Transitions to Employment and Marriage Among Young Men in Egypt

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Abstract

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We examine in this paper the transition from school to work and the transition to marriage among young men with at least a secondary education in Egypt, with particular attention to how the first transition affects the second. In examining the transition from school to work, we analyze the determinants of the duration of transition to first employment after school completion, as well as the type and quality of job obtained in such employment. We then move to an examination of the determinants of further mobility to a second job. In examining the transition to marriage, we investigate the effect of time to the first job and the time to the first good job, if any, on the timing of marriage, controlling for cohort of birth, education, family background and community-level variables.

Our findings are that the duration of transition to first employment has fallen over time primarily because of the reduced availability of formal employment, especially public employment, making it less worthwhile for young men to remain jobless searching for such employment. Having access to work in a family enterprise reduces significantly the duration of transition from school to work as does the need to be the main breadwinner of the family. While education beyond the secondary level has no significant effect on the duration of the transition, it does significantly affect the probability of getting a good job and a formal job, as a first job. The hazard of transition to a second job is negatively associated with the time it takes to get a first job, but that is primarily because it is negatively associated with the quality of the first job and the fact that it takes longer to get good first jobs. Our findings relating to the transition to marriage confirm both the importance of early entry into the job market and of obtaining good jobs for early transition into marriage. However, if delayed entry (due to search) raises the hazard of getting a good job, as is suggested in the first part of this paper, it may actually be a worthwhile strategy, from the point of view of curbing the delay in marriage, for an individual to spend more time in job search.

JEL classification: J12, J20

Keywords: transition from school to work, timing of marriage, youth, Egypt

1- Introduction

The transition of young people to adulthood in much of the Middle East has become by most accounts an increasingly protracted and anxious process in recent years for both the young people themselves and their families. The period between completing school, finding a job that meets one's expectations and accumulating the necessary resources for marriage has not only gotten longer, but is also increasingly accompanied by uncertainty, anxiety and frustration, as well-established patterns of employment and family formation are gradually disrupted. Some have dubbed this prolonged period of anxious waiting for the different elements of life that mark a completed transition to adulthood to come together as "wait adulthood" or "waithood" for short (Dhillon and Yousef 2007, Singerman 2007). As education levels rise, the expectations about job quality and standards of living within marriage also rise, at the same time that young people's ability to obtain good jobs relatively quickly appears to be declining in the context of a more competitive and informalized labor market.

We examine in this paper two important transitions in the life of young men, namely the transition from school to work and the transition to marriage, with particular attention to how the first of these two transitions affects the other. In the analysis of the transition from school to work, we look at the determinants of the duration leading to the first job after school (with a job defined as employment lasting at least six months), the determinants of the type and quality of the first job, and the determinants of the incidence and duration of the second job, if any, in an attempt to understand mobility patterns in the Egyptian labor market. In analyzing both the duration to the first and second jobs we use discrete-time proportional hazard models to account for the fact that some observations have complete durations and some have censored durations. We ordered probit and probit models to examine the quality and type of the first job. The covariates we use in these models include the youth's own education, the education of his parent's, his father's occupation, the presence of farm and non-farm enterprises in the household, time-varying local labor market conditions, including the unemployment rate, the proportion of employment in the public sector and the proportion of wage employment in the private sector, as well as controls for the region of residence at the time of exit from school. In all models we distinguish youth by birth cohort in order to determine the trends over time in the outcome variables we are examining. In the analysis of the transition to marriage, we examine how the timing of marriage is affected by the time to the first job, the time to the first "good" job, the incidence and duration of migration, the availability of rental housing in the district of residence at the time of school exit, as well as all the covariates of the school-to-work transition models listed above.

Although the "waithood" phenomenon affects both young men and young women in Egypt, we opted to focus on young men in this paper for several of reasons. According to prevailing social norms in Egypt, it is young men who are expected to be the primary breadwinners after marriage and it is they and their families who assume the bulk of the cost of marriage.[2] Young women's transition to marriage, the main marker of adulthood in Egypt, has also been prolonged in recent years, but this is often because they must wait for their prospective spouse to become "ready" for marriage by obtaining a good-enough job and accumulating the necessary resources

[2] While the bride and her family contribute some of the costs of marriage, about 70 percent of these costs on average are covered by the groom and his family according to data from the Egypt Labor Market Panel Survey of 2006 (Singerman 2007, see also analysis in Section 3 below).

to acquire housing and the other necessities of setting up a new household. With respect to transition from school to work, only about a third of young women ever make the transition to employment and most of those who do, leave their jobs at or before marriage, unless they happen to get one of the increasingly coveted and hard-to-get public sector jobs (See Assaad and El-Hamidi 2009). Thus in the case of young men, it is fairly safe to assume that the direction of causality runs from labor market trajectory to the timing of marriage, but that is highly unlikely to be the case for young women.

We further restrict our attention in this paper to males with at least an upper secondary education since it is only for that group that the sequencing of the transition is clearly defined as being from school to work rather than from early entry into work followed by dropout from school. Males with less than secondary education, often interrupt their schooling in order to go to work, putting into question the exogeneity of the schooling level to decision to go to work. However, the vast majority of those with secondary degrees and above hold terminal degrees for whom the decision to continue schooling is typically not an option. Among secondary school graduates, fewer than three percent have a general secondary degree that gives them the option to continue onto university. The rest have either 3-year or 5-year technical secondary degrees, which are for the most part terminal degrees in Egypt.[3] Similarly 2-year post secondary degrees and university degrees in Egypt are for the most part terminal degrees as well. It should also be noted that with the increasing educational attainment in Egypt, those with secondary school certificates and above are now the majority of labor market entrants. According to the Egypt Labor Market Panel Survey of 2006, our main source of data, these graduates constitute over 70 percent of all males who entered the job market in the ten years previous to the survey.

The remainder of this paper is divided into two main sections one on the transition from school to work and one on the transition to marriage. In Section 2, we begin by examining the determinants of the duration to a first job, and of the type and quality of employment obtained in this job. We end the section with an examination of the determinants of the transition to a second job, if any, in order to assess the factors that influence job mobility in the Egyptian labor market. In Section 3, we briefly examine changes in the timing and patterns of marriage for young men in Egypt and then examine how the timing of marriage is affected by the labor market trajectories examined in Section 2, including the timing of getting the first job and the first "good" job.

2- The Transition from School to Work

2.1 Literature Review

The study of the transition from school to work has received a great deal of attention in recent years because of its link to the quality and quantity of the labor force and to the quality of jobs an economy generates (Russell and O' Connell 2001). In a review of the international literature on the topic, Bradley and Nguyen (2003) classified existing studies along type of data used, available covariates, and methods of data analysis. According to Bradley and Nguyen (2004), most studies of the school-to-work transition analyze cross-sectional data (Andrews and

[3] According to the Egypt Labor Market Panel Survey of 2006 (ELMPS 06), fewer than 5 percent of technical secondary graduates in Egypt continue onto 2-year post-secondary institutes and fewer than 2 percent continue onto university.

Bradley 1997, Andrews, Bradley and Stott 2002), with some using pooled cross –section time-series data (Lenton 2003, Betts et al. 2000, Lassibille et al 2001). Very few studies use longitudinal data.

The most important covariates included in the analysis are personal characteristics, mainly education, and school-related variables, as well as skills training. These variables are important determinants of the duration of the transition and are also relevant for examining the mismatch between the level and type of education and the type and work obtained (Andrews et al. 2002, Lassibille G et al. 2001). Family background has been used in the literature as well, measured by parental education, occupation, family income, and family structure and size (Bradley and Nguyen 2004). Finally, local labor market conditions are also included in these studies, in particular the local unemployment rate (Ibid.).

The models used in modeling the transition from school to work include logit, multinomial logit (Lenton 2003), ordered logit or probit (Lassibille et al. 2001, Dustman et al. 1998), and Cox proportional hazard models. In order to study the link between search duration, accepted wage, and job duration, a Norwegian study used a system of simultaneous equations estimated by maximum likelihood methods (Bratberg and Nilson 1998). Singer and Willett (1993) called for the use of discrete-time survival models instead of either categorical variable or continuous time duration models to take into account the time-dependent nature of the transition and the fact that duration data is often only observed in discrete units of one year or in calendar years that group together a range of durations. Nguyen and Taylor (2003) and Verdu et al. (2008) heed this advice and use discrete time hazard models to analyze school-to-work transition data. The latter paper uses the STATA module developed by Jenkins (2005) that we use in this paper.

Although there are a number of studies that examine the education-employment match, few studies discuss the quality of jobs resulting from the transition from school to work. Verdu et al. (2008) define what they call "significant and non significant" jobs, where significant is defined as a regular job of at least 20 hours per week and a duration of at least 6 months.

The literature on the transition from school to work in Egypt has documented well the high unemployment rates and long unemployment durations experienced by secondary school and university graduates as they make their way to first employment (see El-Hamidi and Wahba 2005, Assaad 2008, Amer 2009, and Assaad and Mohie 2008). It is now well established that the vast majority of the unemployed are young, first-time new entrants with at least a secondary education. After a sharp increase in youth unemployment from 1988 to 1998, there was a decline from 1998 to 2006, but the decline did not extend to university graduates, especially those living in urban areas. In line with the decline in youth unemployment rates, the duration of transition from school-to-work has actually declined for young men in Egypt from 1998 to 2006. The authors speculate that it is because the prospects for public sector employment have declined and those of getting formal private sector work were still low, making less worthwhile to delay entry into employment in order to search for formal employment (El-Hamidi and Wahba 2005, Assaad 2008). Young men are increasingly getting whatever job they can get, with the hope that they can upgrade their employment at a later date.

2.2 Data & Methodology:

We rely on data from the Egypt Labor Market Panel Survey of 2006 [ELMPS 2006] (ERF 2006). The survey was administered to a nationally representative sample of 8,349 households of which 3,684 were among the original 4,816 households interviewed in the Egypt Labor Market Survey of 1998 [ELMS 98]. An additional 2,167 new households emerged from these 3,684 households as a result of splits, and a refresher sample of 2,498 households was added in 2006. The full sample in 2006 includes 37,140 individuals. Since we restrict our analysis in this section to men aged 15 to 34, our working sample consists of 2,415individuals each of whom is observed over a number of spells.

The data from ELMPS 06 provide retrospective information about the employment history of each individual and also have a special section about their first job and its characteristics. Although we do not have earnings at each point in an individual's career, we have enough information on the jobs they occupied, including employment status, sector of ownership, occupation, economic activity, job stability and formality of employment, that we can predict job quality over the life cycle with a fair degree of accuracy.

Analyzing the Transition from School to Work

Our analysis of the transition from school to work consists of three parts: (i) the duration to the first job and its determinants, (ii) the determinants of the type and quality of the first job, and (iii) the duration to the second job, if any, and its determinants. In each part, we first provide some descriptive results exploring bivariate relationships, then carry out some regression models. In the case of the duration to first and second jobs, we estimate discrete-time proportional hazard models, and in the case of the determinants of the type and quality of the first job we estimate probit and ordered probit models.

A time-to-event analysis is adopted in the paper where time is a discrete variable measured in years. In the case of duration to first job, time is measured from the calendar year of school completion to the calendar year of getting the first job (the event), or to the year of survey if the person had not yet obtained a job by the time of the survey. The latter constitute censored observations. Those who started work before age of 15 while they were still in school were dropped from the study since at the time of their first job they did not satisfy the inclusion criteria of the analysis either in terms of age or in terms of education level. Young people who started their first job after age 15 while still studying, were included but their time to event was set to zero.

Discrete time models are more appropriate than the continuous time hazard models when the durations are measured in broad time intervals, as is the case of our data (Steele 2005). Since we only observe time in calendar years, observations with the same observed difference in calendar years could represent multiple durations in continuous time and thus our observations can be considered 'grouped' or 'banded', making a discrete time model more appropriate. The discrete time hazard for interval t is the probability of an event occurring during interval t, given that no event has occurred prior to that interval. This requires dividing the time into intervals where the event occurs only once and expanding each individual observation into a number of records equivalent to the number of years until the event occurs or until the year of the survey. A censoring indicator then marks whether or not an event has occurred (Singer and Willet 1993).

Let y_{ti} be a binary response for every time interval t_i based on the event/censoring time y_i, and let δ_i be a censoring indicator

$$y_{ti} = \begin{cases} 0 & t < y_i \\ 0 & t = y_i, \delta_i = 1 \\ 1 & t = y_i, \delta_i = 0 \end{cases}$$

Hence the discrete – time hazard for the interval t is as follows:

$$h_{ti} = \Pr(y_{ti} = 1 \mid y_{si} = 0, s < t)$$

The functional form of the hazard can be logistic or complementary log-log, which is the specification used in this paper, since it is a direct extension of the continuous Cox model (Jenkins 2005). Following Jenkins (2005), we assume a parametric Gamma distribution of the disturbances. This is a common assumption since it is a continuous distribution with a support of 0 and above, a mean of one and finite variance which provides a closed form expression for the survival function with frailty (Jenkins 2005). Consequently, the discrete-time hazard function at interval j now includes a normally distributed random variable ε_i and is given by:

$$h_{ti}(X_{ti}) = 1 - \exp\{-\exp[X_{ti}'\beta + \gamma_t + \log(\varepsilon_i)]\}$$

where X_{ti} is a vector of time-varying and time invariant covariates with observed characteristics for person i and interval t, β is a vector of parameters to be estimated and γ_t is the logarithm of the integral of the baseline hazard over interval j (Jenkins 1997, 2005). We use the STATA program *pgmhaz8* written by Jenkins to undertake the estimation.

Time dependence must be explicitly specified in the previous model, otherwise a flat hazard probability over time is assumed. In our model, we estimate a flexible non-parametric form of time dependence, where each spell except the first is represented by a dummy variable.

Measuring Job Quality

Due to the recent interest in the concept of "decent work" or "good quality jobs", there have been an increasing number of studies about job quality. Assaad, Roushdy and Rashed (2009) propose a method of measuring and explaining job quality for both wage and non-wage workers in Egypt in an attempt to operationalize the ILO's "decent work" concept at the level on an individual job. Using factor analysis they estimate a normalized job quality index on pooled data from the ELMS 98 and ELMPS 06 (with mean zero and units equal to one standard deviations) that incorporates earnings, the formality of the job (as measured by the presence of a formal contract, social insurance coverage, paid vacations and paid sick leave), job stability, over and underemployment, and type of workplace. The index is developed to describe a worker's current job for which all the information required to form the index is available.

Because the estimation of the job quality index depends on having earnings information and such information is only available for an individual's current job, as observed in ELMS 98 and ELMPS 06, the job quality index is not available at every point in an individual's employment trajectory. We do however have information on a number of job characteristics at every point in the trajectory and can therefore use this information to predict job quality throughout the trajectory. We first calculate the index from current data in 1998 and 2006 and then regress this

index on the job-related variables available both in the current data and in the retrospective data about previous jobs. These variables include (2-digit) occupation, (2-digit) economic activity, contractual status, social insurance coverage, sector of ownership, and regularity of employment. Separate regressions are estimated for males and females and for wage and nonwage workers. Job quality is then predicted for the worker's first, second and third jobs (if any) on the basis of these regressions. The main limitation of such a method is that the predicted index is not able to capture variations in job quality that occur in the course of a single job (such as those resulting from rising wages on the job). However any changes in employer, occupation, economic activity, job stability, contractual status, or social insurance coverage are considered a change of job in the data and would be reflected in job quality.

2.3 Duration to First Job

Contrary to conventional wisdom and popular perceptions, time to fist job for young male new entrants in Egypt with at least a secondary education has been falling in recent years. As shown in Table 1, the median time from school exit to the first job has dropped from 2.5 years for those born from 1971 to to 1975 to 1.4 years for those born from 1986 to 1990. These estimates are based on Kaplan-Meier statistics and therefore into account that a smaller fraction of the younger cohort has actually entered into employment. Although the decline in time to first job from the oldest cohort to the youngest cohort under consideration can be detected throughout the distribution, it is more pronounced in the middle of the distribution than at the two ends. Median time has dropped by 34 percent compared to 19 percent at the 25th percentile and 14 percent at the 75th percentile.

