value	0	0	0	0
Chi2 test for comparison	2.044	2.044	2.044	2.044
p-value	0.153	0.153	0.153	0.153
rho	-0.198	-0.198	-0.198	-0.198
Censored Observations	430	430	430	430

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

Appendix

Figure A7: Working Life Cycle of Females by Cohort

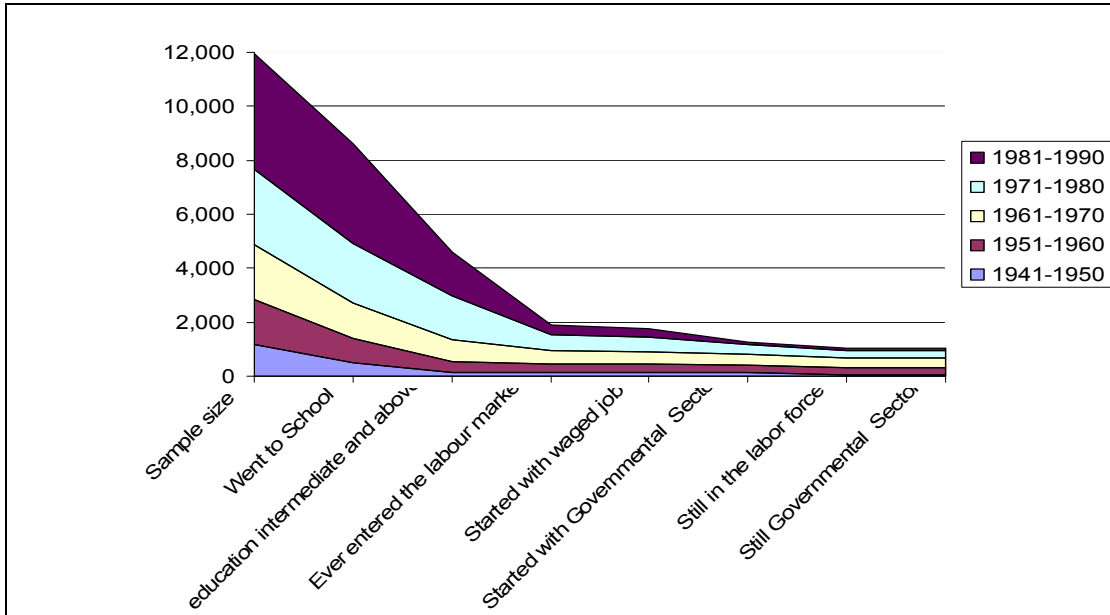


Figure A8: Log Real Hourly Wage Distribution in 1998 and 2006 (2006=100) for the Panel Females' group, by Age Group, Intermediate Education and above

