

## How Does the First Job Matter for an Individual's Career Life in Japan?

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### Abstract

Exploiting annual information on the work status of female workers from the *Japanese Panel Survey of Consumers (JPSC)*, this paper examines how the first job matters for an individual's future job career. Using the ratio of regular employees in the labor force in the year preceding an individual's graduation as an instrument for the first job status (i.e., regular job or not), we confirm that an individual's first job status matters significantly for the future job status even for Japanese female workers, whose retention rates are lower than those of men because of marriage and childbirth. Next, we find that the effect seems to gradually decline over the years and effectively disappears around ten years after graduation. Finally, the negative effect of failing to obtain a regular job at graduation tends to disappear if the individual can secure regular employment within a reasonable time period after graduation.

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## 1. Introduction

New school graduates just having completed their education and in search of a job inevitably will have to contend with the macroeconomic situation in their year of graduation. While those who graduate in a good year are likely to find a desirable job, those who graduate in a bad year may be forced to start with a less attractive job or find themselves unemployed due to a lack of employment opportunities. In Japan, the unemployment rate rose substantially during the 1990s and has remained high since then due to the prolonged period of slow growth and repeated recessions following the burst of the bubble economy. In particular the unemployment rate of the young, which increased from 4 to 10 percent, is causing concern, as young workers who are unable to find a good job upon graduation tend to remain jobless or work as part-time (or temporary) employees in subsequent years. This negative cohort effect impinging on those who graduated during the protracted recession, and especially during what came to be called the employment “ice age” (around 1998-2002), has become an important policy issue in contemporary Japan.

Recent academic studies have found that macroeconomic conditions at labor market entry have a significant impact on individuals’ working conditions not only in their entry year but also in subsequent years. Oreopoulos et al. (2006), for example, focusing on Canadian college graduates, found substantial initial earning losses for those who graduated in a bad year, which linger on for up to around ten years before dissipating. Similarly, Kahn (2010), using U.S. data for white male college-educated workers who graduated in a bad year, found long-run negative effects on wages as well as on occupational attainment. Several studies on other countries also find persistent cohort effects from macroeconomic conditions at graduation, including Brunner and Kuhn (2009) for Austria and Ohtake and Inoki (1997), Kondo (2008), and Genda et al. (2010) for Japan.<sup>1</sup>

While the persistence of cohort effects in the labor market is well established, the mechanisms underlying these effects are not necessarily well understood. Although there are various possible theoretical explanations of the persistency of such effects, such as search costs, the accumulation of human capital

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<sup>1</sup> Brunner and Kuhn (2009), moreover, provide a brief survey of recent empirical studies, while Genda et al. (2010) provide a comparison of such effects in Japan and the United States.

through work experience, or signaling effects, that is, the stigma caused by the failure to find a job on graduation, there are few empirical studies examining the pertinence of the different explanations, since few datasets containing the necessary information on individuals' employment history are available.

Due to the limited availability of data on individuals' entire job career history, many studies exploring the underlying mechanisms have focused on the effect of individuals' first job. The reason is that if an individual's first job matters for his or her later career, the persistence of cohort effects can be attributed – at least in part – to individuals' initial success (or lack thereof) in the job market. Moreover, it would mean that graduating in a bad year affects individuals differently rather than affecting all individuals in a particular cohort evenly, which has important implications also for policy makers. Against this background, a key study is the one by Oyer (2006), who examined the work status of economics Ph.D.s in relation to their first job obtained at graduation. Instrumenting macroeconomic conditions with the demand for economists in the year an individual graduated, he found that there is a causal link between the quality of an economist's first job and that of his/her position anywhere from three to fifteen years later. Focusing on individuals' research productivity, he further found that, for academics, getting a good first job increases publication productivity in the following ten years. Oyer (2006) interprets the result as indicating that the first job matters in terms of the development of task-specific human capital, which affects an individual's future career.

Similar studies on individuals in Japan are relatively scarce. An exception is that by Kondo (2007), which shows that individuals' current employment status is closely linked to their first job. Specifically, she finds that even several years after graduation the probability of being a regular employee is substantially lower if an individual failed to obtain a job as a regular employee at graduation. She suggests that a possible reason for this finding is the signaling effect: in Japan, companies rarely upgrade temporary or part-time workers to regular worker status, and potential employers cannot distinguish between lucky individuals who obtained a full-time regular job at graduation and possibly more able, but unlucky, individuals who failed to do so.

There are reasons to believe that the first job effect is likely to be more important in Japan than in

other countries. Since lifetime employment is an important element of the employment system in Japan, workers are implicitly assumed to begin their job career immediately after graduation and continue to work in the same firm until they reach retirement. This means the standard route of recruitment is the recruitment of new graduates, and if an individual fails to find a desirable job at graduation, it becomes very difficult to find alternatives in subsequent years, since the failure to land a job as a regular employee at graduation is sometimes regarded as a stigma by potential employers. This conjecture is consistent with the results of a study by Genda et al. (2010) focusing on less-educated male workers in Japan and the United States, which finds negative persistent effects of the unemployment rate at graduation in Japan, while in the United States such effects are only temporary.

Against this background, this paper seeks to examine in more detail how the first job matters for an individual's subsequent job career in Japan, using micro-data for female individuals taken from the *Japanese Panel Survey of Consumers (JPSC)*. While the presence of first job effects in Japan has already been established by Kondo (2007), the structure of her dataset, i.e., pooled cross-sectional survey data from 1999 to 2002, prevented her from investigating the processes and mechanisms underlying these effects. For this study, however, we have long-run panel survey data for the period 1993 to 2007 covering individual female workers in Japan and including their employment history (from graduation), thus allowing us to examine the underlying mechanisms in detail. Using this dataset, which is not only considerably larger than that employed by Kondo (2007) but also covers a much longer period, including the so-called employment "ice age" (ca. 1998-2002) and more recent years, we first test whether her central findings on workers in Japan are supported. We then investigate how the first job effect evolves with the passage of time after graduation by examining the career records of individuals collected by the *JPSC*. Finally, taking advantage of the long-run panel, which allows us to track the career progression of individuals following school/university graduation on an annual basis, we examine whether the first job effect differs depending on individuals' career path in the first few years after graduation.