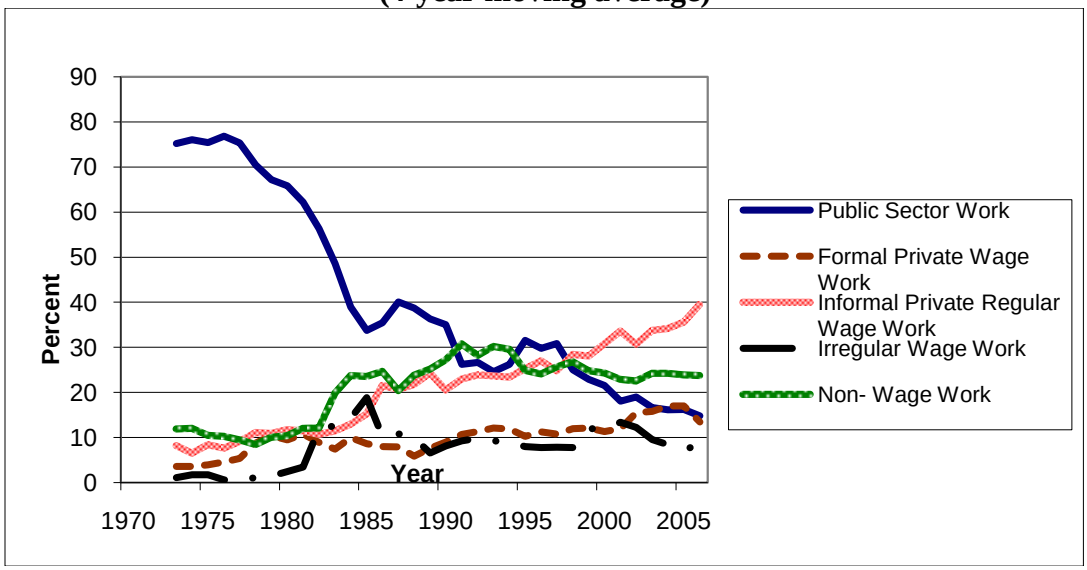
Table 1: Time to First Job by Birth Cohort (25th, 50th and 75th percentiles), Males 15-34 with Secondary School Certificates or Higher.

Cohort	Percentile		
	25%	50%	75%
1971-1975	1.5	2.5	4.4
1976-1980	1.4	2.0	4.4
1981-1985	1.4	1.9	4.4
1986-1990	1.2	1.7	3.8

Source: ELMPS 06
Note: Estimates include all males 15-34 irrespective of whether or not they obtained a first job

Our primary explanation for the decline in the duration of transition from school to work across cohorts is that the restructuring of the Egyptian labor market away from public sector employment has led to a lower probability of such employment for younger cohorts and therefore a lesser incentive to queue for it. As shown in Figure 1, younger cohorts are much more likely to have an informal job as a first job, as the proportion of public sector job for educated new entrants has dropped precipitously in the 1980s. While the share of formal private sector employment has increased somewhat, it is not nearly enough to make up for the reduction in public sector employment. As a result, the share of formal wage and salary employment in total first-time employment of educated new entrants has dropped from nearly 80 percent for those entering the labor market in the mid 1970s to only 30 percent for those entering in the mid 2000's. With such a reduction in the chances of obtaining a formal job, it is no surprise that younger cohorts are searching for them for a shorter period of time.

Figure 1. Distribution of New Entrants with Secondary Education and Higher by Type of First Job and Year of Entry into First Employment (percent) (4-year moving average)



Source: ELMPS 06

Table 2 confirms that, among young men who actually obtained jobs, those who ended up in public sector jobs and in formal private sector jobs had longer transitions from school to work, reflecting the greater search effort and possible queuing that accompanies these formal jobs. It is noteworthy that the next longest durations of transition can be found among those who ended up being employers or self-employed, reflecting the time it takes for set up one's own enterprise. It is no surprise that the shortest durations are experienced by unpaid family workers who simply join an existing family business.

Table 2: Time to First Job for those who Already Obtained such Jobs by Type of First Job (25th, 50th and 75th percentiles), Males 15-34 with Secondary School Certificates or Higher.

Type of First Job	Percentile		
	25%	50%	75%
Public	1.5	2.3	4.2
Private formal wage work	1.6	1.9	4.2
Private regular informal wage work	1.3	1.7	3.4
Private irregular wage work	1.2	1.6	2.7
Unpaid family work	1.2	1.5	1.9
Employer/self-employed	1.4	1.9	3.9

Source: ELMPS 06

Some of the observed differences in the bivariate relationship between time to first job and type of first job may simply reflect differences in educational attainment. Males with higher education are more likely to obtain formal jobs and are therefore more likely to spend time searching for such jobs. As shown in Table 3, there is a positive relationship between educational attainment and duration of transition from school to work. Median durations

increase substantially for those with two-year post-secondary degrees and university degrees. These are precisely the educational levels that are more likely to seek and obtain formal jobs.

Table 3: Time to First Job by Educational Attainment Cohort (25th, 50th and 75th percentiles), Males 15-34 with Secondary School Certificates or Higher.

Educational Attainment	Percentile		
	25%	50%	75%
General secondary	1.4	1.8	3.7
Technical secondary 3yr	1.4	1.9	4.4
Technical secondary 5yr	1.3	1.9	4.2
Post-Secondary 2 yr	1.5	2.6	4.6
University and higher	1.5	2.5	4.3

Source: ELMPS 06

Since region of current residence could be as much a result as well as a determinant of the transition from school to work, we avoid using region of residence as an explanatory variable and use instead region of birth. In the bivariate associations, the metropolitan regions of Greater Cairo and Alexandrian and the Suez Canal Cities haves the longest durations of transitions, followed by urban Lower Egypt. This pattern is consistent as well with the notion that youth living in regions with a greater probability of formal employment are more likely to search for such employment and therefore take longer to accept their first job.

Table 4: Time to First Job by Educational Attainment Cohort (25th, 50th and 75th percentiles), Males 15-34 with Secondary School Certificates or Higher.

Region of Birth	Percentile		
	25%	50%	75%
Greater Cairo	1.5	2.6	4.7
Alexandria & Suez Canal	1.5	2.7	4.7
Urban Lower Egypt	1.5	2.5	4.6
Urban Upper Egypt	1.4	2.0	4.8
Rural Lower Egypt	1.4	1.9	4.0
Rural Upper Egypt	1.3	1.7	3.4

Source: ELMPS 06

As mentioned in the methodology section above, we analyze the determinants of duration to first job using a discrete-time hazard model with non-parametric time dependence. The working sample includes 3,110 young men ages 15 to 34 who completed at least an upper secondary education. However since the data for this model is made up of individual spells rather than individuals, the total number of spells observed for these individuals as they transition from school to work is 10,243. We present in Table 5, the exponentiated coefficients, which can be interpreted as hazard ratios relative to the baseline hazard. A variable with an exponentiated coefficient of 1 has no effect on the baseline hazard, one with a coefficient that is significantly less than one reduces the hazard of a first job and therefore lengthens the duration from school to work and one with a coefficient that is significantly higher than one increases the hazard and thus shortens the duration to a first job.

We estimate three models, with each subsequent model adding additional regressors or interaction terms to the previous model. Model 1, the simplest model, includes dummies for 5-year birth cohorts and dummies for own educational attainment, in addition to the spell dummies that describe the shape of the baseline hazard. The reference category for cohorts is the 1971-75 birth cohort and the reference category for own education is a 3-year technical secondary degree. Model 2 adds to this basic model parental education, the father's type of employment when the youth was 15, and the presence of a farm or a non-farm enterprise in the household. Model 3 adds time varying labor market conditions in the young man's governorate of birth. Since the location of the individual at the time of entry into the labor market can vary with time and is a decision variable that could be endogenous to the timing of first employment, we use the indicators that corresponds to the individual's governorate of birth rather than the governorate of current residence to abstract from migration decisions. These indicators include the local unemployment rate, and the ratios of private sector wage workers and public sector workers among all workers in the governorate. The year of the indicator is matched to the calendar year that corresponds to the individual spell under consideration. Finally, Model 4 adds to the previously included regressors dummies indicating the young man's region of birth. Again, we include region of birth rather than region of current residence to avoid any issues relating to the endogeneity of migration.

As shown in Table 5, results from Models 1 through 3 confirm the bivariate finding that more recent cohorts have been transitioning to the labor market more rapidly than their predecessors. With only own education included as a control, young men born in 1981-85 and 1986-90 have a 41 percent and a 104 percent higher hazard of transitioning to a first job, respectively, compared to those born in 1971 to 1975, the reference category. Once parental education, father's employment, and the presence of household enterprises are included, as in Model 2, the difference between the 1981-85 and 1971-75 cohort disappears and the difference in hazard between the 1986-90 cohort and the 1971-75 cohort is now smaller. This suggests that the more rapid entry of more recent cohorts has something to do with the greater incidence of household enterprises in Egypt in recent years leading to opportunities to work as unpaid family workers. The difference between the 1986-90 and 1971-75 cohorts disappears completely when we include the regional dummies in Model 4.

The positive association between duration from school to work and own educational attainment found in the bivariate analysis is not borne out in the multivariate results. The higher durations observed for post-secondary and university graduates show up in Model 1, but the differences are not statistically significant at conventional levels. However, even these differences disappear completely when other regressors are included. The observed bivariate associations between education and speed of entry are probably due to differences in social class and incidence of unpaid family work that are captured in Models 2 and 3 by parental education, father's type of employment and the presence of household enterprises.

The impact of parental education on the duration of transition from school to work is somewhat ambiguous. Having parents with secondary education leads to a faster transition to employment than parents with less than secondary education, but having parents with university education or higher has no significant impact.[4] This U-shaped effect of parental education could be the result of a possible tradeoff between the additional resources educated parents bring to

[4] The impact of having a parent with post-secondary education has opposite effects for fathers and mothers. Post-secondary degrees are fairly rare in Egypt so these results must be interpreted with some degree of caution.

bear to help their sons find work and the rising expectations for formal employment that come with higher social class position. Parents with secondary education probably have greater resources to help their children find work than lesser educated parents but lower expectations for formal employment than university educated parents.

Father's type of employment and presence of farm and non-farm enterprises have somewhat more predictable effects on young men's transition to first employment. Those whose fathers are either self-employed, unpaid workers or not working transition quickly into the labor market compared to those who fathers are in regular employment either in the government or the private sectors. The transition time is longest for those whose fathers have regular jobs outside government. These results suggest that a lengthy period of transition and job search are a luxury that only those with regular and stable household incomes are able to afford. Those in households with more irregular or limited income from labor must enter into work right away to support their households. Clearly having a self-employed father or a household enterprise speeds up the transition by making available a ready source of work for the youth as an unpaid family worker. Our results indicate that having access to a non-farm enterprise in the household results in a more rapid transition to first employment than having a farm.

The time varying local labor market conditions included in Model 3 do not have a significant impact on the duration of transition to first employment. Being in a governorate with higher than average unemployment rates somewhat slows the rate of transition to first employment, but the effect is only significant at the 7 percent level. The other two local labor market variables have no discernible effect. Adding the regional dummies in Model 4 does not add much additional explanatory power. Only rural Upper Egypt seems to have a higher hazard of transition to first employment than the reference category Greater Cairo and the difference is only significant at the 5 percent level.

The shape of the hazard or the time dependence of the model is described by the spell dummies from year 1 to year 11+, with the latter including all transitions longer than 11 years.[5] The reference category is year 0, i.e. a transition to employment in the same year of, or prior to, graduation from school. With the exception of Model 1 that seems to contain significant remaining unobserved heterogeneity (or frailty), the shape of the baseline hazard is consistent across models. For simplicity, we only show the baseline hazard and cumulative probability of employment for the reference individual from Model 2. As shown in Figure 2a, the hazard increases sharply from year 0 to year 1, drops significantly in year 2, rises again in year 3 and remains at a fairly constant level until year 7, after which it drops significantly and remains low. As shown in Figure 2b, by year 2, the reference individual has more than a 50 percent probability of getting a first job, and, by year six, more than a 90 percent probability.

[5] By year 11, 99.8 percent of the individuals in the sample had transitioned into a first job.

Figure 2a

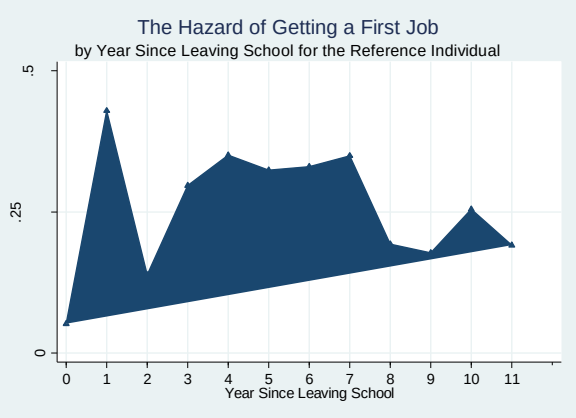


Figure 2b

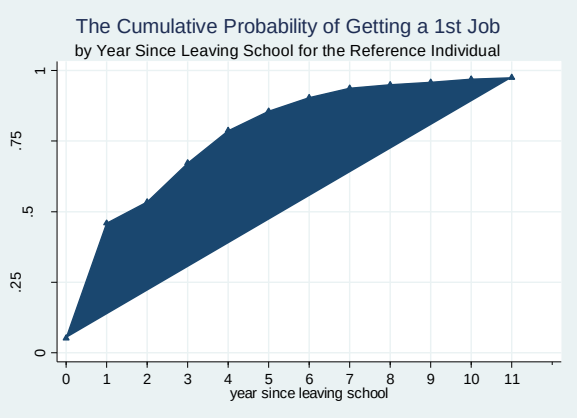


Table 5. Discrete Time Proportional Hazard Model for Hazard of First Job with Non-Parametric Time Dependence and a Gamma Mixture Distribution for Unobserved Individual Heterogeneity. Men 15-34 with Secondary Schooling and Higher, Egypt, 2006.[1]

Covariates	Model 1[2]	Model 2[3]	Model 3[4]	Model 4[5]
Birth Cohort (Ref: 1971-75)				
1976-1980	1.171	0.950	0.944	0.950
	(0.135)	(0.048)	(0.048)	(0.049)
1981-1985	1.415**	0.994	0.985	0.807
	(0.182)	(0.058)	(0.058)	(0.121)
1986-1990	2.041***	1.466***	1.446***	1.101
	(0.398)	(0.137)	(0.135)	(0.179)
Local Labor Market Conditions (time varying)[6]				
local unemployment rates			0.993	0.993
			(0.004)	(0.004)
ratio of local private wage workers			1.003	1.003
			(0.003)	(0.003)
ratio of local public workers			0.999	0.999
			(0.002)	(0.003)
Own Educational Attainment (Ref: Technical Secondary)				
general secondary	1.285	1.105	1.108	1.097
	(0.418)	(0.172)	(0.173)	(0.172)
technical secondary 5yrs	1.257	1.304	1.289	1.304
	(0.422)	(0.188)	(0.186)	(0.189)
above intermediate	0.820	1.080	1.072	1.074
	(0.140)	(0.087)	(0.086)	(0.086)
university and higher	0.836	1.076	1.067	1.072
	(0.085)	(0.055)	(0.055)	(0.055)
Parents' Educational Attainment (Ref.: Below Secondary)				
father : secondary		0.837**	0.831**	0.830**
		(0.057)	(0.057)	(0.057)
father : post secondary		0.683**	0.683**	0.689**
		(0.091)	(0.091)	(0.092)
father : university and higher		0.923	0.922	0.934
		(0.082)	(0.082)	(0.084)
mother: secondary		0.745***	0.744***	0.754**
		(0.065)	(0.065)	(0.067)
mother: post secondary		1.443**	1.447**	1.461**
		(0.199)	(0.200)	(0.202)
mother: university and higher		0.970	0.969	0.971
		(0.152)	(0.152)	(0.153)
Father's employment when youth was 15 (Ref.: Public Employee)				
irregular job		1.345	1.351	1.295
		(0.489)	(0.492)	(0.472)
self employed or employer		1.322***	1.321***	1.313***
		(0.089)	(0.089)	(0.089)
regular employee (non-government)		0.607***	0.608***	0.606***
		(0.038)	(0.038)	(0.038)
unpaid job or jobless		1.703***	1.707***	1.661***
		(0.104)	(0.104)	(0.102)
Presence of Household Enterprise (Ref.: No HH enterprise)				
HH has a farm		1.136*	1.141*	1.066
		(0.060)	(0.061)	(0.061)
HH has a non-agricultural enterprise		1.226***	1.226***	1.241***
				(0.058)
Region of Birth (Ref. : Greater Cairo)				
Alex & Suez Canal				1.018
				(0.082)