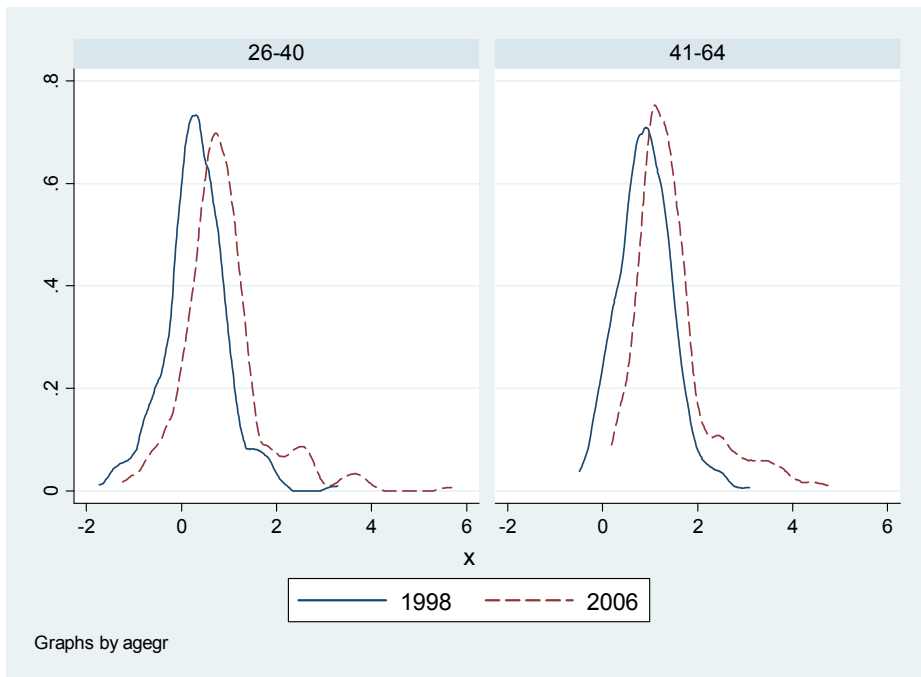


Figure A9: Log Real Hourly Wage Distribution in 1998 and 2006 (2006=100) for the Panel Males' group, by Age Group, Intermediate Education and above

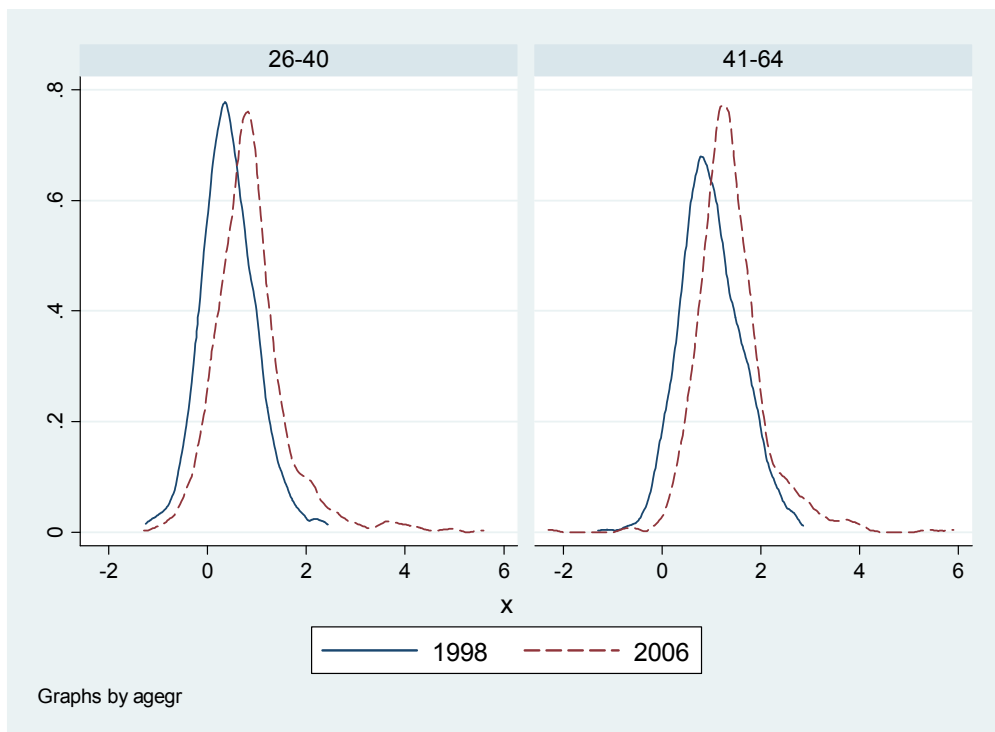


Table A1: Working Life Cycle of Females by Cohort

Cohort	Sample size	Went to School	Education intermediate and above	Ever entered the labor market	Started with waged job	Started with Governmental Sector	Still in the labor force	Still Governmental Sector
1941-1950	1,168	491	157	127	127	122	59	55
1951-1960	1,683	892	392	320	315	301	271	264
1961-1970	2,015	1325	789	501	466	384	352	348
1971-1980	2,799	2189	1,655	599	555	348	277	268
1981-1990	4,305	3725	1625	347	284	109	96	94

Table A2: Females' Percentage in each Hourly Wage Quartile, Based on whole Weighted Samples 18-64 in 1998 and 2006, Intermediate Education and above