The findings can be summarized as follows. First, our results indicate that even for female workers, whose retention rates are lower than those of men because of marriage and childbirth, the

employment status immediately after graduation matters for the employment status in subsequent years. Second, we find that the effect seems to gradually decline over the years and effectively disappears around ten years after graduation. Third, the negative effect of failing to obtain a regular job at graduation tends to disappear if the individual can secure regular employment within a reasonable time period after graduation; however, this by no means implies that the consequences of failing to find a job at graduation are trivial. Due to recruitment practices in Japan, which focus only on new graduates, obtaining a desirable job becomes more difficult in the years after graduation. If bad years carry on for a prolonged period – as was the case during the “lost decade” more generally and the employment “ice age” around the turn of the millennium in particular – a large number of unfortunate new graduates will lack the opportunity to dispel the unfounded stigma attached to not finding regular employment upon graduation and are therefore likely to experience negative effects throughout their career.

The rest of the paper proceeds as follows. The following section describes the data used and the empirical strategy of our analysis. Next, Section 3 reports the results of our empirical analysis with regard to the three key questions we address: (1) whether the existence of a first job effect can be confirmed; (2) how long the first job effect persists; and (3) whether the initial effect is contingent on the career path taken by individuals in the first few years after graduation. Section 4 concludes.

## **2. Data and methodology**

### *2.1. Data*

The dataset we use is the micro-data from the *Japanese Panel Survey of Consumers (JPSC)* conducted by the Institute for Research on Household Economics. The *JPSC* was originally designed as an in-home questionnaire survey (over multiple periods) to track a random sample of 1,500 women aged between 24 and 34 selected from throughout Japan in 1993.<sup>2</sup> To study younger cohorts, 500 women aged 24-27 were added in 1997 and 1,000 women aged 24-29 were added in 2003. Respondents are surveyed once a year in

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<sup>2</sup> The respondents are young or middle-aged women since the survey intends to examine the changing lifestyles of young women in Japan. See <<http://www.kakeiken.or.jp/en/JPSC/jpsc.html>> for more on the objective and methodology of the *JPSC*.

October and thus fifteen waves of data from 1993 to 2007 are currently available.

The *JPSC* provides information on whether each respondent is a regular employee, a part-time or temporary worker, or not in employment, as well as some other characteristics such as age, education, marital status, and family structure. It also asks about respondents' first occupation immediately after graduation and about their labor status (regular employee, part-time or temporary employee, or not in employment) every year since age 18. Even though the *JPSC* does not include respondents under 24 years of age, making use of this information on respondents' job history together with other relevant information obtained, we can construct a large dataset covering individuals from their graduation onward (see Appendix 1 for details on the construction of the dataset). Our dataset consists of 24,462 observations covering 1,745 individuals, compared to the pooled surveys covering 1,406 individuals used by Kondo (2007), and includes individuals who graduated after 1998, when Japanese labor market conditions were particularly severe.

Table 1 presents descriptive statistics of the data used in the following analysis. It should be noted that we excluded from our dataset respondents who were students. We also excluded individuals who were working in a family business, as independent professionals, as self-employed workers, and as homeworkers, since the question on their job status, i.e., whether they are regular employees or not, does not apply. Of the 24,462 observations in our dataset, around half are for high school graduates, while the remainder are for junior college graduates or higher, since we dropped the very small number of junior high school graduates. The share of observations for those who landed a job as a regular employee at graduation in our dataset is around 73 percent, which is broadly comparable with the share indicated by official statistics. Finally, 49 percent of the observations in our dataset are for married women, and 40 percent are for women with children.

## *2.2. Empirical strategy*

To measure the effect of the initial employment status on the current employment status, we start with the following binary choice model:

$$y_{it} = \begin{cases} 1 & (\text{if } y_{it}^* = \alpha y_{i0} + \beta' Z_{it} + \varepsilon_{it} > 0) \\ 0 & (\text{if } y_{it}^* = \alpha y_{i0} + \beta' Z_{it} + \varepsilon_{it} \leq 0) \end{cases} \quad (1)$$

where  $y_{it}$  is a dummy variable for the current job status that takes one if individual  $i$  worked as a regular employee in year  $t$  and zero otherwise and  $y_{i0}$  is a dummy variable for the first job status that takes one if individual  $i$  worked as a regular employee immediately after graduation and zero otherwise.  $Z_{it}$  is a vector of other control variables, while  $\varepsilon_{it}$  is the error term, which is assumed to follow a normal distribution. However, as discussed by Kondo (2007), both  $y_{it}$  and  $y_{i0}$  may be affected by unobservables such as individuals' ability or motivation. Therefore, to take into account this potential endogeneity bias, we estimate the following simultaneous probability model:

$$y_{it} = \begin{cases} 1 & (\text{if } y_{it}^* = \alpha y_{i0} + \beta_1' Z_{1,it} + \beta_2' Z_{2,i} + \varepsilon_{it} > 0) \\ 0 & (\text{if } y_{it}^* = \alpha y_{i0} + \beta_1' Z_{1,it} + \beta_2' Z_{2,i} + \varepsilon_{it} \leq 0) \end{cases} \quad (\text{Current Job Status Eq.})$$

$$y_{i0} = \begin{cases} 1 & (\text{if } y_{i0}^* = \gamma' v_i + \mu_i > 0) \\ 0 & (\text{if } y_{i0}^* = \gamma' v_i + \mu_i \leq 0) \end{cases} \quad (\text{First Job Status Eq.}) \quad (2)$$

where  $Z_{1,it}$  is a vector of time-variant control variables for individual  $i$ , including the number of years since graduation, and family-related factors, such as a dummy variable for marital status, a dummy variable for living with a child aged 6 or below, a dummy variable for living with a child aged 7 to 18, as well as the actual number of children aged 6 or below and the number of children aged 7 to 18. The reason for using separate variables for children aged 6 or below and aged 7 to 18 is that pre-school age children generally require more care than older children. Next,  $Z_{2,i}$  is a vector of other control variables which are determined at the time of graduation and have not varied since. In our dataset, we were able to identify only one such variable, namely, educational attainment. Finally,  $v_i$  is a macroeconomic indicator of labor market conditions at graduation, the instrument for  $y_{i0}$ . The two error components,  $\varepsilon_i$  and  $\mu_i$ , are allowed to correlate, namely,  $Cov(\varepsilon_{it}, \mu_i | Z_{1,it}, Z_{2,i}, v_i) = \rho$ . The model is estimated using a bivariate

probit model.