Urban Lower Egypt				0.957
				(0.080)
Urban Upper Egypt				0.945
				(0.075)
Rural Lower Egypt				1.050
				(0.081)
Rural Upper Egypt				1.220*
				(0.102)
Spell Dummies	included	included	included	included
constant	0.060***	0.053***	0.054***	0.057***
	(0.007)	(0.005)	(0.008)	(0.011)
Gamma variance	1.827*	0.000	0.000	0.000
	(0.531)	(0.000)	(0.001)	(0.001)
Log-likelihood	-5039.37	-4781.69	-4779.00	-4771.27
Number of Individual Spells	10,243	10,243	10,243	10,243
Number of Individuals	3,110	3,110	3,110	3,110

* p<0.05, ** p<0.01, *** p<0.001

Notes:

1. Exponentiated Regression Coefficients indicating Hazard Ratios. Standard Errors in Parentheses.
2. Model 1 includes cohort and own education dummies only as regressors in addition to the non-parametric time dependence
3. Model 2 adds parental education, father's employment and the presense of farm and non-farm enterprises in the HH to the regressors included in Model 1
4. Model 3 adds labor market conditions in the governorate of birth to the regressors included in Model 2
5. Model 4 adds dummies for region of birth to the regressors in Model 3.
6. Time varying labor market conditions in governorate of birth

2.4 The Type and Quality of the First Job

The extent to which a young man is willing to remain unemployed searching for a job will depend on his expectation, as well as those of his family, about the kind of job he is able to get and on his ability to afford to stay jobless until such a job materializes. As we have seen in Figure 1 above, the chances of getting a formal job have dwindled significantly for educated new entrants in Egypt since the mid 1970s as the decreased likelihood of public sector employment has been only very partially compensated by the small increase in likelihood of obtaining formal private employment. In this section, we examine the characteristics of the first job young men are able to get across cohort, controlling for some of the same covariates we used to explain the duration of the transition to first employment. We examine the characteristics of the first job along three different dimensions: (i) public vs. private, (i) formal vs. informal, and (iii) by job quality, as measured by the job quality index discussed in the methodology section above. Although we could use the continuous normalized job quality index, to ease interpretation, we opted to classify jobs into good, fair, and poor jobs. A good job is defined as a job with an index of 0.5 or higher, meaning that its job quality is half a standard deviation above the mean job quality or higher. A fair job is a job with an index between -0.5 and 0.5 and a poor job has an index of -0.5 or less.[6] A job is defined as formal if it benefits from either a formal contract or social insurance coverage. Finally public includes both the civil service and the public enterprises and private includes all the rest.

[6] The job quality index is normalized to have a mean of zero and units of one standard deviation when all current jobs observed in 1998 and 2006 in Egypt are pooled together into a single distribution.

The three dimensions are overlapping to some extent, but are not entirely equivalent to each other. There is a significant degree of overlap between informality and sector of employment in the first job. As shown in Table 6, 83 percent of private first jobs are informal and 91 percent of public first jobs are formal. While nearly all informal first jobs are in the private sector, formal first jobs are divided nearly equally between the private and public sectors. Job quality is also closely related to formality and sector of employment. All poor jobs are in the private sector and all are informal. However, only 12 percent of first jobs in the private sector and 15 percent of informal jobs are poor jobs, compared to 0 percent of public and formal jobs. The bulk of private and informal first jobs are classified as fair jobs according to our job quality index. Whereas only 15 percent of first jobs in the private sector are classified as "good jobs", nearly 88 percent of first jobs in the public sector are. Similarly, only 4 percent of informal jobs are classified as good, while 83 percent of formal jobs are. Thus while most public sector jobs are good, the public sector only provide just over half of all good first jobs in the economy. The vast majority of good jobs though are also formal jobs (89 percent).

Table 6: Sector of Employment, Formality and Job Quality in the First Job, Row Percentages, Males 15-34 with Secondary Education and Higher

	Private	Public	Informal	Formal	Poor	Fair	Good
Private			83	17	12	72	15
Public			9	91	0	12	88
Informal	98	2			15	81	4
Formal	47	53			0	17	83
Poor	100	0	100	0			
Fair	97	3	92	8			
Good	45	55	11	89			
All	83	17	70	30	10	62	28

Source: ELMPS 06

To investigate the determinants of the first job along these three dimensions we estimate an ordered probit model on the job quality dimension, and probit models for the formal/informal and public/private dimensions. The covariates are similar to the ones we used to explain the time to first job shown in Table 5. We present in Table 7 the marginal effects for these models computed for a reference individual who is born between 1971 and 1975, has a technical secondary education, whose parents have less than secondary education, whose father is a government employee, and who lives in Greater Cairo. This reference individual has a 2.4 percent probability of getting a poor job, a 59 percent probability of getting a fair job and a 38 percent probability of getting a good job in his first job. He has a 45 percent probability of getting a formal job and a 24 percent probability of getting a public sector job. As an indication of the severe deterioration in the labor market conditions facing young people in Egypt, an individual born between 1981 and 1985 has more than double the probability of getting a poor job on his first job and a 12 percentage point reduction in the probability of getting a good job compared to a similar individual born from 1971 to 1975. He also has a 20 percentage point reduction in the probability of getting a formal first job and a 15 percentage point reduction in the probability of getting a public sector job. Thus, although younger cohorts are getting jobs faster than their older counterparts, the quality of these jobs is deteriorating significantly.

Local labor market conditions affect the type of first job a young man is able to get. In particular a 10 percent increase in the proportion of public sector jobs in the local labor market

raises the probability of a good job by 3 percentage points although it has no discernible effect on the probability of a public sector job. Similarly a 10 percentage point increase in the local unemployment rate is associated with a 4 percentage point higher probability of obtaining a formal job. This is probably because the greater local availability of formal jobs induces more intensive searching for such jobs, thus raising the local unemployment rate.

As expected higher levels of own educational attainment are associated with a lower probability of poor and fair jobs and a higher probability of good jobs in the first job. Similarly they are associated with a higher probability of formal and public jobs. A two-year post-secondary degree increases the probability of a good job by 24 percentage points and a university degree increases it by 35 percentage points, almost doubling it, compared to a 3-year technical secondary degree. Similarly a university degree raises the probability of a formal job by 30 percentage points and of a public job by 32 percentage points (from 24 to 56 percent) for the reference individual.

Although the education of one's father has a positive impact on one acquiring a good job in the first job, controlling for one's own education, mother's education does not have a discernible impact. The probability of a good job increases by 12 and 17 percentage points for young men whose fathers have a secondary and university and higher degrees, respectively, compared to those whose father have less than secondary education. However, the effect of father's education does not extend to obtaining either formal or public employment. Mother's education, on the other hand seem to increase the probability of formal employment.

Father's employment has an additional significant impact on both job quality and the probability of obtaining a formal or a public job, correcting for own and parents' education. Relative to someone whose father is a government employee, a young man whose father is an employer or is self-employed has an 8 percentage point lower probability of getting a good job, a 9.5 percent lower probability of getting a formal job and a 10 percentage point lower probability of getting a public job. Roughly similar results obtain for someone whose father is a regular employee outside government. If the father is irregularly employed, jobless or an unpaid family worker, there is a 9.5 percent reduction in the probability of a good job, an 8 percent reduction in the probability of a formal job and a 5.4 percent reduction in the probability of a public job compared to someone whose father is a public employee. It therefore turns out that the best parental background to have to succeed in the labor market is to have a university educated father who works for the government.

The presence of a farm enterprise in the household has no effect on job quality, but reduces the chance of formal employment by nearly 14 percentage points and of public employment by over 7 percentage points. The presence of a non-farm enterprise significantly reduces the change of a good job, a formal job and a public job. This may be due to the fact that it raises the probability that a young man will be an unpaid family worker in the beginning of his career, an employment state that precludes searching for either a formal or public sector job.[7]

Region of residence has the expected effect on the type and quality of the first job. Residence in Greater Cairo provides the greatest opportunity for good jobs and formal jobs and

[7] It is quite likely that our job quality index understates the quality of self-employment and unpaid family labor because it emphasizes institutional aspects of the employment such as the presence of social and medical insurance coverage, and paid vacations, which are typically absent in family enterprises.

residence in rural Upper Egypt the lowest chance of both. It is noteworthy however that region of residence has no significant impact on the probability of obtaining public employment.

Table 7: Marginal Effects from Ordered Probit Regression on Job Quality in First Job and Probit Regressions on the Probability of Formal and Public Employment in the First Job. Men 15-34 with Secondary Education and Higher who have obtained a First Job.

	Ordered Probit			Probit	Probit
	Pr(poor)	Pr(fair)	Pr(good)	Pr(Formal)	Pr(Public)
Base Probability for Reference Individual	0.024	0.591	0.384	0.451	0.244
Change due to one unit change in:					
Birth Cohort (Ref: 1971-75)					
1976-1980 (d)	0.018**	0.073***	-0.092***	-0.104***	-0.100***
	(0.006)	(0.019)	(0.023)	(0.026)	(0.022)
1981-1985 (d)	0.027***	0.094***	-0.121***	-0.201***	-0.147***
	(0.008)	(0.021)	(0.026)	(0.030)	(0.026)
1986-1990 (d)	0.022*	0.082**	-0.103**	-0.263***	-0.130***
	(0.010)	(0.029)	(0.038)	(0.047)	(0.038)
Local Labor Market Variables					
local unemployment rate (%)	0.000	0.000	0.000	0.004*	0.001
	(0.000)	(0.001)	(0.002)	(0.002)	(0.002)
local prop. of private wage workers (%)	0.000	-0.002	0.002	0.002	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
local proportion of public workers (%)	-0.000*	-0.003*	0.003**	0.002	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Own Educational Attainment (Ref.: Technical Secondary 3yrs)					
general secondary (d)	-0.002	-0.011	0.013	-0.066	0.015
	(0.010)	(0.061)	(0.071)	(0.094)	(0.089)
technical secondary 5yrs (d)	-0.016**	-0.149*	0.165*	0.154*	0.235**
	(0.005)	(0.063)	(0.067)	(0.073)	(0.081)
post-secondary 2yrs (d)	-0.019***	-0.218***	0.238***	0.230***	0.281***
	(0.005)	(0.035)	(0.037)	(0.038)	(0.043)
university & higher (d)	-0.022***	-0.333***	0.355***	0.304***	0.317***
	(0.005)	(0.022)	(0.024)	(0.026)	(0.029)
Parents' Educational Attainment (Ref: Below Secondary)					
father: secondary (d)	-0.013**	-0.107***	0.120***	0.079*	-0.008
	(0.004)	(0.031)	(0.033)	(0.037)	(0.032)
father: post-secondary (d)	-0.016**	-0.152*	0.168*	-0.043	-0.101*
	(0.005)	(0.065)	(0.069)	(0.069)	(0.045)
father: university & higher (d)	-0.016***	-0.157***	0.173***	0.071	-0.015
	(0.005)	(0.044)	(0.047)	(0.050)	(0.041)
mother: secondary (d)	-0.007	-0.048	0.055	0.06	-0.007
	(0.005)	(0.039)	(0.044)	(0.048)	(0.040)
mother: post-secondary (d)	-0.012	-0.094	0.106	0.143*	0.098
	(0.007)	(0.068)	(0.074)	(0.072)	(0.067)
mother: university & higher (d)	-0.007	-0.047	0.054	0.195*	0.026
	(0.009)	(0.073)	(0.081)	(0.079)	(0.072)
Father's Employment (Ref: Government Employee)					
father self-employed (d)	0.016*	0.066**	-0.081**	-0.095**	-0.101***
	(0.007)	(0.025)	(0.030)	(0.036)	(0.028)
father regular employee (non-gov.) (d)	0.017**	0.068**	-0.085**	-0.088**	-0.097***
	(0.006)	(0.024)	(0.028)	(0.033)	(0.027)
father irregular, unpaid or jobless (d)	0.019**	0.076***	-0.095***	-0.080*	-0.054*
	(0.007)	(0.023)	(0.028)	(0.034)	(0.027)

Presence of Household Enterprise					
HH has farm enterprise (d)	-0.004	-0.025	0.029	-0.137***	-0.074**
	(0.003)	(0.023)	(0.026)	(0.032)	(0.027)
HH has non-farm enterprise (d)	0.023***	0.086***	-0.110***	-0.153***	-0.137***
	(0.007)	(0.016)	(0.019)	(0.025)	(0.022)
Region of Residence (Ref.: Greater Cairo)					
Alexandria & Suez Canal (d)	0.010	0.046	-0.055	-0.051	0.027
	(0.007)	(0.030)	(0.036)	(0.042)	(0.039)
Urban Lower Egypt (d)	0.017*	0.070*	-0.087*	-0.054	0.047
	(0.008)	(0.030)	(0.036)	(0.043)	(0.041)
Urban Upper Egypt (d)	0.041***	0.118***	-0.160***	-0.095*	0.029
	(0.010)	(0.028)	(0.034)	(0.042)	(0.039)
Rural Lower Egypt (d)	0.028***	0.097***	-0.126***	-0.069	0.024
	(0.008)	(0.027)	(0.033)	(0.040)	(0.037)
Rural Upper Egypt (d)	0.104***	0.152***	-0.255***	-0.153***	-0.015
	(0.018)	(0.032)	(0.033)	(0.044)	(0.041)
N		2637		2637	2637
Pseudo-R2		0.1832		0.2059	0.1705
Log-Likelihood		-1919.793		-1279.105	-1016.363

(d) marginals for discrete change of dummy variable from 0 to 1
* p<0.05, ** p<0.01, *** p<0.001
Marginal effects are computed for a reference individual whose dummy variables are set to zero and whose continuous variables are set to their sample mean.

We now turn to the question whether a better job quality in the first job is associated with a longer transition from school to work. While we cannot address the question whether a longer job search necessarily results in higher job quality because of the endogeneity of the two decisions, it is interesting to note whether there is an association between the two. We begin investigating this by looking at the bivariate association between the type and quality of the first job and the duration of transition to the first job, for those who obtained such jobs. The results shown in Table 8 suggest that higher job quality is associated with a longer duration of transition, so are formal jobs and public jobs. This at least suggests that individuals who seek higher quality jobs, formal jobs or public sector jobs tend to spend more time searching for these jobs. Those that perceive themselves as having a lower chance of getting such jobs end their job search early and just take up any job.

Table 8 Average and Standard Deviation of Time to First Job by Type and Quality of First Job

Type & Quality of First Job		Time to First Job	
		Mean	Std. Dev.
Job Quality	poor	1.6	1.5
	fair	1.8	1.8
	good	2.5	1.9
Formality	Informal	1.8	1.7
	Formal	2.6	2.0
Sector	Private	1.9	1.8
	Public	2.5	2.0
	Total	2.0	1.8

Does the association between the type and quality of the first job and the duration of transition to first employment survive when other determinants of type and quality of job are

included? To answer this question we ran regressions similar to the ones shown in Table 7 but including time to first job and time to first job squared as additional regressors. The marginal effects of these two variables for the reference individual are shown in Table 9. All the regressors shown in Table 7 are included as well but are not shown. Based on these results the maximum probability of a good job is associated with a transition duration of 6.5 years, the maximum probability of a formal job is associated with a duration of 6 years and the maximum probability of a public first job is associated with a duration of 9.4 years, holding all other characteristics constant. Thus getting a good first job is associated with fairly long search times. The reduced probability of obtaining such jobs for younger generations of youth is therefore the most likely explanation for their more rapid transition from school to work.