Wage Quartiles*	% of Females in 1998	% of Females in 2006
1	34.2	24.2
2	29.9	23.5
3	26.4	28.5
4	26.8	30.6
% in the Whole Waged sample	29.4	26.6

Source: Based on author's calculations from ELMS and ELMPS

Table A3: Females' Percentage in each Job Security Index Quartile, Based on whole Weighted Samples 18-64 in 1998 and 2006, Intermediate Education and above

Job Security Index Quartiles*	% of Females in 1998	% of Females in 2006
1	24.1	14.1
2	34.2	28.8
3	37.1	31.1
4	29.8	33
% in the Waged sample	31.1	26.6

Notes: * Quartiles' Values differ from Year to Year

Source: Based on author's calculations from ELMS and ELMPS

Table A4: Descriptive Statistics of Some Selected Variables of the Target Panel Sample, Females

	Sample in 98 aged 26-50 in 2006*	Waged in 1998	Remained waged in 2006
Individual Characteristics			
Age**	28.5	32.1	33.2
Education**			
Secondary & intermediate	63.8%	46.9%	44.9%
Above Intermediate	13.3%	16.9%	17.7%
University & above	22.9%	36.3%	37.5%
Married 98**	63%	66.1%	72.7%
Married between 98 & 06**	22.4%	15.5%	9.8%
Birth 98 and 06**	54.3%	37.7%	34.9%
Spouse or Father characteristics			
Education**			
Illiterate	11.2%	8.9%	6.8%
Prim. Or Prep.	15.5%	13.8%	13.4%
Intermediate	37.3%	32.2%	33.9%
Above Intermediate	36.2%	45.1%	45.9%
Occupation**			
Professional & Managerial & Technicians	57.1%	67.1%	68.2%
Clerks & Sales	17.6%	16.8%	16.5%
Agriculture & Fishing	4.5%	2.1%	1.8%
Crafts & Trade	20.7%	14.0%	13.6%
Mother education			
Illiterate	64.8%	58.6%	58%
Prim. Or Prep.	26.6%	30.2%	30.6%
Intermediate	5.2%	6.2%	6.6%
Above Intermediate	3.4%	5.1%	4.9%
Wealth**	0.42	0.60	0.62
Urban/Rural	75.1%	80.7%	81.2%
Project 98	29.2%	20.6%	18.5%
Job Characteristics			
		Dropped Waged Work	Continue Waged Work
Experience 1 job		5.5	10.4
Experience current job		2.8	8.9
Sector in 98 (% of Public)		45.7%	90.5%
Wage of 98 (Hourly mean wage)		1.7	2.1
Job security of 98		-0.36	0.66
Occupation of 06 (% of Professionals)			74%
Professional (mean of wage difference) ²			0.73
Non Professional (mean of wage difference)			0.68
Changed Job from 98 to 06			19.8%
Yes (mean of wage difference)			0.74
No (mean of wage difference)			0.68
Pregnancy leave*			12.7%
Yes (mean of wage difference)			0.51
No (mean of wage difference)			0.72

Notes: * Significant at the univariate level. ** Significant at the univariate level for wage working in 98 continuing to work in 2006. Those who were studying in 1998 were excluded from the sample. Professionals, Managers, Technicians vs. Clerks and Sales

Table A5: Descriptive Statistics of Some Selected Variables of the Target Panel Sample, Males