As instrument  $v_i$ , which must be correlated with  $y_{i0}$  and independent from  $\varepsilon_{it}$ , we use the ratio of regular employees in the labor force among female workers aged between 25 to 34 years in the year preceding individual  $i$ 's graduation. This ratio simultaneously takes two separate aspects of the labor market environment that are likely to affect the ease of finding a regular job at graduation into account: prevailing labor practices, which determine the extent to which employers prefer to hire regular or non-regular workers, and business conditions, which affect the overall rate of unemployment.<sup>3</sup> We use the ratio in the preceding year rather than in the year of graduation, because in Japan students normally start job hunting, and are offered employment, during the year leading up to their graduation.

### 3. Results

#### 3.1. Does the first job matter for female workers in Japan?

The basic result for equation (2) is reported in the first column of Table 2, where standard errors are adjusted to account for the possible correlation within a cluster (i.e., within an individual). The coefficient on the ratio of regular employees at graduation is positive and significant, as expected. The marginal effect of the first job is positive and significant, implying that if a new graduate obtains a job as a regular employee upon graduation, the probability of being a regular employee in subsequent years is 24 percentage points higher. This estimated marginal effect is smaller than the value obtained by Kondo (2007) for her dataset including both male and female employees, which was 48 percentage points. While our dataset does not allow us to make direct comparisons because it only covers women, our results indicate that the first job effect is significant even for female employees who, for family-related reasons such as getting married and having children, have relatively lower job retention rates than men.<sup>4</sup>

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<sup>3</sup> Specifically, the ratio of regular employees in the labor force among women aged 25 to 34 is calculated as follows: we divide the number of female regular employees in that age bracket by an approximation of the female labor force in that age bracket, which we obtain by dividing the number of all employees by  $(1 - \text{unemployment rate}/100)$  for women in that age bracket. That is, we calculate  $(\text{regular employees}/(\text{total employees}/(1 - \text{unemployment rate}/100))) \approx \text{regular employees}/\text{labor force}$ . We obtain the necessary data for the calculation of this ratio from the *Labor Force Special Survey*, published by the Statistics Bureau, Ministry of Internal Affairs and Communications, from 1988 to 2001. The survey was integrated into the *Labor Force Survey* (also published by the Statistics Bureau) in 2001. We retrospectively calculated a proxy for the ratio back to 1980, using the ratio of regular to non-regular employees observed in the *JPSC*.

<sup>4</sup> Kondo (2007) also reports results by gender, which suggest that the marginal effect is 28 percentage points for female workers and 47 percentage points for male workers, although both estimates are not statistically significant. She notes that



The estimation in the first column implicitly assumes that the first job effect is the same regardless of individuals' educational background. To examine the validity of this assumption, we divide our sample by level of education. The results are reported in the second and third columns and show that the marginal effect is slightly smaller for junior college graduates or higher (20 percentage points) than high school graduates (29 percentage points). With regard to family-related factors, married women are less likely to have a regular job. If an individual has a small child or children aged 6 or younger, there is a lower probability that she will work as a regular employee.

### *3.2. How long does the first job effect persist?*

Our next question is how long this initial effect persists. Since the regressor of key interest (the success/failure in job hunting at graduation) does not vary over time for any given individual, standard panel data techniques such as estimating individual-specific fixed effects cannot be used. We therefore examine the persistence of the first job effect using cross-section data for one year, two years, three years, etc., after graduation. The number of observations is 1,707 for one year after graduation and gradually declines to 1,074 for twelve years after graduation. To check that our results are not influenced by a comparison of different individuals, we also estimate the model using only individuals that responded to the survey throughout the first twelve years (928 individuals). The estimated marginal effect for each year after graduation is depicted in Figure 1. As can be seen in the two panels, the effect gradually declines and is statistically significant up to around ten years after graduation both when using the whole sample and when using the sample consisting of the same individuals only. Our finding that the first job effect weakens over time is in line with the findings of earlier studies (Genda et al. 2010, Kondo 2007).<sup>5</sup>

### *3.3. Does the first job really matter?*

The analysis so far has confirmed that there exists a first job effect for female workers in Japan, and that the

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this is probably due to the limited sample size.

<sup>5</sup> This finding is also consistent with the results obtained by Genda and Kurosawa (2001) which show that an increase in the unemployment rate at graduation raises the future probability of workers leaving employers by lowering the quality of job matches in Japan. Bowlus (1995) reports similar findings on matching quality in recessions in the United States.

effect persists at least for several years. In this subsection, we examine a more subtle question: does the first job really matter? By “first” job we mean the first job obtained *immediately* after graduation from school/college. Among those who were unsuccessful in their job hunt at the time of their graduation due to unfavorable macroeconomic circumstances, some are likely to have been able to find a job as a regular employee in subsequent years, especially when the economy recovered. In fact, during the period of recovery of the Japanese economy from 2003 to 2007, many enterprises are said to have broadened their search for new employees from new graduates to include “recent graduates” to make up for shortages in their workforce.<sup>6</sup> Against this background, it is natural to ask whether the first job really matters, or in other words, whether the first job effect is reversible in the sense that someone who was unsuccessful during the first job hunt at the time of graduation can make up for the negative effect if she can secure a regular job within a reasonable time period. If the first job effect persists irrespective of individuals’ career after (but not at) their graduation, policy measures to help those that “lost out” in their first job hunt may be advisable. However, if the effect disappears relatively quickly for those who do find a job as a regular employee a few years after graduation, all we need to be concerned about are those who have been unsuccessful in finding a job as a regular employee even a few years after graduation.