Table 9: Marginal Effect of Time to First Job and Time to First Job Squared on Job Quality and Probability of Formal and Public Jobs

	Ordered Probit			Probit	Probit
	Pr(Poor)	Pr(Fair)	Pr(Good)	Pr(Formal)	Pr(Public)
time to first job	-0.012***	-0.066***	0.078***	0.119***	0.037**
	(0.003)	(0.013)	(0.014)	(0.017)	(0.014)
time to first job squared	0.001**	0.005**	-0.006**	-0.010***	-0.002
	(0.000)	(0.002)	(0.002)	(0.002)	(0.002)

* p<0.05, ** p<0.01, *** p<0.001

- other regressors shown in Table 7 are included but not shown.

2.5 Transition to a Second Job

To further investigate employment dynamics for educated young men in the Egyptian labor market, we examine in this section the determinants of the hazard of transition to a second job. As shown in Table 10, the median duration to a second job for young men with at least a secondary education in Egypt is 8.7 years, with 25 percent of young men transitioning to a second job in less than 4 years and 25 percent remaining in their first jobs up to 16 years.[8] Unlike the transition to the first job where younger cohorts had a significantly shorter transition time, the pattern across cohort is somewhat more complicated for the transition to the second job. Transition times appears to be getting shorter from the 1971-75 to the 1976-80 cohort and then getting longer for younger cohorts. It remains to be seen whether this pattern holds in the multivariate analysis. There is not a strong relationship between the rate of transition to a second job and educational attainment. The shortest transition times are observed for those with 5-year technical secondary degrees, but the differences across educational levels appear to fairly small.

The hazard for transition to a second job varies significantly with the type and quality of the first job. As expected, the lowest rates of transition are from the self-employment or employer states (7 percent of all first jobs) and from public sector work (25 percent of first jobs). The second lowest rates of transition to second jobs are for private formal sector wage work (12 percent) and unpaid family work (16 percent). The highest rates of transition to second jobs are from both regular and irregular informal wage work in the private sector (40 percent). Also, as expected, rates of transition to second jobs are highest from poor first jobs, followed by fair first

[8] The results reported in Table 10 are corrected for censoring by using a Kaplan-Meier life table estimator.

jobs and lowest for good jobs. Finally, there appears to be no clear bivariate relationship between transition time to a first job and the hazard of transition to a second job.

Table 10: Time to Second Job for those who obtained First Job by Selected Characteristics (25th, 50th and 75th percentiles), Males 15-34 with Secondary School Certificates or Higher.

	25%	50%	75%
All	3.9	8.7	15.7
Birth Cohort			
1971-75	4.7	9.8	17.8
1976-80	3.6	7.5	12.5
1981-85	3.8	8.1	>14
1986-90	5.8	9.1	>12
Own Education			
General Secondary	6.6	9.7	>16
Technical Secondary 3yrs	4.0	8.4	15.3
Technical Secondary 5yrs	3.6	7.9	>13
Post-Secondary	3.7	8.8	>13
University & Higher	4.0	10.4	16.5
Type of First Job			
Public sector work	7.3	>17	>17
Private formal wage work	4.5	8.7	>16
Private informal regular wage work	2.9	6.1	11.8
Private informal irregular wage work	3.0	7.0	10.2
Unpaid family work	4.3	7.9	12.6
Employer/self-employed	>15	>15	>15
Quality of First Job			
Poor	3.0	5.9	13.1
Fair	4.0	8.8	16.0
Good	7.2	>16	>16
Time to First Job			
0 years	4.1	6.9	11.5
1 years	3.4	7.6	>16
2 years	4.9	>15	>15
3 years	4.1	10.7	>15
4 years	5.3	>13	>13
5 years	4.3	10.1	>12
6 years	5.2	8.7	>12
7 years	4.4	>8	>8
8 years	3.5	>7	>7

Note: Estimates from Kaplan-Meier life table estimates

We now move to a multivariate analysis of the determinants of the hazard of transition to a second job. As in the case of the transition to the first job, we estimate discrete time hazard models with non-parametric duration dependence for the baseline hazard. The exponentiated coefficients (hazard ratios) are shown in Table 11 below and the parameters of the spell dummies indicating the shape of the baseline hazard are shown in Appendix Table A2. Model 1, our

baseline model, includes the basic set of regressors that were also included in the hazard model for time to first job (Model 4 in Table 5), namely cohort, time- varying local labor market conditions, own educational attainment, parent's education, father's employment, the presence of household enterprises, and region of residence at school exit. Model 2 adds the time to the first job and its square, Model 3 adds to Model 1 dummies indicating the type of the first job, Model 4 adds both time to first job and its square as well as the type of the first job dummies, Model 5 adds to Model 1 dummies indicating the quality of the first job, and Model 6 ads to Model 1, the time to first job, its square and the quality of first job dummies. As before, the quality of first job is determined based on the job quality index discussed above.[9]

As in the vase of the transition to the first job, we start by discussing the shape of the baseline hazard, which can be ascertained from the coefficients of the spell dummies shown in Appendix Table A2. Since there is relatively little variation in these coefficients across models, we use Model 1 to plot the shape of the hazard and cumulative hazard for the reference individuals in Figures 3a and 3b. We aggregate spell dummies from year 20 onwards, since by then there are very few people left in our sample of 15 to 39 year olds.

The basic pattern that emerges is that the hazard of changing jobs is highest immediately after getting a first job, when just under 25 percent of first job holders move to a second job. It then declines sharply after that. The hazard of moving to a second job then rises very gradually from year 1 to year 11. By then the cumulative probability of changing jobs has risen to over 60 percent. The hazard of moving to a second job goes down from year 11 to year 15, after which it becomes unstable because there are relatively few individuals in our sample who survive that long in a first job.[10] The spike in the hazard at year 19 is almost certainly a statistical artifact since there are only 5 observations in our sample who survive in a first job that long.

[9] Because there are some missing observations on the variables used to estimate the job quality index, Models 5 and 6 are estimated on fewer individuals than the first 4 models.

[10] As seen in Appendix Table A2, the coefficients of the spell dummies are insignificant after year 14.

Figure 3a

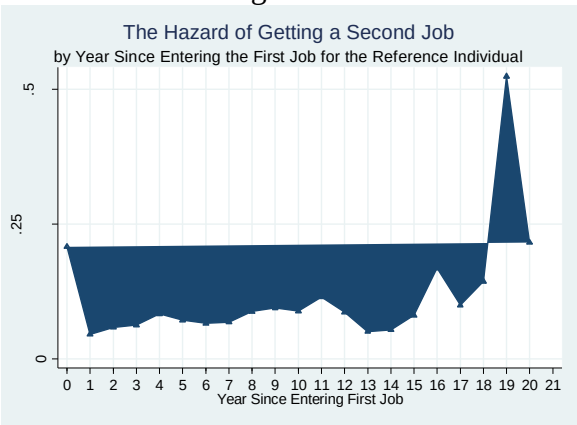


Figure 3b

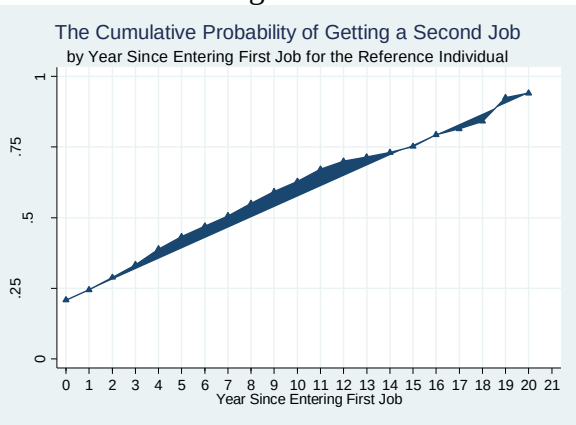


Table 11. Discrete Time Proportional Hazard Model for Hazard of Second Job with Non-Parametric Time Dependence and a Gamma Mixture Distribution for Unobserved Individual Heterogeneity. Men 15-34 with Secondary Schooling and Higher who have Obtained a First Job, Egypt, 2006.[1]

Covariates	Model 1[1]	Model 2[2]	Model 3[3]	Model 4[4]	Model 5[5]	Model 6[6]
Birth Cohort (Ref.: 1971-75)						
1976-1980	1.336***	1.310***	1.230**	1.224**	1.276***	1.271**
	(0.087)	(0.086)	(0.081)	(0.081)	(0.093)	(0.093)
1981-1985	1.382***	1.320**	1.235*	1.218*	1.339**	1.321**
	(0.118)	(0.114)	(0.105)	(0.106)	(0.127)	(0.128)
1986-1990	1.355*	1.258	1.238	1.206	1.385*	1.348
	(0.195)	(0.184)	(0.179)	(0.177)	(0.223)	(0.221)
Time to First Job (in years)						
timeto1st job		0.903**		0.945		0.945
		(0.033)		(0.035)		(0.038)
timeto1st job squared		1.011		1.008		1.008
		(0.006)		(0.006)		(0.007)
Type of First Job (Ref.: unpaid family work)						
public job			0.545***	0.557***		
			(0.062)	(0.064)		
private formal wage job			0.852	0.877		
			(0.099)	(0.104)		
private informal regular wage			1.195*	1.207*		
			(0.102)	(0.104)		
private informal irregular wage			1.417***	1.424***		
			(0.137)	(0.137)		
employer or self-employed			0.523***	0.535***		
			(0.068)	(0.070)		
Quality of First Job (Ref.: good first job)						
poor first job					3.457***	3.403***
					(0.408)	(0.404)
fair first job					1.903***	1.881***
					(0.191)	(0.189)
Local Labor Market Variables (time varying)						
local unemployment rates	1.003	1.003	1.005	1.005	1.004	1.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ratio of local priv. W&S workers	1.002	1.002	1.001	1.001	1.002	1.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ratio of local public workers	1.002	1.002	1.003	1.003	1.003	1.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Own Educational Attainment (Ref. Technical Secondary 3 rs.)						
general secondary	0.921	0.904	0.898	0.888	0.856	0.847
	(0.193)	(0.189)	(0.188)	(0.186)	(0.207)	(0.205)
technical secondary 5yrs	1.170	1.173	1.308	1.312	1.273	1.283
	(0.213)	(0.214)	(0.240)	(0.241)	(0.268)	(0.270)
above intermediate	0.956	0.950	1.103	1.099	1.054	1.055
	(0.103)	(0.102)	(0.119)	(0.119)	(0.126)	(0.127)
university and higher	0.917	0.910	1.134	1.128	1.105	1.105
	(0.068)	(0.068)	(0.088)	(0.089)	(0.090)	(0.091)
Parents' Educational Attainment (Ref.: below secondary)						
Father: secondary	1.011	1.018	1.063	1.063	1.041	1.042
	(0.096)	(0.097)	(0.101)	(0.101)	(0.108)	(0.108)
father: post secondary	1.212	1.216	1.210	1.200	1.344	1.331
	(0.239)	(0.240)	(0.240)	(0.239)	(0.289)	(0.288)
father: university and higher	1.367*	1.365*	1.432**	1.430**	1.599***	1.596***
	(0.176)	(0.176)	(0.183)	(0.183)	(0.220)	(0.219)
mother: secondary	0.831	0.832	0.833	0.830	0.835	0.832
	(0.111)	(0.111)	(0.111)	(0.111)	(0.121)	(0.121)
mother: post secondary	0.839	0.829	0.882	0.880	0.875	0.877
	(0.161)	(0.159)	(0.169)	(0.169)	(0.185)	(0.185)
mother: university and higher	0.691	0.686	0.771	0.764	0.753	0.751
	(0.185)	(0.183)	(0.206)	(0.204)	(0.202)	(0.201)

Father's Employment (Ref.: government employee)						
irregular job	0.939	0.947	0.696	0.703	0.333	0.332
	(0.430)	(0.434)	(0.321)	(0.325)	(0.239)	(0.238)
self employed	0.956	0.939	0.951	0.948	0.891	0.885
	(0.082)	(0.081)	(0.083)	(0.083)	(0.085)	(0.084)
regular job (non-government)	1.047	1.046	0.952	0.953	0.917	0.916
	(0.084)	(0.085)	(0.078)	(0.078)	(0.083)	(0.083)
unpaid job or jobless	0.828*	0.817*	0.777**	0.775**	0.744**	0.740**
	(0.071)	(0.071)	(0.067)	(0.067)	(0.070)	(0.070)
Presence of Household Enterprise (Ref: No HH Enterprise)						
HH has farm	0.859*	0.849*	0.920	0.918	0.956	0.949
	(0.066)	(0.065)	(0.074)	(0.074)	(0.081)	(0.080)
HH has a non-agric. enterp.	1.061	1.050	1.162*	1.157*	1.024	1.023
	(0.064)	(0.064)	(0.075)	(0.075)	(0.069)	(0.069)
Region of Residence (Ref.: Greater Cairo)						
Alex & Suez Canal	1.149	1.158	1.156	1.164	1.085	1.093
	(0.123)	(0.124)	(0.124)	(0.125)	(0.128)	(0.129)
Urban Lower Egypt	0.863	0.873	0.870	0.879	0.793	0.800
	(0.096)	(0.097)	(0.097)	(0.099)	(0.098)	(0.099)
Urban Upper Egypt	1.008	1.009	0.967	0.971	0.773*	0.776*
	(0.105)	(0.105)	(0.102)	(0.103)	(0.091)	(0.092)
Rural Lower Egypt	0.951	0.955	0.947	0.951	0.735**	0.740**
	(0.096)	(0.097)	(0.096)	(0.097)	(0.085)	(0.086)
Rural Upper Egypt	1.191	1.180	1.113	1.115	0.839	0.841
	(0.127)	(0.126)	(0.121)	(0.122)	(0.102)	(0.102)
Spell Dummies	included	included	included	included	included	included
constant	0.202***	0.223***	0.207***	0.213***	0.107***	0.113***
	(0.046)	(0.052)	(0.048)	(0.051)	(0.028)	(0.030)
Log Gamma variance	0.000	0.000	0.000	0.000	0.000	0.000
	(0.004)	(0.002)	(0.000)	(0.001)	(0.006)	(0.005)
Number of Spells	13,259	13,259	13,259	13,259	11,614	11,614
Number of individuals	2,750	2,750	2,750	2,750	2,352	2,352
Log-Likelihood	-4266.599	-4261.852	-4202.601	-4201.462	-3527.058	-3526.097

* p<0.05, ** p<0.01, *** p<0.001

1. Exponentiated regression coefficients indicating hazard ratios
2. A baseline model
3. Model 1 plus 'time to a first job' and 'time to first job squared' terms added
4. Model 1 plus type of first job dummies added
5. Model 1 plus 'time to a first job' and 'time to first job squared' terms and type of first job dummies added
6. Model 1 with quality of first job dummies added
7. Model 1 plus 'time to a first job' and 'time to first job squared' terms and quality of first job dummies added
8. The coefficients for the spell dummies are shown in Appendix Table A2

All six models confirm the pattern observed in the bivariate analysis that the hazard of a second job increases for the two cohorts that follow the 1971-75 birth cohort, but then declines for the 1986-90 cohort. This difference among cohorts is somewhat attenuated, once the type of the first job is controlled for (in Models 3 and 4), suggesting that the observed difference might well be due to the higher likelihood of public employment for members of the oldest cohort. Model 2 shows that time to first job has a weak effect on reducing the hazard of transition to a second job, an effect that disappears completely when the type of first job or quality of first job are controlled for (Models 4 and 6). Thus, it is only when a longer search for the first job results in public or formal private sector job, or in a better job, that it reduces the hazard of transition to a second job. Models 3 and 4 confirm the importance of type of first employment on subsequent job moves observed in the bivariate results. People who obtain either a public job or become employers or self-employed in their first job have the lowest hazard of transition to a second job. The second lowest hazard of transition is for people who obtain formal private sector employment, followed by unpaid family work. The highest hazards of transitions is among

informal private wage workers, with irregular wage workers (those with presumably some of the worst jobs) having the highest hazards of moving on.