	Sample in 98 aged 26-50 in 2006*	Waged in 1998	Remained waged in 2006
Individual Characteristics			
Age in 1998**	28.8	31.1	31.0
Education 1998**			
Secondary & intermediate	61.5%	56.3%	54.7%
Above Intermediate	12.9%	14.3%	14.6%
University & above	25.6%	29.4%	30.7%
Married 98**	41%	54%	55.6%
Married between 98 & 06**	34.5%	30.0%	30.4%
Birth 98 and 06			
Spouse or Father characteristics			
Education**			
Illiterate	39.0%	37%	36.8%
Prim. Or Prep.	40.7%	43.1%	43.1%
Intermediate	11.5%	11.1%	11.0%
Above Intermediate	8.8%	8.8%	9.2%
Occupation			
Professional & Managerial & Technicians	34.9%	34.0%	34.7%
Clerks & Sales	18.2%	19.3%	18.2%
Agriculture & Fishing	21.8%	21.1%	21.9%
Crafts & Trade	25.1%	25.7%	25.2%
Mother education			
Illiterate	71.5	69.8	70.0
Prim. Or Prep.	21.2	23.3	23.3
Intermediate	4.4	3.9	3.5
Above Intermediate	2.9	3.0	3.1
Wealth**			
Urban/Rural	69.5%	72.1%	71.3%
Project 98	35.9%	23.1%	22.7%
Job Characteristics			
Experience 1 job** 1998	9.6	9.9	10.1
Experience current job 2006	10.3	11.6	12.1
Sector in 98 (% of Public)**		61.1%	65.5%
Wage of 98 (Hourly mean wage)*		2.1	2.1
Job security of 98*		0.33	0.38
Occupation of 06 *			
Professionals & Managers & (mean of wage difference) ²			0.58
Clerks & Sales (mean of wage difference)			0.6
Agriculture - fishing - crafts & trading (mean of wage difference)			0.37
Changed Job from 98 to 06			29.9%
Yes (mean of wage difference)			0.52
No (mean of wage difference)			0.54

Notes: * Significant at the univariate level. ** Significant at the univariate level for wage working in 98 continuing to work in 2006. Those who were studying in 1998 were excluded from the sample

Table A6: Variables' Names in the Analyses

Variables	Definition
Age	
agecat1	26-30 years (Reference)
agecat2	31-35 years
agecat3	36-40 years
agecat4	41-45 years
Education in 1998	
edu981	Intermediate (Reference)
edu982	Above Intermediate
edu983	University and Above
Sector in 1998	
pubpriv98	Public =0/Private=1
samejob	0 if job 1998 and 2006 is the same, 1 o.w.
exp1job	Time from first 1998 till 1998
exp1job2	Squared time from first 1998 till 1998
Occupation	
prof1	Professional, managerial, technicians
prof2	Clerks, and sales
prof3	Agriculture, fishing, and craft workers
Marriage status	
marr9806	Married between 98 and 2006
preginterr	1 if took maternity leave of absence more than 3 months, 0 o.w.
marr98	Married in 1998
Job Security Index	
jsdiff*	Job Security Index difference between 2006 and 1998
fact98	Job Security Index value in 1998
js981	1 if being in first quartile of Job security Index of 1998, 0 o.w. (Reference)
js982	1 if being in second quartile of Job security Index of 1998, 0 o.w.
js983	1 if being in third quartile of Job security Index of 1998, 0 o.w.
js984	1 if being in fourth quartile of Job security Index of 1998, 0 o.w.
Wage	
wage98*	1 if was wageworker in 1998, 0 o.w.
Wagecont*	1 if was wageworker in 1998 and continued to in 2006, 0 o.w.
diffhwage*	Difference of log hourly real wage of 2006 and 1998
wg981	1 if being in first quartile of wage in 1998, 0 o.w. (Reference)
wg982	1 if being in second quartile of wage in 1998, 0 o.w.
wg983	1 if being in third quartile of wage in 1998, 0 o.w.
wg984	1 if being in fourth quartile of wage in 1998, 0 o.w.
Family Characteristics	
wealth98	Wealth Index value in 1998 (based on family assets)
proj98	1 if family has a business in 1998, 0 o.w.
urban98	1 if residence in 1998 was urban, 0 for rural
fathedu061 & fathedu062	1 for no or low father's education, 0 o.w. (Reference)
fathedu063	1 for intermediate and above father's education, 0 o.w.
fathedu064	1 for university and above father's education, 0 o.w.
fathocc4gr1	1 if father's occupation among professionals, managers, and technicians, 0 o.w. (Reference)
fathocc4gr2	1 if father's occupation in clerks and sales, 0 o.w.
fathocc4gr3	1 if father's occupation in agriculture and fishing, 0 o.w.
fathocc4gr4	1 if father's occupation craft, trading, and elementary jobs, 0 o.w.

Notes: * These variables were used as dependent variables.