Examining the reversibility of the first job effect may help not only in the design of policies but also contribute to our understanding of possible underlying mechanisms of the effect. If the first job effect persists irrespective of whether individuals were able to find a regular job at some point after – but not at – their graduation, this would provide support for the view that the first job effect results from the accumulation of human capital through job experience. On the other hand, if the first job effect simply is the result of a negative signal, i.e., the stigma attached to having been unsuccessful in the job hunt at graduation, the effect should disappear once those who failed to get a job at graduation find regular employment later. To examine the reversibility of the first job effect, we modify our model as the following:

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<sup>6</sup> According to a survey covering enterprises with 300 or more employees, around 55 percent of enterprises said that in addition to new graduates, they also aimed at recruiting regular workers from among recent graduates (people who graduated within the past three years), and 95 percent of these actually did hire recent graduates in 2004 (Japan Institute for Labour Policy and Training 2005).

$$\begin{aligned}
y_{it} &= \begin{cases} 1 & (\text{if } y_{it}^* = \alpha_1 y_{i0} + \alpha_2 y_{ik} + \beta_1' Z_{1,it} + \beta_2' Z_{2,i} + \varepsilon_{1it} > 0) \\ 0 & (\text{if } y_{it}^* = \alpha_1 y_{i0} + \alpha_2 y_{ik} + \beta_1' Z_{1,it} + \beta_2' Z_{2,i} + \varepsilon_{1it} \leq 0) \end{cases} \quad (\text{Current Job Status Eq.}) \\
y_{i0} &= \begin{cases} 1 & (\text{if } y_{i0}^* = \gamma' v_i + \varepsilon_{2i} > 0) \\ 0 & (\text{if } y_{i0}^* = \gamma' v_i + \varepsilon_{2i} \leq 0) \end{cases} \quad (\text{First Job Status Eq.}) \\
y_{ik} &= \begin{cases} 1 & (\text{if } y_{ik}^* = \delta' u_i + \varepsilon_{3i} > 0) \\ 0 & (\text{if } y_{ik}^* = \delta' u_i + \varepsilon_{3i} \leq 0) \end{cases} \quad (\text{Eq. for Job Status During First } k \text{ Years after Graduation})
\end{aligned} \tag{3}$$

where  $y_{ik}$  represents the employment status during the first  $k$  years after graduation.  $y_{ik}$  equals one if individual  $i$  worked as a regular employee at least once during the first  $k$  years, and zero otherwise. We assume that the error terms,  $\varepsilon_{1it}$ ,  $\varepsilon_{2i}$ ,  $\varepsilon_{3i}$ , are trivariate normal, each with a mean of zero, and  $\text{Var}(\varepsilon_{1it}) = \text{Var}(\varepsilon_{2i}) = \text{Var}(\varepsilon_{3i}) = 1$ . The error terms are allowed to correlate, namely,  $\text{Cov}(\varepsilon_{1it}, \varepsilon_{mi} | Z_{1,it}, Z_{2,i}, v_i, u_i) = \rho_{1m}$  (for  $m=2, 3$ ) and  $\text{Cov}(\varepsilon_{2i}, \varepsilon_{3i} | Z_{1,it}, Z_{2,i}, v_i, u_i) = \rho_{23}$ . We estimate the model using a trivariate probit model. The model is estimated via the method of maximum simulated likelihood using a Geweke-Hajivassiliou-Keane (GHK) simulator (see Cappellari and Jenkins 2003 for details).<sup>7</sup>

The question that we are interested in is whether the first job effect weakens or disappears if we control for individuals' employment status during the first few years after graduation. Fortunately, we can examine this subtle question regarding the first job effect using the annual career records of individual participants in the *JPSC*. Given the result obtained in the previous subsection that the first job effect is significant up to around ten years after graduation, we limit our observations to those for whom twelve years or less have passed since graduation. As instrument  $u_i$ , which must be correlated with  $y_{ik}$  and be independent from  $\varepsilon_{1it}$ , we use the maximum value of  $v_i$ , the ratio of regular employees among female workers aged 25-34, during the first  $k$  years since graduation.

The results are reported in Table 3. The first column shows the results for equation (2) when  $k=2$ , i.e., excluding observations for individuals that graduated only one or two years earlier. The marginal effect

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<sup>7</sup> We compute the estimations in Stata employing the *mvprobit* command developed by Cappellari and Jenkins (2003).

is 20 percentage points and statistically significant at the 1 percent level. This estimate is marginally smaller than that obtained in the first column of Table 2 (24 percentage points). In the second column, we estimate equation (3) for the case of  $k=2$  in order to see how the effect of not finding a job at graduation on the likelihood of having a regular job from the third year onward after graduation differs depending on whether the individual managed to find regular employment at least once during the intervening period, i.e., between graduation and the third year. The estimation results indicate that the first job effect becomes substantially smaller, while the coefficient on the employment status during the first two years after graduation – i.e., whether an individual has been able to find regular employment at least once during this period – becomes large, positive, and statistically significant. As can be seen in the following columns, the pattern remains essentially the same when  $k$  is set to 3 or 4. Looking at the results for equation (2) when  $k=3$ , the marginal effect is 16 percentage points and statistically significant. This value is smaller than that for  $k=2$ , suggesting that the first job effect diminishes over time, which is consistent with the results shown in Figure 1. Moreover, in the estimates for equation (3), the first job effect becomes smaller, while the employment status during the first three years after graduation becomes positive and significant. Finally, the results are very similar when  $k=4$ . The fact that the first job effect becomes substantially smaller, i.e., that it is reversible, suggests that it is the stigma (negative signaling) attached to the failure of finding a job during the initial job hunt at graduation that plays the key role in the job effect. Conversely, this means that the accumulation of human capital or skills through work experience – at least for the time span considered here, namely the first few years after graduation – plays a subordinate role.

The results in Table 3 suggest that what really matters is not finding a job as a regular employee at graduation but finding a job as a regular employee within a reasonable period of time from graduation. In other words, the “first” job at graduation, namely whether or not an individual finds a job as a regular employee at the time of graduation, does not necessarily matter. However, this finding does not mean that it is unimportant for an individual’s subsequent career whether she finds regular employment at graduation. In the Japanese labor market, where workers are implicitly assumed to start their career immediately after graduation and to continue to work in the same firm, those who fail to find a regular job at graduation will

find it even more difficult to obtain a regular job later. The situation becomes still more serious when a temporary business downturn becomes a protracted recession, as was the case during the so-called employment “ice age.”

#### **4. Conclusion**

Using the employment histories of female workers constructed from micro data of the *Japanese Panel Survey of Consumers*, this paper examined how finding a job as a regular employee at graduation matters for an individual’s future employment career. We confirm that even for female workers (whose retention rates are lower than those of men), an individual’s job status at graduation matters significantly for the future job status (i.e., regular job or not). The effect gradually declines and effectively disappears around ten years after graduation. However, the observed first job effect depends on the post-graduation career path taken by the individual: even if individuals failed to find a regular job at graduation, if they managed to find regular employment at least once within the first few years after graduation, their probability of being in regular employment thereafter was not notably lower than that of those who found regular employment immediately at graduation. That being said, though, because of hiring practices in Japan, those who failed to land a regular job at graduation will find it much more difficult to do so in later years unless labor market conditions improve dramatically.