When quality of first job is included instead of type of first job, as in Models 5 and 6, we see that those with poor jobs have nearly three and a half times the hazard, and those with fair jobs nearly twice the hazard, of moving on to a second job compared to those who start out with a good job. These estimates are robust to the inclusion of time to first job and its square as additional regressors. Thus it appears that there is some scope for mobility if one gets stuck with a poor or fair job in one's first job, but the question remains whether such mobility allows young men to improve their job quality. To answer this question, we present the transition matrix from quality of first job to quality of second job for those with at least two jobs. As shown in Table 12, nearly 70 percent of those in first poor jobs who managed to change jobs, actually improved their job quality. Similarly 25 percent of those in fair jobs improved their job quality upon changing jobs. The table also shows, however, that 25 percent of those in good jobs who changed jobs ended up in fair jobs. Fortunately, mobility from good jobs is rather low.

Table 12: Transition Matrix for Quality of First and Second Jobs
(Row Percentages)

		Job Quality in Second Job			
		poor	fair	good	Total
Job Quality in First Job	poor	30	52	18	100
	fair	12	63	25	100
	good	0	25	75	100
	Total	15	56	29	100

As in the case of transitions to a first job, neither local labor market conditions nor own educational attainment has any significant impact on transitions to second jobs. Having a father who is educated at the university level, however, seems to increase the hazard of transition to a second job and having a father who is not working reduces that hazard. Being part of a household that has as farm reduces the hazard of transition to a second job, but the effect is only significant in Model 2. Having a non-farm enterprise in the household increases the hazard of moving to a second job in Models 3 and 4. Finally, region of residence at school exit has no effect on the hazard of transition to a second job.

3. Transitions To Marriage

Marriage constitutes the sole socially-accepted institution of family formation in the Arab World and is widely perceived as the main marker of adulthood. Nonetheless, the region has experienced a significant delay in male age at first marriage that makes it stand out among other world regions. While female age at marriage has also gone up, the trend there is comparable to trends elsewhere in the world. Thus the increase in male age at marriage and the continuing large age gap between spouses appears to be specific to Arab societies (Mensch 2005, Mensch et al. 2005). This seemingly involuntary postponement of marriage by young men may have the same major social and political implications of the better documented effects of a "surplus" unmarried male population in China resulting from unbalanced sex ratios (Hudson and Den Boer 2002, 2004). While the high cost of marriage has been documented for Egypt (Singerman 2007, Singerman and Ibrahim 2001), an in-depth analysis of the causes of the significant delay in men's age at marriage is still lacking.

Using the detailed life-course data available from the ELMPS 06, this section of the paper analyzes the determinants of the timing of marriage in Egypt and links the delayed marriage phenomenon to the changing labor market prospects facing Egyptian youth that were described in the previous section. Specifically, we link the timing to marriage to the timing of first employment, the incidence and timing of a good job, the migration experience of the young man, his educational attainment, the socioeconomic background of his parents, the performance of local labor markets, and the prevailing sex ratios in their region of residence.

This section is structured as follows. After describing changes in the Egyptian marriage market over the past three or four decades in Section 3.1, we review in Section 3.2 the literature on the determinants of age at marriage including earlier research on Egypt. In Section 3.3, we present our results on the determinants of the timing of marriage among men in Egypt. To better illustrate these results, we used our estimates to conduct simulations of the effect of the timing of the first job, and the first "good" job, if any, on the timing of marriage. The simulations are presented in Section 3.4. We conclude by highlighting the implications of our results and suggesting directions for further research.

3.1 Recent Trends in the Timing of Marriage in Egypt

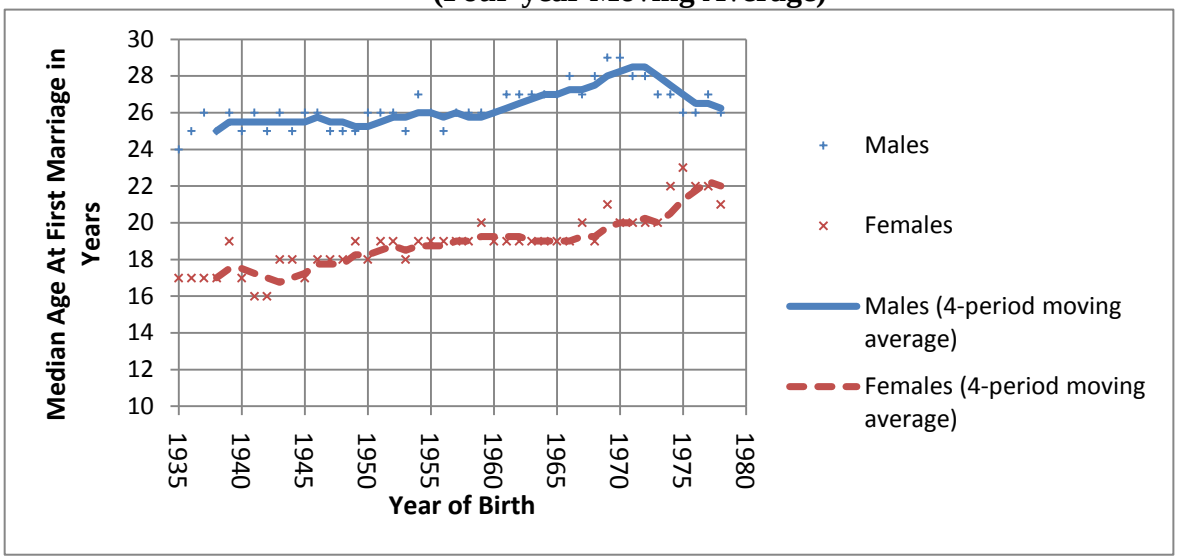
We present in this section a brief overview of trends in the Egyptian marriage and labor markets. On the basis of these trends we argue that the observed delay in male age at marriage in Egypt can be attributed to a number of factors including rising expectations about living standards – especially aspirations for nuclear family living arrangements after marriage – combined with significant difficulties in finding housing to realize these aspirations and deteriorating labor market prospects for young men as demonstrated in the previous section. We argue that as a result of these trends, young men and their families are finding themselves increasingly unable to afford the high costs associated with marriage in Egypt or to adequately signal their eligibility for marriage to potential brides and their families.

We should note that many of the questions related to marriage in the ELMPs 06, such as the costs of marriage and who bears these costs, are asked to ever-married women aged 16 to 49 and relate to their first marriage. Consequently, this information can only be assigned to those married men in the sample who were, at the time of the survey, still married and living together with their first wife. Luckily, this condition applies to almost 97 percent of married men aged 18 to 39 who are the objects of analysis here.

With regard to the delay in the age at marriage, Egypt conforms well to the general trend in Arab societies referred to above. Both men and women are marrying later in Egypt, although there was a recent decline in men's age at marriage. Figure 3 shows the median age at first marriage for men and women in Egypt. The numbers plotted in the figure are computed using life table analysis that takes into account that some members of each cohort had not yet married at the time of the survey. As Figure 3 shows, the delay in male age at first marriage started with the cohorts born by the end of the 1950s and continued through those born in the early 1970s. The delay for women began somewhat earlier and continued uninterrupted through the cohorts born in the late 1970's.[11]

[11] It is not possible to calculate the median age at marriage for cohorts born after that because less than 50 percent of these cohorts are married.

Figure 3: Median Age at First Marriage by Year of Birth and Sex (Four-year Moving Average)

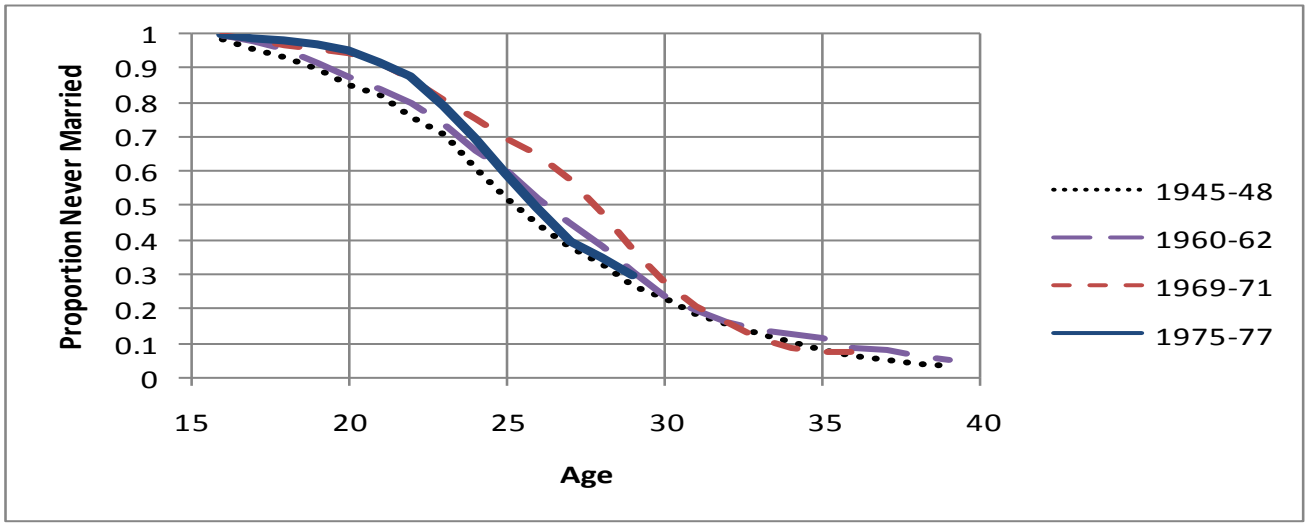


Source: ELMPS 06.

As a result of this pattern, the age gap between spouses remained fairly constant at 8 to 9 years and only started to narrow for males born after 1975. The main novelty here, which runs counter to either conventional wisdom or recent qualitative studies, is that male median age at first marriage has declined in recent years after reaching a peak of 29 for those born in 1970. Assaad and Ramadan (2008) attribute this recent decline to housing law reform passed in 1996 that made it easier for young couples to acquire market-rate rental housing.

The delay in the age of marriage for young men and its subsequent reversal can also be seen by looking at the entire distribution of age at marriage by birth cohort and not just at the median. As shown in Figure 4, the delay in the age at marriage from the 1945-48 birth cohort to the 1960-62 birth cohort was very slight, with the median age shifting by at most one year from 25 to 26. By the 1969-71 birth cohort, the median had reached about 28. Seventy percent of that cohort had not yet married by age 25 and 30 percent had not married by age 30. The reversal in the delay in age at marriage is readily apparent for the 1975-77 birth cohort compared to the 1969-71 cohort. Although very early marriages (before age 23) were equally rare for these two cohorts (less than 20 percent), the median age at first marriage drops from 28 to 26, right back where it was for the 1960-62 cohort. Finally, it is clearly apparent from Figure 2 that marriage for men in Egypt is virtually universal by age 40.

Figure 4. Kaplan-Meier Survival Function for Distribution of Age at First Marriage for Men by Cohort of Birth



Source: ELMSP 06.

3.2 Literature Review on the Economic Determinants of the Timing of Marriage for Men

There are relatively few economic studies on the age at first marriage for young men and even fewer that link young men's work trajectories to their transition to marriage. On the theoretical side, Keeley (1977) develops a model that incorporates search costs into Becker's (1973, 1974) theory of marriage. Becker (1973, 1974) uses household production theory to explain the benefits from marriage, such as love and child care, and to explain spouses' specialization in market or domestic work depending on their relative wages. Costs associated with searching for a spouse, for instance, are neglected. According to Keeley's (1977) theory, in contrast, an individual enters the marriage market only if his/her expected benefits of search are equal to or exceed the expected costs. With regard to men's and women's employment status, Keeley's (1977) model predicts that "higher-wage men and lower-wage women have greater gains from marriage and thus tend to enter the marriage market earlier" (ibid: 245) provided that men earn more than women. Using US data from the 1967 Survey of Economic Opportunity, he finds empirical evidence in support of his theoretical model. Bergstrom and Schoeni (1996) develop a theoretical model of the marriage market that predicts a positive correlation between income and age at first marriage for men. They use the 1980 US census and regress family income and annual earnings on the age at marriage (not vice versa!). For that, they restrict their analysis to men aged 40 and above who are currently married and married only once. Estimation results confirm their theoretical model but also show a negative correlation for those in the sample who married after age 30. Similarly, Danziger and Neuman's (1999) estimation results support Keeley's (1977) hypothesis. However, they also find evidence for Bergstrom and Bagnoli's (1993) hypothesis that in traditional societies men's age at marriage *increases* with their wage rate. Bergstrom and Bagnoli (1993) argue that it takes time until a man can show his ability to earn a high wage. Hence, men who are confident in their career path will postpone marriage in order to marry a more desirable woman. Consequently, more desirable women will marry older men. Danziger and Neuman (1999) rely on data from the 1983 Israeli Census of Population and Housing and run separate regressions for Muslim and Jewish married couples. In addition, they run regressions for

the following cases: non-working wife, working wife, wife's wage exceeding the husband's wage and vice versa.

Very few studies go beyond wages to measure job status or career. One exception is the study by Gutiérrez-Domènech (2008), which confirms earlier findings from Ahn and Mira (2001) that unemployment spells (non-employment spells in Ahn and Mira (2001)) and temporary contracts delay men's timing of marriage and first child bearing in Spain. Ahn and Mira (2001) also control for the likely endogeneity of education to the marriage and childbearing decision by running the models separately for each educational category. Employment status is classified into four categories: full-time continuous work, part-time or temporal work, no work and military duty. De la Rica and Iza (2005), again on Spain, exclusively focus on the role of fixed-term contracts. They show that men working under such insecure conditions, or even not working at all, delay their marriage compared to those holding an indefinite contract. Women's decision to marry remains, in contrast, unaffected by their contractual status. Finally, Oppenheimer et al. (1997) consider career transition as a process and therefore look at both current career and long-term labor-market status as determinants for marriage timing. More specifically, they use information on job type at the previous interview (non-employed, "stopgap" jobs, career (entry) positions, or military service), and work experience during the previous year expressed in categories based on hours worked, and earnings. Using data from the National Longitudinal Survey of Youth from 1979 to 1990 and applying duration analysis, they find a strong impact of the career-entry process on men's age at marriage.

The importance of economic factors is also confirmed by studies on marriage timing in developing countries although these studies often focus on women's age at marriage. The study by Anderson et al. (1987) shows, for instance, that the wife's and husband's occupations, age and – similar to Oppenheimer et al. (1997) – ethnicity have a high influence on women's age at marriage in Malaysia. Bates et al. (2007) show that other factors also matter for rural Bangladesh, such as mother's education. Of those who (also) analyze men's marriage decision, Caltabiano and Castiglioni (2008) focus on the interrelatedness between first sexual intercourse, marriage, and cohabitation given that, in Nepal, cohabitation may be delayed up to several years after marriage. Using data from the 2001 Nepal Demographic and Health Survey (DHS), they do not, however, control for variables related to employment or job status. Admittedly, economic factors may be less important in their context as men's average age at marriage has remained relatively stable across cohorts. Furthermore, they limit their estimation to married men and women in order to include variables related to the husband's or wife's characteristics. Another study on Nepal, conducted by Ghimire et al. (2006) looks at changes in spouse choice and its association with age at marriage. They estimate hazard models for a pooled sample of men and women treating spouse choice and arranged marriage as competing risks. Employment status, however, is not taken into consideration.

To sum up, there are still relatively few studies linking the labor and the marriage market. Historically, most economic studies on marriage timing covered industrialized societies, especially the US and more recently Europe. However, with the role of marriage and the forms of family-formation changing, these studies have become more interested in related topics, such as cohabitation versus marriage and the timing of births and less on the age at marriage itself (e.g., Kreyenfeld 2000). Put differently, the role of marriage as a marker of adulthood has declined in Western societies, as have social and economic constraints on the marriage decision. With regard to marriage timing in developing countries, attention has primarily been paid to the determinants of women's delay in marriage. This corresponds to the general trend in most developing regions as described earlier, namely the increase in female age at first marriage over time and a relatively

unchanged pattern for male age at first marriage. The main contribution of this paper is to build a better understanding of the determinants of men's timing of marriage, and in particular the role of their employment status, in a developing country context. More specifically, using data from the ELMPS 06 allows us to study the impact of young men's labor market trajectories on their transitions to marriage in Egypt.

3.3 Econometric Analysis: A Discrete-Time Hazard Model of Men's Timing of Marriage

We use a discrete time hazard model similar to the one described in Section 2 above to model the timing of marriage. The ELMPS 06 collected information about an individuals' year of first marriage but not on the month of marriage or even the day. Hence, although marriage takes place in continuous-time, we observe spell lengths in units of one year. Our spell lengths are thus interval-censored and we have to deal with 'grouped' or 'banded' data, thus our use of the discrete-time approach. Figures 5a and 5b show the discrete-time baseline hazard and cumulative probability of first marriage for the reference individual. The hazard function shown in Figure 5a reveals a non-monotonic relationship with age, with the hazard of first marriage increasing with age until about age 30 and then remaining roughly constant for another decade.[12]

As in Section 2 we divide our explanatory variables into time-varying and time-invariant covariates. The principal explanatory variables upon which we focus our attention in this section are all time-varying and describe the employment trajectories of the individuals in the sample. This first in an indicator variable that switches on when the individual first takes up a job that lasts for at least six months. From the year of first employment onwards, the variable in our person-year dataset takes on the value of 1 – irrespective of whether or not the individual experiences a period of non-employment later. Out of a total of 3,995 men aged 18-40 in our sample, 3,332 (83 percent) actually got a first job.

The second time varying covariate attempts to capture the impact of job quality on the timing of marriage. We do that by including a variable that switches from zero to one when, if ever, an individual has obtained a "good" job. The definition of a "good" job is the same as that used in Section 2. Again, of 3,332 individuals who got at least one job, 1,132 (34 percent) got a "good" job. We use an indicator for "good" job rather than other job classifications, such as formal job or public job, because it correlates closely to formal employment, captures job quality in both the public and private sectors, and appears to be closely related to job satisfaction, as indicated by low levels of mobility to second jobs.

The third employment-related time-varying covariate relates to a young man's experience with international migration. There is ample qualitative evidence that young men often use temporary international migration as a strategy to raise the necessary capital for marriage (Singerman 1995, Hoodfar 1997). Migration experience may also help them get better jobs after returning to Egypt. We use the migration history module of the ELMPS 06 to determine young men's experience with international migration. We assume that an individual who departed abroad after age 15 left in order to work. Our time-varying migration variable turns on when an individual returns from migration. We also include a time invariant variable that indicates how long he was away in total. Since we are only interested in the effects of migration on the timing of marriage, we ignore migration that occurs after marriage. Only 39 individuals in our sample,

[12] Although all men in the sample are currently over age18, which is the legal age of marriage, several older men in the sample had married before 18, with the earliest marrying at age 14.

or 1 percent, migrated prior to marriage. The mean duration of migration for those who migrated was 4.4 years and the mean age upon return was 27.8 (See Table 13).

Table 13. Summary Statistics of Explanatory Variables, Males aged 18 to 40 with secondary school education or higher.

Explanatory Variables	Mean	St. dev.	N	min	max
individual characteristics					
age at leaving school *	19.6	2.39	3995	17	39
general secondary degree	0.018	0.132	3995	0	1
Technical secondary 3 yrs ***	0.598	0.490	3995	0	1
Technical secondary 5yrs	0.021	0.142	3995	0	1
Post-secondary	0.076	0.264	3995	0	1
University & Higher	0.288	0.453	3995	0	1
*age at taking up first job**	20.17	3.63	3332	6	37
*age at taking up first good job**	23.75	3.57	1132	12	3
duration of migration period**	4.38	3.9	39	0	15
*age at returning back to Egypt***	27.82	4.40	39	19	39
number of sisters	2.04	1.51	3995	0	12
Parental Background					
Father: below secondary education***	0.775	0.417	3995	0	1
Father: secondary education	0.115	0.319	3995	0	1
Father: post-secondary education	0.023	0.148	3995	0	1
Father: University & higher	0.0871	0.282	3995	0	1
Mother: below secondary***	0.881	0.324	3995	0	1
Mother: secondary education	0.073	0.260	3995	0	1
Mother: post-secondary	0.017	0.129	3995	0	1
Mother: university & higher	0.030	0.169	3995	0	1
father: government employee***	0.442	0.497	3995	0	1
father: regular wage worker outside government	0.128	0.334	3995	0	1
father: irregular wage work or not working	0.107	0.309	3995	0	1
father: employer or self-employed	0.323	0.468	3995	0	1
Regional and community-Level Variables					
sex ratio in district of residence in 1996	0.860	0.114	3995	0.40	3
Greater Cairo***	0.169	0.375	3995	0	1
Alexandria and Suez	0.104	0.305	3995	0	1
Urban Lower Egypt	0.137	0.344	3995	0	1
Rural Lower Egypt	0.236	0.425	3995	0	1
Urban Upper Egypt	0.172	0.377	3995	0	1
Urban Upper Egypt	0.181	0.385	3995	0	1
cohort 1966 – 1970***	0.147	0.354	3995	0	1
cohort 1971 – 1975	0.222	0.415	3995	0	1
cohort 1976 – 1980	0.290	0.454	3995	0	1
cohort 1981 – 1985	0.274	0.446	3995	0	1
cohort 1986 +	0.067	0.250	3995	0	1

** provided that individuals are not censored and that migration started before year of marriage.
*** omitted category.
italic: time-varying covariates

The norm in the literature is to lag the employment-related time-varying covariates by one year (see for example Gutiérrez-Domènech 2008). The argument is that the decision to marry

and marriage itself usually occur with a certain time-lag. The disadvantage of this approach is that it assumes the length of the lag rather than allows it to be determined from the data. Since it may take longer than one year for a change in employment status to affect the hazard of marrying, a more complex lag structure may be justified. We therefore initially estimate several models with a one-year lag, but then include a version of our preferred model with a more complex lag structure for the time-varying employment variables, namely one, three and five-year lags. The combined effect of these lagged variables can tell us about the speed with which the hazard of marrying responds to changes in employment or migration status.

The last time-varying covariate we use is an indicator variable that shows whether the individual was still in school. Although all individuals in our sample are currently out of school by design, we start observing them at age 14 and therefore they would have been in school in the past. The variable takes on the value of 1 when the individual is attending school and switches to zero when he leaves it.

Our time-invariant explanatory variables include cohort of birth, own educational attainment, number of living sisters, parental education, father's type of employment, the sex ratio in the district of residence in 1996, region, and the duration of migration, if the individual is a return migrant. The individuals in our sample fall into one of four birth cohorts, namely 1966-70, which is the reference cohort, 1971-75, 1976-80, 1981-85, and 1986+. Since the last cohort only includes individuals 18 to 20 in 2006, it is much smaller than the previous three. Since our sample consists of individuals who completed secondary schooling, we distinguish between the following education levels: (i) general secondary graduates, (ii) 3-year technical secondary degree holders, which are our largest group and the reference category, (iii) 5-year technical secondary degree holders, (iv) graduates of 2-year post-secondary institutions, and (v) holders of university degrees and higher (see Table 13 for the relative size of each group).

We include the number of living sisters a young man has as an explanatory variable because young men in Egypt are expected to step in financially should their parents have difficulties in accumulating the required capital for his sisters to marry. We therefore expect men with a higher number of sisters to marry later. The mean mumber of sisters for men in the sample is two.

To control for a young man's socio-economic background, we include his parents' education, distinguishing between less than secondary, secondary, post-secondary and higher education for both fathers and mothers. We also include the type of employment the father held when the young man was 15. The reference category for this is government employee and additional categories we examine are "regular wage worker outside government", "employer or self-employed", and a residual category that includes fathers with irregular employment or no employment at all.

We control for conditions in an individual's wider community that can affect the timing of marriage by including the sex ratio in the district of residence as provided by the 1996 Population Census. Because there is an average age gap of 6-7 years between spouses in Egypt, sex ratios were calculated by dividing the number of males in a given five-year age group by the number of females in the younger five-year age group in the individual's district of residence. For example, men aged 25 to 29 were related to women aged 20 to 24. Men in the sample were assigned the sex ratio corresponding to their age in 1996. The average district-level sex ratio for individuals in the sample was 0.86 (See Table 13).

In what follows we estimate a series of increasingly richer models. Model (1) includes only the cohort and education dummies. Model (2) adds the labor market and migration variables describing an individual's employment trajectory, with the time-varying variables lagged one period only. Model (3) adds the number of sisters and parental background variables. Model (4) adds the community-level variables and regional dummies. Finally, Model (5) is similar to Model (4) but includes the full lag structure of the time-varying labor market variables, i.e. one, three and five-year lags.

Table 14 reports the exponentiated coefficients for the various discrete-time hazard models we estimate. Assuming that a proportional hazard model applies to the underlying continuous time data, the exponentiated coefficients can be interpreted as hazard ratios relative to the baseline hazard, so, for example, a coefficient of 1.5 means that the variable in question raises the hazard of marriage by 50 percent. Incorporating time-varying covariates into the model relaxes the proportionality though, which becomes evident in the results of the simulations we present below (See Rabe-Hesketh and Skrondal 2008).

In discussing the results shown in Table 14, we will focus on Models (3) and (4), our most comprehensive models, and will point out differences with other models, if any. We start with an examination of the results relating to the impact of a young man's employment trajectory on his hazard of marrying. Since we return to these variables when we present the simulation results, we limit ourselves here to the direction and rough magnitude of the effects. We first note based on Model (3) that getting as first job increases the hazard of marrying by nearly two times. As Model (4) suggests, however, this effect is spread out over more than three years, with the coefficients of both the 1-year and 3-year lagged variables being significantly above one. Getting a good job more than doubles the hazard of marrying, but unlike the first job, the effect is almost immediate. The 3-year and 5-year lagged versions of the variable have insignificant effects in Model (4). The results on the employment variables are fairly consistent across all four models where they are entered with only a single period lag.

Similarly migrating abroad and returning from such migration has a fairly large positive effect on the hazard of marrying, with those returning from migration having nearly three times the hazard of marrying that those who did not migrate at all. Again the impact of returning from migration is fairly immediate and raises the probability of marriage one year after returning. It turns out, however, that the duration an individual spends abroad does not appear to affect the hazard of marrying in a significant way

After correcting for labor market experience and other individual and family background characteristics, we still find significant differences among cohorts with regard to the hazard of marrying. For the cohorts we have under consideration, namely people born between 1966 and 1988, the hazard of marrying has increased significantly for every cohort starting with the 1971-75 cohort. This is in line with the descriptive results shown in Figure 3 showing that the age of first marriage has declined since the cohort born around 1972. The predicted baseline hazard and cumulative probability of marriage by age for different birth cohorts is shown in figures 5a and 5b. We excluded the 1986-90 cohort from the figure because they were only 18 to 20 in 2006. We can clearly see that every cohort had a higher hazard of marrying, with the largest change occurring between the 1966-70 and 1976-80 cohorts. Based on these results, the median age of marriage for the reference individual has gone from 31 for the 1966-70 birth cohort to 27 for the 1981-85 cohort, keeping all else constant. This is a somewhat surprising result given the big popular concerns about the increased difficulty of marrying and the perception that Egyptian society is going through a marriage crisis. Assaad and Ramadan (2008) have convincingly shown

that the decline in the age at marriage after the 1971 birth cohort can be attributed to the change in housing laws that occurred in the late 1990s that made rental housing more readily available to young people, precluding the need to save large amounts of cash to acquire housing. The concern about the deteriorating labor market conditions facing young men is real however and is clearly contributing to greater difficulty in marrying as we shall see in Section 3.4 below.

Figure 5a

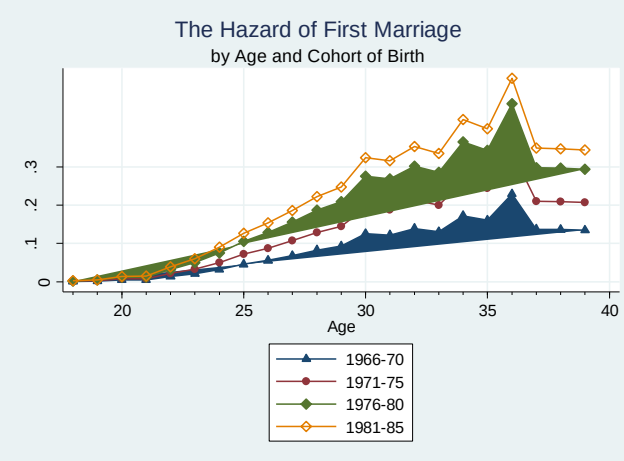
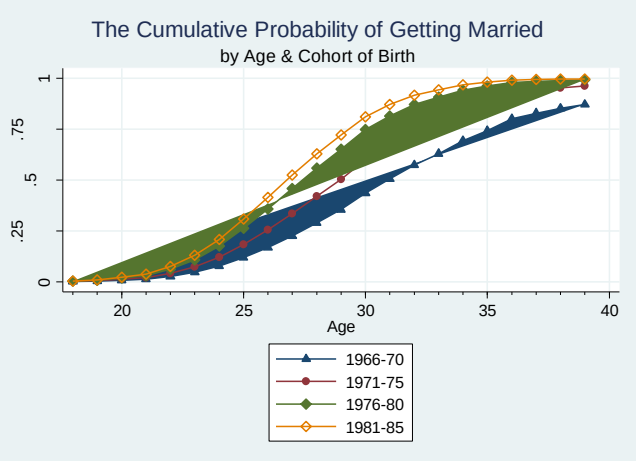


Figure 5b



Note**: C**alculations based on Model 4 in Table 14

Like most previous studies (e.g., Yabiku 2005, Ghimire et al. 2006) we find that being enrolled in school reduces the hazard of marrying, but in our case the effect is not significant once other time-varying characteristics are taken into account. Unlike Yabiku (2005) who finds that school attainment in Nepal increases the hazard of marriage, we find that higher educational attainment, correcting for enrollment status, significantly delays marriage. Compared to a individual with a 3-year technical secondary degree, the hazard of first marriage for someone with a university degree or higher is about 30 percent lower in Model 3. It is even lower in Model 1, where parental background and region are not controlled for. This may be due to the fact that educated men are more likely to marry educated women and that these women and their families are more likely to insist on having independent living arrangement upon marriage and higher standards of living within marriage, both of which raise the cost of marriage and may therefore delay it.

Based on findings in the literature (Bates et al. 2007) and studies on social class and mobility in Egypt (Nagi 2001), we expect indicators related to social class, such as parental background, to have important effects on the hazard of marrying. Although, we find that parental education does not affect the hazard of marrying in a significant way, over and above its effect on one's own education, we find that father's employment does have an effect. Having a father who is self-employed or an employer raises the hazard of marriage by about 20 percent compared to someone whose father is a government employee. Other paternal employment states are not significantly different from government employment.

We expected that the number of sisters a man has to have a negative effect of his hazard of marrying, but do not find such an effect. If anything, it seems to marginally raise his hazard of marrying in Model 2, but has an insignificant effect in Models 3 and 4.

Consistent with the literature, we find that living in a district with a 'surplus' of men relative to women of the appropriate age, i.e. a sex ratio greater than 1, has a negative impact on the hazard of marrying, but the effect is not statistically significant at conventional levels (Models 4

and 5). In accordance with earlier descriptive findings, we find that controlling for other factors, men in rural areas have hazards of marrying that are about one and a half times higher than men in urban areas, with the ratio being higher in rural Upper Egypt than in Lower Egypt. The different urban regions do not differ significantly from each other. This confirms our expectation that more metropolitan, urbanized areas have later ages at marriage, which may be due in part to the availability and cost of housing.

The non-parametric specification we use gives us the most flexible fit for the baseline hazard. The estimates on the exponentiated coefficients of the spell dummies shown in Appendix Table A3 provide a fairly consistent picture across all the models we estimate of the shape of the baseline hazard. As shown in Figure 5a above, the hazard rises monotonically until about age 30, flattens from age 30 to 33 and then becomes somewhat unstable after that as the precision of the estimates declines. As shown in Figure 5b, by age 35, 75 percent of the members of the 1966-70 cohort were married and over 95 percent of the members of 1976-80 and 1981-85 cohorts are expected to be married by that age.

Our estimates indicate that there is some remaining unobserved heterogeneity, as measured by the variance of gamma, in Models 1 and 2, but these variances tend toward zero in our preferred models 3 and 4.