These empirical findings provide some clues to help our understanding of the mechanisms underlying the negative cohort effect associated with entering the labor market during a recession and provide some indications for a policy response in prolonged recessions such as during the employment “ice age.” As for the background mechanisms, it can be argued that the burden of the negative cohort effect from a recession falls disproportionately on individuals who are unsuccessful in their first job hunt (rather than falling evenly on all individuals in that cohort). Moreover, our finding that the first job effect becomes irrelevant if an individual is fortunate enough to find a job as a regular employee within a reasonable time period after graduation suggests that, in the context of the Japanese employment system, the first job effect results at least partially from the negative signal or stigma attached to having been unsuccessful in the first

round of job hunting at graduation.

Our findings also highlight the need for policies to assist those who lose out in the first job hunt, especially when the economy is experiencing prolonged stagnation such as during the “lost decade” or the employment “ice age.” As it appears to be possible for individuals to make up for the negative effect caused by the bad luck of graduating when macroeconomic conditions are unfavorable if they can find a job as a regular employee within a reasonable time period, systematic policies to provide support for the employment of young workers who failed to find a (good) job in their first round of job hunting could provide substantial benefits. In this context, the recent proposal by the Japan Association of Corporate Executives (Keizai Doyukai) that recruiting firms should treat all workers that have graduated within less than three years as if they were new graduates is an encouraging step in the right direction.

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**Table 1. Basic statistics**

	Whole sample	High-school graduates	Junior college graduates or higher
Total number of observations	24,462 (100.0)	12,701 (100.0)	11,761 (100.0)
Current employment status			
Regular	11,995 (49.0)	5,773 (45.5)	6,222 (52.9)
Non-regular	5,015 (20.5)	2,880 (22.7)	2,135 (18.2)
Not in employment	7,452 (30.5)	4,048 (31.9)	3,404 (28.9)
Employment status at graduation			
Regular	17,897 (73.2)	9,364 (73.7)	8,533 (72.6)
Non-regular	1,506 (6.2)	632 (5.0)	874 (7.4)
Not in employment	5,059 (20.7)	2,705 (21.3)	2,354 (20.0)
Married	12,030 (49.2)	6,479 (51.0)	5,551 (47.2)
With children	9,836 (40.2)	5,591 (44.0)	4,245 (36.1)
Number of children (average)	1.76	1.81	1.69
With children aged 6 and below	7,421 (30.3)	4,208 (33.1)	3,213 (27.3)
Number of children aged 6 and below (average)	1.43	1.44	1.40
With children aged 7 to 18	4,126 (16.9)	2,473 (19.5)	1,653 (14.1)
Number of children aged 7 to 18 (average)	1.58	1.60	1.56
Years since graduation (average)	9.1	9.7	8.5
Age (average)	28.0	27.2	29.0

Note: Numbers in parentheses show the percentage of the total.



**Table 2. Effect of obtaining a regular job at graduation on likelihood of regular employment at present**

	(1) Whole sample	(2) High-school graduates	(3) Junior college graduates or higher
Marginal effect of first job	0.236 *** (0.022)	0.286 *** (0.030)	0.197 *** (0.032)
<i>Coefficients (current job status equation)</i>			
Employment status at graduation ( $y_{i0}$ )	0.862 *** (0.089)	1.153 *** (0.164)	0.693 *** (0.115)
Married	-0.853 *** (0.053)	-0.799 *** (0.075)	-0.904 *** (0.077)
Living with children aged 6 and below	-0.416 *** (0.081)	-0.338 *** (0.117)	-0.494 *** (0.114)
Number of children aged 6 and below	-0.196 *** (0.055)	-0.297 *** (0.079)	-0.086 (0.077)
Living with children aged 7 to 18	-0.125 (0.116)	-0.198 (0.162)	-0.037 (0.161)
Number of children aged 7 to 18	-0.129 * (0.076)	-0.049 (0.105)	-0.228 ** (0.106)
Years since graduation	-0.104 *** (0.025)	-0.072 (0.054)	-0.109 *** (0.029)
College graduate or higher	-0.087 (0.084)	— —	— —
Ratio of regular employees	0.016 *** (0.005)	0.023 *** (0.007)	0.011 * (0.006)
<i>Coefficients (first job status equation)</i>			
Ratio of regular employees at graduation ( $v_i$ )	0.072 *** (0.018)	0.119 *** (0.041)	0.056 *** (0.021)
$\rho$	-0.080 *** (0.039)	-0.235 *** (0.085)	-0.005 (0.051)
Wald $\chi^2$	1084.7 ***	624.1 ***	525.5 ***
Number of observations	24,462	12,701	11,761
Number of households	1,745	811	934

Notes:

1. The marginal effects are calculated as  $Pr(y_{it}=1/y_0=1) - Pr(y_{it}=1/y_0=0)$  evaluated at the mean of other covariates.
2. Standard errors of coefficients clustered by individual are shown in parentheses. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Age and age squared are included in the current job status equation.

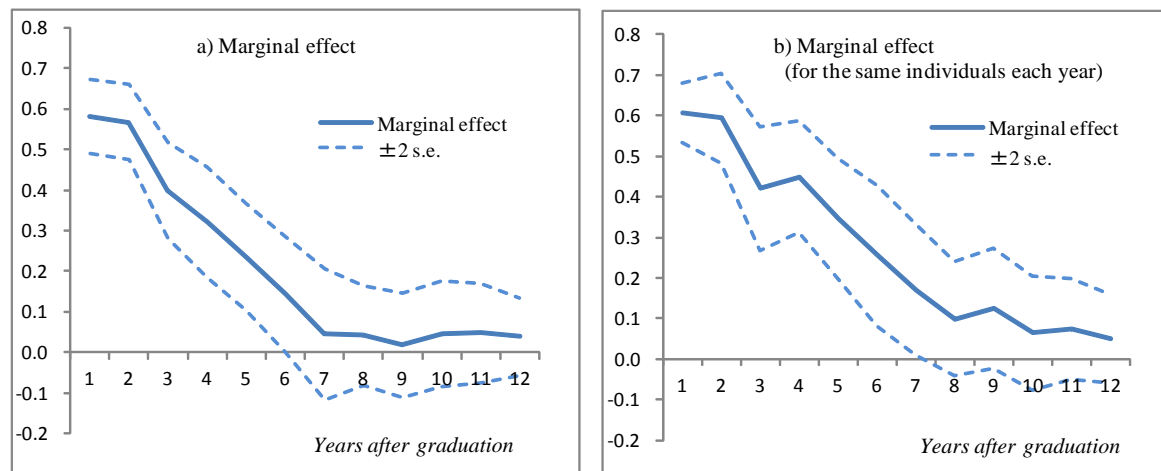
**Table 3. Reversibility of the first job effect**