Table 14. Discrete Time Proportional Hazard Model for Hazard of first Marriage with Non-Parametric Time Dependence and a Gamma Mixture Distribution for Unobserved Individual Heterogeneity. Men 18-39 with Secondary Schooling, Egypt, 2006.[1]

Explanatory Variables	Model 1[2]	Model 2[3]	Model 3[4]	Model 4[5]
Labor Market Trajectory Variables				
start any job (-1)	2.200***	1.854***	1.908***	1.534***
	(0.201)	(0.160)	(0.163)	(0.173)
start any job (-3)				1.267*
				(0.131)
start any job (-5)				1.095
				(0.086)
start "good" job (-1)	2.510***	2.415***	2.435***	2.250***
	(0.162)	(0.148)	(0.140)	(0.238)
start "good" job (-3)				1.152
				(0.156)
start "good" job (-5)				0.973
				(0.112)
duration of migration period	1.032	1.023	1.024	1.026
	(0.035)	(0.032)	(0.030)	(0.031)
return from migration (-1)	3.243***	3.306***	2.817***	2.550**
	(0.995)	(0.921)	(0.757)	(0.899)
return from migration (-3)				1.517
				(0.944)
return from migration (-5)				0.872
				(0.685)
Cohort of Birth (Ref.: 1966-1970)				
cohort 1971-1975	1.440***	1.685***	1.594***	1.599***
	(0.101)	(0.112)	(0.099)	(0.103)
cohort 1976-1980	2.238***	2.467***	2.411***	2.401***
	(0.182)	(0.197)	(0.186)	(0.191)
cohort 1981-1985	2.635***	3.199***	2.960***	2.913***
	(0.346)	(0.416)	(0.380)	(0.377)
Cohort 1986-1990	4.977***	5.429***	5.096***	5.173***
	(2.331)	(2.660)	(2.516)	(2.555)
Own Educational Attainment (Ref.: technical secondary 3 yrs)				
enrolled in school	0.792	0.833	0.814	0.755
	(0.124)	(0.123)	(0.119)	(0.114)
general secondary	0.601*	0.562**	0.624*	0.633*
	(0.127)	(0.117)	(0.121)	(0.127)
technical secondary 5 years	0.708*	0.775	0.729*	0.742
	(0.123)	(0.126)	(0.114)	(0.120)
post-secondary	0.777**	0.785**	0.865	0.888
	(0.075)	(0.073)	(0.074)	(0.079)
university & higher	0.539***	0.663***	0.688***	0.737***
	(0.038)	(0.044)	(0.042)	(0.054)
Parents' Educational Attainment (Ref.: below secondary)				
father: secondary schooling		1.028	1.128	1.145
		(0.091)	(0.094)	(0.097)
father: post-secondary		0.724	0.831	0.846
		(0.156)	(0.171)	(0.176)
father: university & higher		0.939	1.022	1.028
		(0.111)	(0.115)	(0.117)
mother: secondary		0.823	0.839	0.835
		(0.104)	(0.103)	(0.103)
mother: post-secondary		0.870	0.868	0.860
		(0.183)	(0.174)	(0.174)
mother: university & higher		0.765	0.802	0.796
		(0.148)	(0.150)	(0.150)

Explanatory Variables (contn'd)	Model 1[2]	Model 2[3]	Model 3[4]	Model 4[5]
Father's Employment (Ref.: government employee)				
self-employed or employer		1.244***	1.211***	1.199**
		(0.075)	(0.069)	(0.069)
regular wage worker outside government[2]		1.002	0.992	0.991
		(0.080)	(0.075)	(0.077)
Irregular worker or jobless		0.985	0.912	0.906
		(0.094)	(0.083)	(0.084)
number of sisters		1.048**	1.026	1.027
		(0.017)	(0.015)	(0.016)
Regional and community-Level Variables				
sex ratio in district of residence in 1996			0.853	0.847
			(0.213)	(0.213)
Alexandria and Suez Canal Cities[4]			0.961	0.960
			(0.086)	(0.087)
Urban Lower Egypt			1.153	1.153
			(0.098)	(0.099)
Urban Upper Egypt			0.904	0.897
			(0.075)	(0.076)
Rural Lower Egypt			1.404***	1.409***
			(0.107)	(0.112)
Rural Upper Egypt			1.557***	1.551***
			(0.130)	(0.141)
Spell Dummies[6]	included	included	included	included
Constant	0.107***	0.090***	0.091***	0.081***
	(0.018)	(0.015)	(0.026)	(0.026)
Gamma Variance	0.220***	0.098**	0.000	0.017
	(0.050)	(0.047)	(0.000)	(0.077)
Log-Likelihood	-5885.014	-5850.491	-5809.234	-5798.813
person-years	49,848	49,848	49,848	49,848
N	3,996	3,996	3,996	3,996

* p<0.05, ** p<0.01, *** p<0.001

[1]Exponentiated regression coefficients indicating hazard ratios.
[2]Baseline model including time-varying labor market variables lagged oe period, cohort and own educational attainment.
[3]Adds to Model 1 parental and family background variables
[4]Adds to Model 2 community and regional level variables
[5]Adds to Model 3 the time varying labor market variables lagged three periods and five periods.
[6]The coefficients of the spell dummies are shown in Appendix Table A3.
italic: denotes time-varying covariates

3.4 Simulating the Effect of Labor Market Experience on the Hazard of Marriage

To clarify, the impact of the different labor market trajectories on the timing of marriage of young men, we conduct a series of simulation where we vary the timing of first employment, first good employment, if any, and migration for a reference individual.[13] If not otherwise specified, the reference individual starts his first employment at age 19, does not obtain a "good" job and is not a return migrant. Our simulations are based on the estimation results from Model (4), the last

[13] As before, the reference individual is born between 1966 and 1970, has a 3-year technical secondary education, lives in Greater Cairo, has parents with below secondary education, and a father that works for the government. He also has the average number of sisters and lives in a district with the average sex ratio.

model in Table 14. This is our richest model that includes all the time-varying covariates, with their full lag structure.

To see how the employment situation of young men affects their transition to marriage, we simulate the following scenarios:

Scenario 1 ("job entry effect") compares the reference case with the four alternatives relating to the timing of first-time job entry, namely not obtaining a job at all, and delaying entry into employment to the ages of 22, 25, and 28.

Scenario 2 ("Timing of first-time job entry vs. timing of getting a "good" job) examines the impact of obtaining any job versus obtaining a "good" job, while varying the timing of both eventualities. The main idea here is to compare a situation where an individual waits to find a "good" job at the expense of entering into employment late, with a situation where he enters early but gets any job. To get at this possible trade-off we simulate the following cases and compare them to our reference case: early job entry (at age 19) and directly obtaining a "good" job, early job entry (again at age 19) while obtaining a good job only comparatively late (at age 25 and 28) and finally two cases of waiting for a good job, i.e. not taking up just 'any' job at an early age but waiting to get a "good" job at age 25 and at age 28.

Scenario 3 ("Incidence of migration and timing of return from migration") compares the impact of migrating abroad and returning at different ages to starting work early in the domestic labor market.

Figures 6a and 6b show our simulation results for scenario 1. Figure 6a shows the effect of different timings of first-time employment on the hazard of marrying and Figure 6b shows the same for the probability of remaining unmarried by a certain age for reference individuals who never get a "good" job. As expected the lowest hazard of marrying is for those who don't get a job at all and the highest hazard is for those who obtain first jobs early (age 19). The hazards for those obtaining first jobs later start out low and then "catch up" to the higher hazards several years after the job is acquired, because of the lag structure of the estimates. Thus, for example, the hazard of marrying for a young man who obtains first employment at age 28, catches up to the hazard of someone who obtained a first job at 19 only by age 33. From Figure 6b, we can see that the median age at marriage for a reference individual who obtains a job at age 19 is 31. If entry into employment is delayed to age 28, the median age increases to 33. If there is not entry into employment at all, the median age goes to 35.

Model 4 suggests that getting a "good" job as opposed to any job further increases the hazard of marrying, but is it worth waiting for a good job from a marriage timing perspectives if such waiting enhances the probability of getting a good job? This is what Scenario 2 is designed to investigate. Figure 7a shows that for two individuals entering employment at age 19, one who enters into a good job has about twice the hazard of marrying as one who gets a fair or poor job. If one gets a first job at 19 and a good job at 25, the hazard of marrying starts out low but shifts to the "good job" hazard within a year or two of getting that good job. If one delays entry into a first job until age 25, but then gets a good job at that age, the hazard of marrying is initially lower than if one took any job at 19, but then catches up with it within a year (at age 25) and then exceeds it to catch up with the "good job" hazard by age 28. Someone who waits until age 28 to enter the job market and find a good job at that age has a lower hazard of marrying until age 28 than someone who takes any job at 19. Their hazard only catches up with those who do not get

get good jobs immediately after getting the job, but only catches up with those who got good jobs early by age 32.

Figure 7b shows the effect of these scenarios on the probability of being married by a certain age. The median age at marriage is the easiest way to summarize the information in the figure. A reference young man who gets a good job immediately at 19 has a median age at marriage of 27, more than four years earlier than someone who starts working at 19 but never gets a good job and three and a half years earlier than someone who waits until age 28 to enter directly into a good job. The median age of marriage for someone who waits to enter the job market until age 25 but gets a good job at that age, is 28 years, about three years younger than someone who enters earlier and never gets a good job. In fact, it is only one year later than someone who gets any job at 19 and a good job at 25 and about half a year earlier than someone who enters any job at 19 and only gets a good job at 28. This suggests that from the perspective of reducing age at marriage, it may be worth it for a young man to remain unemployed and search for a good job rather than entering early on into any job, if the latter will delay his ability to get a good job by three years or more.

The final scenario we examine in our simulation (scenario 3) relates to the incidence of international migration prior to marriage and the timing of return from such migration. Our results indicated that the actual duration of migration seems not to matter, so we set that duration to the mean value for return migrants, which is 4.5 years. We the situation of a reference individual who never goes abroad and starts work at 19 in the domestic labor market as the reference case. As shown in Figure 8a, a young man who migrates and returns at age 22 sees his hazard of marrying rising rapidly after that age. Interestingly someone who returns at age 25 has a brief period between the ages of 28 and 30, where they have a higher hazard of marrying than someone returning at age 22. As shown in Figure 8b, however, the lowest median age of marriage (26) is for someone who migrates and returns by age 22. This compares to a median age of 27.5 for someone who migrates and returns at 25 and to a median age of 31 for someone who does not migrate and starts working in the domestic market at age 19.

Figure 6a

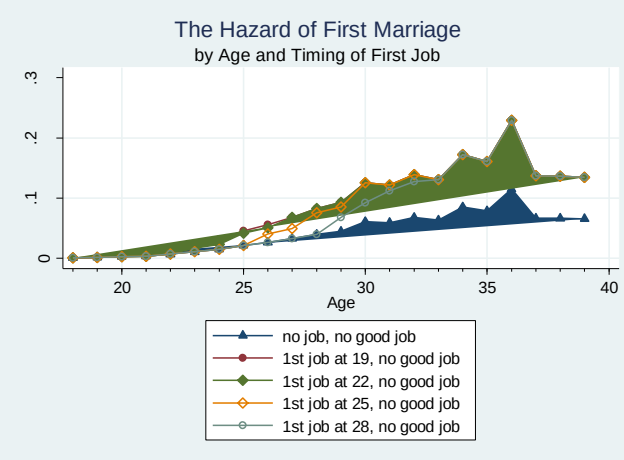


Figure 6b

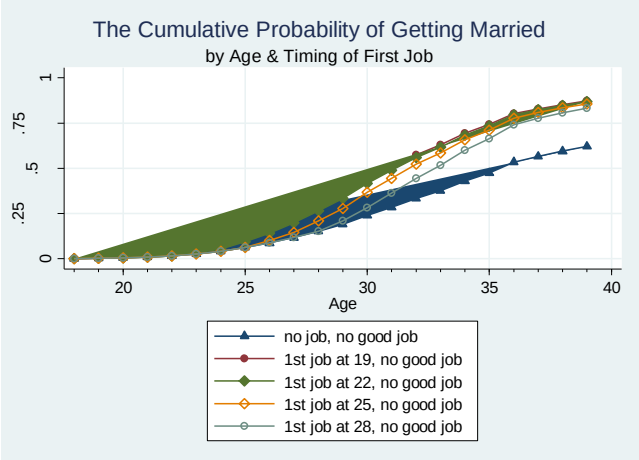


Figure 7a

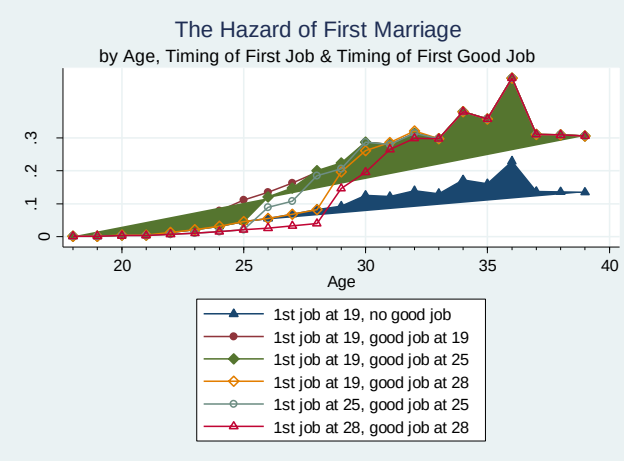


Figure 7b

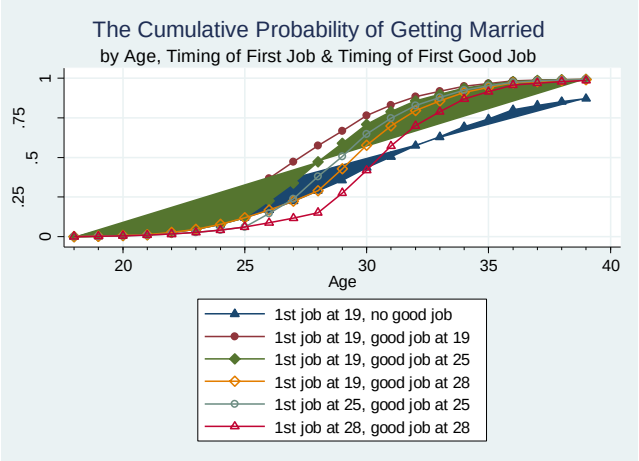


Figure 8a

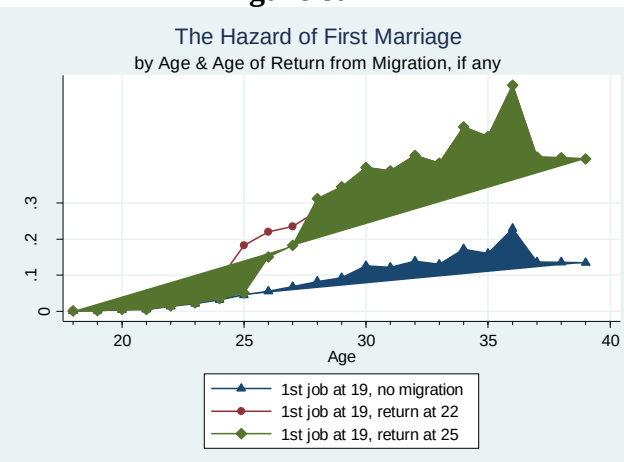
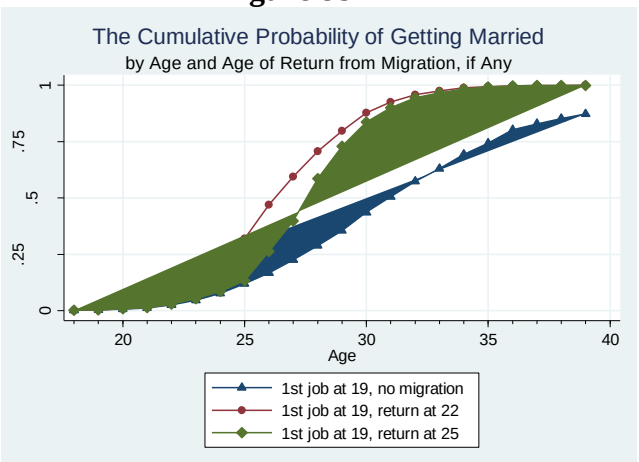


Figure 8b



4. Conclusions

We examined in this paper two major aspects of the transition to adulthood for young men in Egypt, namely the transition to employment and the transition to marriage and family formation, with a focus on how the first transition affects the second. Regarding the transition into employment, we find that transition times to first employment have been falling across cohorts. Taking only

educaton and cohort into account, those born in 1986-90 have twice the hazard of transitioning into first employment than those born in 1971-75. This is not necessarily all good news, however. We find that there is a strong positive association between obtaining a "good" job, a formal job, or a public job, and longer transition time to first employment.[14] Thus the shortening of the transition to first employment that is occurring across cohorts can essentially be explained by the fact that younger cohorts have fewer opportunities to obtain formal employment, especially public employment, making it less worthwhile for them to stay unemployed for long periods of time searching for such employment. We find that about half of all young men with secondary education or higher, transition into employment within a year of leaving school, another quarter take between 1 and 4 years, and the remaining quarter take up to 7 or 8 years to complete their transition. We find that own education, beyond the secondary level, has no effect on the speed of transition, but that parental education does. Nevertheless, the impact of parental education is not monotonic. Having a father educated at the middle level appears to speed up the transition to a first job, but having a father educated at the higher level is no different than a father with lower levels of education. We interpret this as the result of a possible trade-off between parental resources to help their sons in finding a job and parental expectations for formal employment for their children.