	<i>k</i> =2		<i>k</i> =3		<i>k</i> =4	
	<i>Eq. (2)</i>	<i>Eq. (3)</i>	<i>Eq. (2)</i>	<i>Eq. (3)</i>	<i>Eq. (2)</i>	<i>Eq. (3)</i>
<b>Marginal effects</b>						
Marginal effect of first job	0.197 *** (0.030)	0.005 *** (0.001)	0.156 *** (0.034)	0.025 ** (0.007)	0.117 *** (0.037)	-0.009 ** (0.003)
Marginal effect of the employment status during the first <i>k</i> years after graduation	—	0.290 ** (0.093)	—	0.301 ** (0.105)	—	0.324 ** (0.131)
<b>Coefficients (current job status equation)</b>						
Employment status at graduation ( $y_{i0}$ )	0.703 *** (0.113)	0.017 (0.107)	0.559 *** (0.129)	0.089 (0.101)	0.420 *** (0.141)	-0.032 (0.110)
Employment status during the first <i>k</i> years after graduation ( $y_{ik}$ )	—	0.996 *** (0.124)	—	1.047 *** (0.002)	—	1.191 *** (0.137)
<b>Coefficient (first job status equation)</b>						
Ratio of regular employees at graduation ( $v_i$ )	0.069 *** (0.018)	0.058 *** (0.017)	0.070 ** (0.019)	0.056 *** (0.017)	0.071 *** (0.020)	0.064 *** (0.018)
<b>Coefficient (eq. for job status during first <i>k</i> years after graduation)</b>						
Maximum ratio of regular employees during the first <i>k</i> years since graduation ( $v_{ikmax}$ )	—	0.059 *** (0.018)	—	0.057 *** (0.019)	—	0.044 ** (0.021)
$\rho$	-0.046 (0.059)	—	-0.029 (0.069)	—	0.005 (0.077)	—
$\rho_{21}$	—	-0.011 (0.036)	—	-0.080 (0.038)	—	-0.036 (0.428)
$\rho_{31}$	—	-0.001 (0.038)	—	-0.070 (0.040)	—	-0.015 (0.434)
$\rho_{32}$	—	0.979 *** (0.003)	—	0.967 *** (0.004)	—	0.959 *** (0.005)
Log pseudo likelihood	-15905.7	-18468.4	-14178.6	-16540.3	-12381.9	-14353.0
Wald $\chi^2$	1015.9 ***	1022.5 ***	909.8 ***	922.2 ***	810.56 ***	869.1 ***
Number of observations	14,392	14,392	12,721	12,721	11,087	11,087
Number of individuals	1,745	1,745	1,707	1,707	1687	1687

Notes:

1. The marginal effects in Eq. (2) are calculated as  $Pr(y_{it}=1|y_0=1) - Pr(y_{it}=1|y_0=0)$  evaluated at the mean of other covariates. The effects in Eq. (3) are estimated using the "mefddum" command written by Jones et al. (2007).
2. Standard errors of coefficients clustered by individual are shown in parentheses. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Age and age squared, marital status, a dummy for having a child aged 6 and under, a dummy for having a child aged 7-18, the number of children aged 6 and under, the number of children aged 7-18, the number of years since graduation, a dummy for the level of educational attainment, and the current regular employee ratio are included in the current job status equation.

**Figure 1. Marginal effect of the first job on the current employment status**



Note: See Appendix 2 for detailed results.

## **Appendix 1. Construction of the dataset using information on employment histories**

While the aim of this paper is to examine the persistence and reversibility of the first job effect, the number of observations in the *JPSC* on individuals for the years immediately after their graduation unfortunately is rather limited because it only covers females aged 24 and over. To fill this gap, we expand our database by using past information on individuals available from the survey.

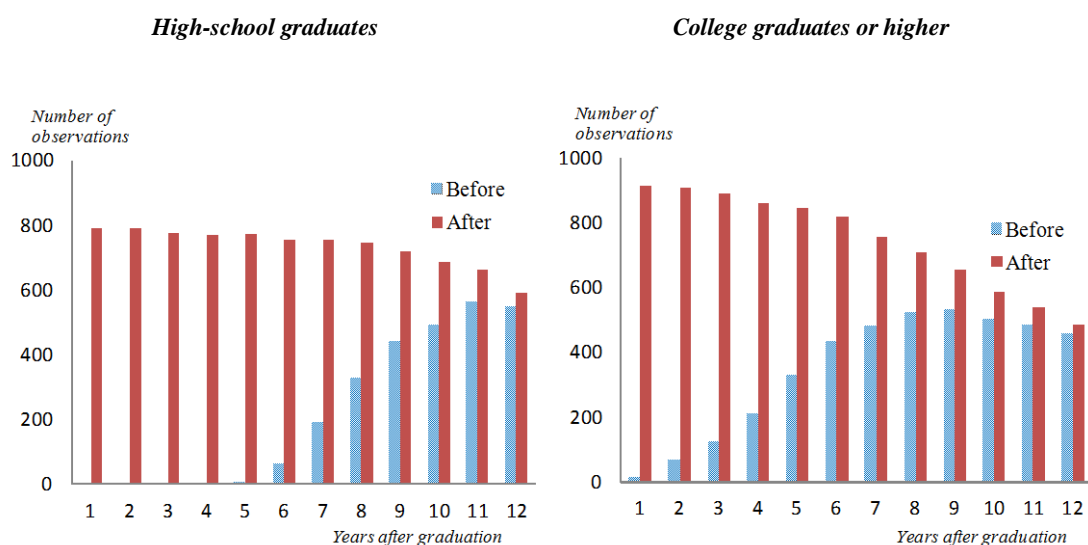
With regard to the current employment status, the *JPSC* asks each respondent whether she is (a) employed; (b) self-employed, working for a family business, or working as an independent professional; (c) a homemaker; (d) a student; or (e) not in employment. For those who select the first choice, there is a further question asking whether they are (a) a regular employee; (b) a part-time worker; or (c) a temporary worker. Thus, we can define regular employees as those who select the first choice in the second question. The remaining observations in our database consist of respondents who replied they were a part-time or a temporary worker in the second question and those who replied they were “not in employment” in the first question.

In addition, the *JPSC* in the first or second panel for each respondent asks about respondents’ first occupation, including the starting and ending periods, together with their past employment status each year since graduation, which we use in order to expand our database back to respondents’ year of graduation. Respondents who completed their education in or before 1980 are excluded from our database since the number of such individuals is limited. The *JPSC* also asks respondents, when they join the panel, about the number and age of their children (for up to five children) as well as the year of their marriage (if they are married). Thus, we regard respondents as single up to the year they got married and as married thereafter. In order to obtain the number and ages of children before respondents joined the panel, we calculate backward the age of each child for each year by subtracting one for each year from the age of a child (available in the first panel) until age zero, i.e., when the child was born.

Figure A.1 shows the number of observations in the dataset before and after these procedures. The number of observations considerably increases, especially for years immediately after graduation.

Table A.1 presents basic statistics of the *JPSC* data before the expansion. Among other differences, respondents in the *JPSC* data are older by three to four years than in the expanded dataset underlying Table 1 due to the lack of observations for younger individuals immediately after their graduation.

**Figure A.1 Number of observations in the dataset before and after using information on respondents' employment history**



**Table A.1 Basic statistics (Before using information on respondents' employment history)**

	Whole sample	High-school graduates	Junior college graduates or higher
Total number of observations	13,488 (100.0)	6,525 (100.0)	6,963 (100.0)
Current employment status			
Regular	4,838 (35.9)	1,875 (28.7)	2,963 (42.6)
Non-regular	3,453 (25.6)	1,966 (30.1)	1,487 (21.4)
Not in employment	5,197 (38.5)	2,684 (41.1)	2,513 (36.1)
Employment status at graduation			
Regular	9,979 (74.0)	4,881 (74.8)	5,098 (73.2)
Non-regular	785 (5.8)	273 (4.2)	512 (7.4)
Not in employment	2,724 (20.2)	1,371 (21.0)	1,353 (19.4)
Married	8,971 (66.5)	4,711 (72.2)	4,260 (61.2)
With children	7,946 (58.9)	4,386 (67.2)	3,560 (51.1)
Number of children (average)	1.86	1.93	1.77
With children aged 6 and below	5,554 (41.2)	4,208 (64.5)	1,346 (19.3)
Number of children aged 6 and below (average)	1.46	1.48	1.43
With children aged 7 to 18	4,053 (30.0)	2,473 (37.9)	1,580 (22.7)
Number of children aged 7 to 18 (average)	1.59	1.60	1.57
Years since graduation (average)	13.0	14.4	11.8
Age (average)	32.1	31.9	32.3

Appendix 2. Estimation results for Figure 1

Table A-2. Effect of obtaining a job as a regular employee at graduation on likelihood of having a job as a regular employee at present

Years since graduation	1	2	3	4	5	6	7	8	9	10	11	12
Marginal effect of first job	0.581 *** (0.046)	0.567 *** (0.047)	0.400 *** (0.059)	0.321 *** (0.068)	0.236 *** (0.066)	0.144 ** (0.071)	0.045 (0.081)	0.042 (0.061)	0.018 (0.065)	0.046 (0.064)	0.048 (0.061)	0.039 (0.048)
Coefficients ( <i>current job status equation</i> )												
Employment status at graduation ( $Y_{i0}$ )	3.103 *** (0.278)	2.558 *** (0.200)	1.693 *** (0.219)	1.243 *** (0.244)	0.874 *** (0.237)	0.518 ** (0.252)	0.156 (0.284)	0.150 (0.220)	0.064 (0.235)	0.175 (0.254)	0.197 (0.264)	0.164 (0.213)
Married	-0.829 ** (0.383)	-0.896 *** (0.160)	-0.851 *** (0.124)	-0.764 *** (0.099)	-0.817 *** (0.091)	-0.591 *** (0.087)	-0.771 *** (0.088)	-0.660 *** (0.094)	-0.660 *** (0.099)	-0.709 *** (0.107)	-0.803 *** (0.112)	-0.785 *** (0.122)
Living with children aged 6 and below	-1.137 ** (0.470)	-1.176 *** (0.310)	-1.173 *** (0.887)	-0.899 * (0.484)	-0.411 (0.372)	-0.467 * (0.270)	-0.421 * (0.217)	-0.311 (0.193)	-0.465 ** (0.181)	-0.554 *** (0.179)	-0.710 *** (0.181)	-0.474 ** (0.197)
Number of children aged 6 and below	-	-	0.301 (0.828)	0.079 (0.423)	-0.442 (0.319)	-0.484 (0.208)	-0.399 (0.153)	-0.491 (0.129)	-0.305 (0.109)	-0.154 (0.099)	-0.057 (0.095)	-0.146 (0.106)
Living with children aged 7 to 18	-	-	-	-	-	4.990 (0.214)	-0.217 (0.711)	-0.090 (0.398)	-0.630 (0.291)	-0.759 (0.792)	-0.281 (0.477)	0.613 (0.453)
Number of children aged 7 to 18	-	-	-	-	-	-	-	-	-	0.431 (0.726)	0.081 (0.396)	-0.855 (0.391)
College graduate or higher	0.143 (0.228)	0.214 (0.183)	0.092 (0.165)	0.030 (0.150)	-0.303 ** (0.149)	-0.147 (0.149)	-0.180 (0.154)	-0.455 *** (0.153)	-0.327 ** (0.158)	-0.283 * (0.168)	-0.187 (0.173)	-0.065 (0.180)
Ratio of regular employees	0.031 (0.031)	0.031 (0.019)	0.037 ** (0.015)	0.041 *** (0.012)	0.036 *** (0.010)	0.029 *** (0.009)	0.026 *** (0.008)	0.020 ** (0.008)	0.015 * (0.008)	0.013 * (0.008)	0.011 (0.008)	0.012 (0.008)
Coefficients ( <i>first job status equation</i> )												
Ratio of regular employees at graduation ( $v_i$ )	0.060 *** (0.016)	0.069 *** (0.016)	0.061 *** (0.017)	0.066 *** (0.017)	0.062 *** (0.018)	0.055 *** (0.019)	0.068 *** (0.021)	0.070 *** (0.024)	0.082 *** (0.027)	0.096 *** (0.030)	0.103 *** (0.032)	0.085 *** (0.034)
$\rho$	0.062 (0.139)	-0.380 *** (0.146)	-0.115 (0.127)	-0.130 (0.146)	-0.001 (0.135)	0.082 (0.143)	0.181 (0.161)	0.111 (0.121)	0.092 (0.130)	0.031 (0.142)	-0.031 (0.150)	-0.027 (0.110)
Wald $\chi^2$	157.3 ***	269.5 ***	183.9 ***	230.1 ***	283.4 ***	927.8 ***	377.9 ***	359.8 ***	342.5 ***	299.8 ***	300.7 ***	243.7 ***
Number of individuals	1,707	1,703	1,670	1,632	1,619	1,574	1,515	1,455	1,375	1,276	1,202	1,074