The father's employment situation also influences the length of the transition to first employment. The shortest transition times are experienced by those whose fathers were jobless when they were 15, suggesting that the need for income pushes them toward a quick entry into the labor market. The second fastest times are for those whose father's are either employers or self-employed, suggesting that the son can learn the father's profession and may have a family business in which to work. This interpretation is confirmed by the faster transitions for those whose family have a non-agricultural enterprise. The longest transition times are for those whose fathers have regular wage and salary employment in the private sector.

Our investigation of the type and quality of the first job confirms the decline in job quality for the cohorts born since 1976, but there is some evidence of stabilization in job quality across those born in 1981-85 and 1986-90, despite the fact that the latter are less likely to get formal jobs than their older counterparts. The most important determinant of access to high-quality first jobs is the young man's education. Those with university education or higher have nearly twice the likelihood of landing a good job than those with three-year technical secondary degrees, primarily because they have a must higher chance of getting both formal and public jobs. Father's education plays an additional in improving the chances of obtaining a good job, although it has a weak effect on getting a formal job or a public job. Those with fathers in government employment have the highest chance of getting good jobs, primarily because of their greater access to public employment.

Our findings with regard to transition to second jobs suggest that the hazard of such transitions has increased from the 1971-75 cohort to the subsequent cohorts, but has then either stabilized or even declined. They also indicate that there is a strong relationship between the type and quality of job ones obtains in the first job and the chance of moving onto a second job. In fact the lower hazard of moving to a second job associated with the length of transition to a first job disappears entirely when the quality or type of the first job is controlled for. Those least likely to move to a second job are those who have either public employment or are self-employed or employers in their first jobs, followed by those who have formal jobs in the private sector. Those most likely to move are those who are informally employed as wage and salary workers in the private sector, especially those whose employment is irregular. Those with "poor" jobs in their first job are nearly three and a half times as likely to move to a second job as those who start out with a "good" job. The good news is

[14] We define what we mean by "good" job and how we measure job quality in the body of the paper.

that 70 percent of those in a poor first job are able to upgrade to a "fair" or "good" job in their second jobs, and 25 percent of those in "fair" jobs are able to upgrade to "good" jobs.

Regarding the transition to marriage, our findings confirm the descriptive results that show that age at first marriage has been dropping starting with the 1971-75 birth cohorts. The timing of marriage has been affected by a number of contradictory labor market trends. On the one hand, the duration of transition to first employment has been getting shorter and, on the other, the chance of getting high quality employment has been falling. Controlling for cohort, education, family background, and community-level variables, we show that the hazard of marrying is positively affected by early entry into first employment, but it is also strongly affected by incidence and timing of a "good" job. We estimate that the median age at marriage of a reference individual who gets a first job at age 19 is two years earlier than a similar individual who gets his first job at age 28 (31 vs. 33 years). We also estimate that if the same reference individual gets a "good" job at 19, his median age at marriage is 4 years earlier than if had had entered at 19 into any job, but never got a good job (27 vs. 31 years).

We also show that in terms of being able to marry earlier, there may be a tradeoff between remaining unemployed longer to increase the probability of obtaining a good job, and getting to work early. A reference young man who waits until age 25 to enter the labor market, but who can get a "good" job at that age has an estimated median age of marriage of 28, as compared to 31 for someone who enters at age 19, but never gets a good job. Even waiting until age 28 to enter, but then getting a good job at that age results in about the same estimated median age at marriage as starting to work at 19 but never getting a good job. Thus, if delaying entry raises the chances of getting a "good" job as our results on the transition to employment suggest, it may be worthwhile from the point of view of marrying early, to do that.

Although only a small fraction of young men (1 percent) manage to migrate abroad and return before marriage, we show that such a strategy can be a substitute for getting a good job in the domestic labor market, if the return from migration is early enough. A reference young man who migrates and returns by age 22 has an estimated median age of marriage of 26, as compared to 27.5 for someone who migrates and returns at age 25 and 31 for someone who starts working in the domestic labor market at age 19, does not migrate, and does not get a good job. In fact, the estimated median age at first marriage for someone who migrates and returns by age 22 is a year less than it is for someone who gets a good job in the domestic labor market at age 19. Surprisingly, the duration actually spent abroad does not seem to matter for the timing of marriage, once the age of return is controlled for.

Even after correcting for timing of first employment and the incidence and timing of a "good" job, our results show that age at marriage has decline in Egypt since the 1971-75 birth cohort. Although we do not investigate this in this paper, Assaad and Ramadan (2008) make a convincing argument that the recent declines in age at marriage are due to changes in housing laws that have made rental housing more readily available in Egypt and have thus reduced the need to accumulate large sums of money to acquire housing.

The results we obtain on the other covariates mostly conform to our expectations. Higher school attainment significantly delays marriage. This effect is presumably due to the higher expectations of the kind of match one can obtain at higher levels of education. Once own schooling was controlled for, we found no additional effect for parental school on the age at first marriage. Father's type of employment does seem to matter, but only in the case of the father being an employer or self-

employed, which reduces the age of marriage. This may be due to the incentive of bringing in more hands into the household to help with the family business. Having a larger number of sisters did not result in delayed marriage as hypothesized.

The results of this research have significant implications for policy. We show that getting good jobs, which are essentially formal jobs, has a profound effect on a young man's ability to signal that he is ready to marry. The informalization of the labor market in recent years, as the economy moved away from public sector employment, has contributed to delayed marriage among young men, but that effect was counteracted by the fact that young men now enter into first employment earlier, sensing the futility of searching for formal employment. While an opportunity to migrate internationally can serve as a substitute for getting a good job on the domestic market, few young people get such an opportunity in Egypt today. By allowing for more flexible employment contracts and a lower social insurance burden, current labor market policies and ongoing reform efforts are attempting (with some success) to increase the extent of formality in the Egyptian labor market (Wahba 2009). While it is still too early to study the impact of these labor market reform efforts on age at marriage, we can already see how similar reforms in the housing market that led to greater access to rental housing have indeed paid off in terms of curbing the delays in marriage among young men (Assaad and Ramadan 2008). Clearly other policies that can increase the supply of good jobs in the domestic market, such as policies that lead to more rapid economic growth, would also help. Finally, we show that early entry into jobs after completing schooling is helpful. Policies and programs that encourage such early entry and reduce queuing or waiting for formal jobs would also curb delays in marriage. Examples of such policies are ones that reduce the cost of hiring new entrants for employers through subsidies for on-the-job training or a temporary reductions in social insurance contributions.

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Appendix
Non-Parametric Duration Dependence Parameter Estimates

Appendix Table A1 - Non-parametric Duration Dependence in Discrete-Time Hazard Model of Time to First Job. Exponentiated Regression Coefficients[1]

year 1	20.60***	10.53***	10.51***	8.85***
	(5.086)	(0.793)	(0.791)	(0.856)
year 2	10.11***	2.795***	2.789***	2.46***
	(4.345)	(0.278)	(0.277)	(0.305)
year 3	37.48***	6.603***	6.595***	6.878***
	(21.42)	(0.594)	(0.592)	(0.745)
year 4	88.90***	8.103***	8.083***	7.81***
	(69.49)	(0.787)	(0.785)	(0.909)
year 5	151.45***	7.347***	7.340***	7.03***
	(149.183)	(0.854)	(0.853)	(0.951)
year 6	275.62***	7.524***	7.494***	7.54***
	(323.24)	(1.063)	(1.059)	(1.174)
year 7	523.87***	8.071***	8.020***	7.464***
	(713.23)	(1.380)	(1.371)	(1.399)
year 8	408.32***	4.026***	4.014***	3.775***
	(617.71)	(1.159)	(1.156)	(1.105)
year 9	485.93***	3.666***	3.639***	3.357***
	(785.38)	(1.329)	(1.319)	(1.229)
year 10	979.75***	5.518***	5.448***	5.040***
	(1686.24)	(2.005)	(1.980)	(1.851)
year 11 & higher	1369.29***	3.974***	3.904***	3.678***
	(2660.08)	(1.543)	(1.516)	(1.441)

* p<0.05, ** p<0.01, *** p<0.001
[1]See Table 5 for remaining regression coefficients. Reference category is year 0.

Appendix Table A2 - Non-Parametric Duration Dependence in Discrete-Time Hazard Model of Time to Second Job from Starting First Job. Exponentiated Regression Coefficients[1]

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
year 1	0.199***	0.199***	0.201***	0.201***	0.224***	0.224***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.026)	(0.026)
year 2	0.258***	0.257***	0.263***	0.262***	0.301***	0.301***
	(0.026)	(0.026)	(0.027)	(0.027)	(0.033)	(0.033)
year 3	0.277***	0.275***	0.285***	0.284***	0.298***	0.297***
	(0.029)	(0.029)	(0.030)	(0.030)	(0.035)	(0.035)
year 4	0.374***	0.369***	0.388***	0.386***	0.445***	0.443***
	(0.038)	(0.038)	(0.040)	(0.039)	(0.049)	(0.049)
year 5	0.319***	0.314***	0.334***	0.332***	0.378***	0.376***
	(0.038)	(0.038)	(0.040)	(0.040)	(0.049)	(0.049)
year 6	0.293***	0.287***	0.307***	0.305***	0.357***	0.355***
	(0.041)	(0.040)	(0.043)	(0.042)	(0.053)	(0.053)
year 7	0.302***	0.295***	0.318***	0.315***	0.325***	0.322***
	(0.046)	(0.045)	(0.049)	(0.048)	(0.056)	(0.056)
year 8	0.394***	0.383***	0.413***	0.409***	0.409***	0.405***
	(0.061)	(0.059)	(0.064)	(0.063)	(0.072)	(0.071)
year 9	0.425***	0.413***	0.448***	0.444***	0.435***	0.431***
	(0.072)	(0.070)	(0.076)	(0.076)	(0.085)	(0.084)
year 10	0.398***	0.386***	0.418***	0.414***	0.468***	0.463***
	(0.082)	(0.080)	(0.087)	(0.086)	(0.104)	(0.103)
year 11	0.523**	0.504**	0.550**	0.543**	0.590*	0.582*
	(0.113)	(0.109)	(0.119)	(0.118)	(0.141)	(0.139)
year 12	0.388**	0.371***	0.413**	0.406**	0.479*	0.470*
	(0.114)	(0.109)	(0.122)	(0.120)	(0.148)	(0.146)
year 13	0.223**	0.209**	0.231**	0.226**	0.209**	0.204**
	(0.112)	(0.105)	(0.117)	(0.114)	(0.121)	(0.118)
year 14	0.238*	0.220**	0.243*	0.236*	0.288*	0.279*
	(0.138)	(0.128)	(0.141)	(0.137)	(0.168)	(0.163)
year 15	0.362	0.333	0.360	0.350	0.420	0.408
	(0.210)	(0.194)	(0.209)	(0.204)	(0.245)	(0.238)
year 16	0.789	0.723	0.774	0.749	0.937	0.905
	(0.399)	(0.366)	(0.392)	(0.380)	(0.476)	(0.460)
year 17	0.449	0.413	0.445	0.432	0.561	0.543
	(0.450)	(0.414)	(0.446)	(0.434)	(0.564)	(0.545)
year 18	0.665	0.611	0.607	0.589	0.813	0.787
	(0.668)	(0.614)	(0.610)	(0.593)	(0.818)	(0.792)
year 19	3.182	2.934	2.839	2.760	3.639*	3.523*
	(1.899)	(1.753)	(1.694)	(1.648)	(2.171)	(2.102)
year 20 & higher	1.042	0.963	0.756	0.736	0.902	0.876
	(1.055)	(0.975)	(0.764)	(0.744)	(0.914)	(0.887)

* p<0.05, ** p<0.01, *** p<0.001

[1]See Table 11 for remaining regression coefficients. Reference category is year 0.

Appendix Table A3 - Non-parametric Duration Dependence in Discrete-Time Hazard Model of Age At First Marriage. Exponentiated Regression Coefficients[1]

	Model 1	Model 2	Model 3	Model 4
Age 14	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Age 15	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Age 16	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Age 17	0.003***	0.003***	0.003***	0.003***
	(0.002)	(0.002)	(0.002)	(0.002)
Age 18	0.013***	0.011***	0.011***	0.013***
	(0.005)	(0.004)	(0.004)	(0.005)
Age 19	0.024***	0.021***	0.021***	0.026***
	(0.006)	(0.006)	(0.005)	(0.008)
Age 20	0.040***	0.035***	0.036***	0.044***
	(0.009)	(0.008)	(0.008)	(0.011)
Age 21	0.043***	0.040***	0.040***	0.048***
	(0.009)	(0.009)	(0.008)	(0.012)
Age 22	0.087***	0.084***	0.087***	0.100***
	(0.017)	(0.016)	(0.015)	(0.021)
Age 23	0.136***	0.134***	0.138***	0.155***
	(0.024)	(0.023)	(0.021)	(0.030)
Age 24	0.193***	0.187***	0.194***	0.216***
	(0.032)	(0.030)	(0.028)	(0.039)
Age 25	0.287***	0.276***	0.286***	0.312***
	(0.045)	(0.043)	(0.040)	(0.053)
Age 26	0.369***	0.365***	0.361***	0.383***
	(0.057)	(0.055)	(0.050)	(0.062)
Age 27	0.438***	0.461***	0.456***	0.473***
	(0.067)	(0.068)	(0.062)	(0.074)
Age 28	0.590***	0.560***	0.564***	0.576***
	(0.088)	(0.082)	(0.077)	(0.086)
Age 29	0.687*	0.675**	0.641**	0.652**
	(0.104)	(0.099)	(0.090)	(0.097)
Age 30	0.981	0.951	0.895	0.898
	(0.147)	(0.138)	(0.125)	(0.130)
Age 31	1.001	0.929	0.870	0.870
	(0.157)	(0.144)	(0.131)	(0.132)
Age 33	1.046	1.088	0.932	0.935
	(0.202)	(0.201)	(0.171)	(0.172)
Age 34	1.313	1.518*	1.263	1.264
	(0.281)	(0.301)	(0.248)	(0.252)
Age 35	1.308	1.451	1.157	1.169
	(0.344)	(0.358)	(0.282)	(0.291)
Age 36	1.908*	2.178**	1.702*	1.738*
	(0.545)	(0.573)	(0.435)	(0.460)
Age 37	1.048	1.338	0.962	0.985
	(0.483)	(0.532)	(0.383)	(0.401)
Age 38	1.035	1.435	0.963	0.978
	(0.627)	(0.712)	(0.498)	(0.514)
Age 39	1.033	1.514	0.950	0.968
	(0.891)	(1.025)	(0.684)	(0.704)

* p<0.05, ** p<0.01, *** p<0.001

[1]See Table 14 for remaining regression coefficients. Reference category is age 32.