Notes:

- The marginal effects are calculated as  $Pr(Y_{it}=1|y_{i0}=1) - Pr(Y_{it}=1|y_{i0}=0)$  evaluated at the mean of other covariates.
- Standard errors of coefficients are shown in parentheses. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Age and age squared are included in the current job status equation.

**Table A-3. Effect of obtaining a job as a regular employee at graduation on likelihood of having a job as a regular employee at present (for the same individuals each year)**

Years since graduation	1	2	3	4	5	6	7	8	9	10	11	12
Marginal effect of first job	0.605 *** (0.037)	0.593 *** (0.056)	0.420 *** (0.076)	0.449 *** (0.069)	0.346 *** (0.074)	0.255 *** (0.087)	0.170 ** (0.081)	0.100 (0.070)	0.124 * (0.074)	0.064 (0.070)	0.074 (0.062)	0.051 (0.055)
Coefficients ( <i>current job status equation</i> )												
Employment status at graduation ( $Y_{i0}$ )	3.243 *** (0.225)	2.592 *** (0.233)	1.766 *** (0.278)	1.697 *** (0.262)	1.249 *** (0.276)	0.901 *** (0.325)	0.597 ** (0.299)	0.357 (0.264)	0.477 (0.318)	0.242 (0.278)	0.303 (0.278)	0.211 (0.240)
Married	-1.023 * (0.525)	-0.889 *** (0.213)	-1.027 *** (0.167)	-0.848 *** (0.130)	-0.902 *** (0.116)	-0.727 *** (0.113)	-0.861 *** (0.112)	-0.726 *** (0.119)	-0.749 *** (0.123)	-0.745 *** (0.127)	-0.747 *** (0.129)	-0.765 *** (0.131)
Living with children aged 6 and below	-1.238 ** (0.509)	-0.996 ** (0.393)	-1.785 * (1.027)	-0.982 (0.668)	-0.277 (0.490)	-0.160 (0.357)	-0.409 (0.274)	-0.194 (0.243)	-0.469 ** (0.212)	-0.538 *** (0.203)	-0.620 *** (0.200)	-0.439 ** (0.211)
Number of children aged 6 and below	—	—	0.842 (0.937)	0.166 (0.599)	-0.500 (0.432)	-0.661 (0.292)	-0.436 (0.199)	-0.549 (0.166)	-0.291 (0.126)	-0.143 (0.110)	-0.097 (0.104)	-0.160 (0.113)
Living with children aged 7 to 18	—	—	—	—	—	5.048 (0.229)	0.272 (0.779)	0.222 (0.461)	-0.260 (0.332)	-0.918 (0.950)	-0.227 (0.556)	0.569 (0.481)
Number of children aged 7 to 18	—	—	—	—	—	—	—	—	—	0.685 (0.875)	0.050 (0.462)	-0.783 (0.414)
College graduate or higher	0.147 (0.310)	-0.024 (0.238)	-0.215 (0.220)	-0.022 (0.195)	-0.511 *** (0.192)	-0.237 (0.191)	-0.365 * (0.196)	-0.383 ** (0.192)	-0.228 (0.194)	-0.248 (0.193)	-0.229 (0.193)	-0.049 (0.193)
Ratio of regular employees	-0.001 (0.065)	0.029 (0.044)	0.053 (0.042)	0.106 *** (0.032)	0.088 *** (0.027)	0.071 *** (0.021)	0.054 *** (0.018)	0.050 *** (0.016)	0.039 *** (0.012)	0.020 * (0.010)	0.016 * (0.009)	0.012 (0.009)
Coefficients ( <i>first job status equation</i> )												
Ratio of regular employees at graduation ( $v_i$ )	0.091 *** (0.038)	0.106 *** (0.037)	0.093 (0.038)	0.103 *** (0.039)	0.097 ** (0.039)	0.093 ** (0.038)	0.091 ** (0.038)	0.091 ** (0.038)	0.092 ** (0.038)	0.091 ** (0.038)	0.092 ** (0.038)	0.091 ** (0.038)
$\rho$	-0.003 (0.099)	-0.464 ** (0.170)	-0.133 (0.157)	-0.338 * (0.164)	-0.240 (0.164)	-0.152 (0.191)	-0.048 (0.167)	0.028 (0.140)	-0.085 (0.178)	0.030 (0.150)	-0.071 (0.155)	-0.026 (0.126)
Wald $\chi^2$	226.3 *** 928	181.9 *** 928	121.4 *** 928	188.2 *** 928	210.4 *** 928	892.1 *** 928	264.4 *** 928	242.7 *** 928	248.3 *** 928	218.0 *** 928	218.2 *** 928	210.2 *** 928
Number of individuals	928	928	928	928	928	928	928	928	928	928	928	928

Notes:

1. The marginal effects are calculated as  $Pr(Y_{it}=1|Y_{i0}=1) - Pr(Y_{it}=1|Y_{i0}=0)$  evaluated at the mean of other covariates.

2. Standard errors of coefficients are shown in parentheses. \*\*\*, \*\*, and \* denote significance at the 1, 5, and 10 percent level, respectively. Age and age squared are included in the current job status equation.