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Is Good Beginning Half Done?*

- Measuring the impacts of non-regular initial employment on future employment prospects in Japan -

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Using data from Japanese General Social Surveys (JGSS), this study examines the effects of non-regular initial employment status on future employment prospects. In order to deal with the potential endogeneity of initial employment status, empirical analyses use bivariate probit models as well as univariate probit models. However I found almost no evidence that the univariate probit models were subject to endogeneity bias. The empirical results indicate that getting non-regular jobs at the year of leaving school reduces significantly the probability of obtaining regular full-time job at present. I also implemented several sensitivity tests, and the finding were relatively stable across several specifications.

Keywords : japanese youth labor market, non-regular initial employment, endogeneity of employment status, bivariate probit model.

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I. Introduction

This study examines the effects of employment status of first job on future career prospects in Japan. The primary focus of interest is whether the non-regular initial employment is a transient or permanent phenomenon. Do workers who initially begin with non-regular jobs continue to have difficulty escaping the entrapped positions, or do (some of) these jobs provide a “stepping stone” to better ones? Understanding this issue is important for a number of theoretical and practical reasons.

First, economists have developed various and contrasting theories relating initial labor market experience to labor mobility: e.g., segmented labor market theory (Doeringer & Piore, 1971) and the screening hypothesis (Wang and Weiss, 1998). This study provides an empirical test of which one is more appropriate for explaining the relation between initial labor market experience and future career prospect.

Second, recent researches have suggested that the recent rapid increase in non-regular works (often referred to as “freeters”) is a crucial cause of the gap-widening society (*Kakusa Syakai*) in Japan (e.g., Ohta, 2005; Tachibanaki, 2005; Uni, 2007). However, the negative effects of non-regular works on society are determined not only by the numerical increase in non-regular works itself, but by long-term employment prospects of the works (that is, whether they are stepping stones or traps). This study provides an empirical evidence for the long-term impacts of the increase in non-regular works.

Although the issue of whether non-regular jobs are stepping stones or traps appears clear intuitively, examining this issue is not as simple as it looks because of potential endogeneity of the initial employment status, which may arise from unobserved heterogeneity of individuals. Initial employment status

could be correlated with unobserved (time-invariant) factors that also affect future employment status. For example, unobserved personality traits-motivation or preference to regular full-time works-that are likely to be positively or negatively related to the probability of obtaining regular full-time works at first job could also influence the probability of gaining regular full-time employment at current job.¹⁾ In this context, unobserved heterogeneity refers to the joint dependence of both the initial and the future employment status on the unobserved propensity or preference to regular full-time work. Therefore, the appropriate model must take this endogeneity into account.

A number of empirical studies have found that non-regular initial employment has strong negative effects on aspects of employment prospects such as wage, employment status, and job mobility (Mitani, 2001; Sakai & Higuchi, 2005; Kondo, 2007). That is, these studies support the entrapment hypothesis in that a worker who entered the labor market with a non-regular job has a long lasting disadvantage throughout his/her career. Mitani (2001) and Sakai & Higuchi (2005), however, do not adequately account for the endogeneity of initial employment status. To my best knowledge, Kondo (2007) is only one that addresses the endogeneity issue with an instrumental variable method.

While this paper parallels Kondo (2007) in respect of addressing the endogeneity issue by using instrumental variables, this study expands on the previous studies by making following three contributions. First, this study addresses the endogeneity of initial employment status by using new instrumental variables: involuntary quit rate and employment share of the service industry at the prefecture level when workers finished their final schools.

1) In fact, Japanese non regular workers show strong unwillingness to regular full-time works. General Survey on Actual Conditions of Diversification in Employment Styles in 2003 reported that only around 20% of non-regular workers chose non-regular jobs for the passive reasons, e.g. there were no companies offering regular jobs, whereas as much as 80% accepted the non-regular jobs for positive reasons, e.g. because of easy task and less responsibility.

Second, using the Japanese Occupational Prestige Scores in 1995, I distinguish regular full-time jobs into several types — the educationally appropriate and the adequate regular full-time jobs — rather than concentrating only on the formal employment statuses. This additional classification allows us to examine the issues of whether the non-regular entry has *really* damaging impacts on one's employment prospect.

Third, this paper devotes more attentions to the impacts of institutional characteristics of Japanese labor market — e. g., well developed (firm's) internal labor market and school to work transition through schools' mediation — on subsequent employment prospects.

This paper is organized as follows. The next section provides hypothetical explanations for the impacts of the non-regular entry. Section III describes the JGSS data and basic variables used in this analysis, and outlines empirical models. Section IV contains the estimation results. In sub-section IV.1 and IV.2 I report estimation results derived from basic models and alternatively defined regular full-time job models. In sub-section IV.3 results of several sensitivity a set of tests for the basic models are reported. In sub-section IV.4 I provide the results of tests of whether or not the impacts of non-regular initial works are homogeneous across several subgroups. Finally, this paper summarizes the finding with some conclusion remarks.

II. Theory and Hypotheses

There are two major competing hypotheses concerning the implications of the impacts of non-regular entry on future employment prospects: the stepping stone and the entrapment hypotheses. The stepping stone hypothesis emphasizes the transient character of initial job and suggests that workers who enter the labor market with non-optimal jobs easily overcome their initial

disadvantageous position in a manner such that the first jobs have no negative effects on their future career prospects. This hypothesis is supported by the theory of job mobility (Sicherman, 1991) and the screening hypothesis (Wang & Weiss, 1998).²⁾

However, the opposing view argues that non-regular entry hinders successful settlement into the labor market by inducing a vicious cycle of non-regular jobs and unemployment. Thus the non-regular entry has significant and long-lasting negative effects on one's entire career. The entrapment hypothesis can be derived from the segmented labor market theory (Doeringer & Piore, 1971). These two competing hypotheses, however, have been subject to the criticism that they ignore other important factors — for instance, the institutional structure of the labor market — that might have also influences on the consequences of non-regular entry. The two hypotheses can neither hold absolute validity nor are they applicable to every case (country); instead they are likely to be dependent on the institutional structures of individual countries.

With regard to research on the relationship between the consequences of labor market entry and institutional frameworks, the works by Marsden (1990; 1997) may provide valuable insight. Marsden makes a distinction between two labor markets: the (firm-) internal labor market (ILM) and the occupational labor market (OLM). In the OLM, there is a high level of job standardization — defined by technology and institutional rules — and access to skilled jobs is typically determined by formal educational and vocational training qualifications. Job vacancies are usually filled by external workers with appropriate vocational backgrounds. This implies it is nearly impossible for low-skilled workers to access to these types of jobs. In contrast, in ILM

2) According to Wang & Weiss (1998), employers who possess risk associated limited information regarding their employees tend to hire young workers on a temporary basis, because it allows them to observe the workers' productivity before making permanent contracts. If the young worker performs well, the contract will be made permanent. In this sense, these non regular jobs can be considered as a stepping stone.

countries like Japan, there is a low level of job standardization, and the formal certifications are less important for access to skilled jobs.³⁾ Instead of the certifications, schools have traditionally played a central role in matching new school leavers and employers in Japan (e. g., Mitani, 1999; Genda, 2001). This orderly system of school to work transition in Japan, if effective, improves the quality of matches and reduce the information asymmetry between employers and workers (Genda, 2001), and thereby offer more upward mobility and job stability to the lower educated and lower skilled school leavers.

Japanese employers prefer to fill new vacancies with the pool of their current workers through the firm's promotion ladder, rather than recruiting them externally. Therefore firm-specific skills are more important and on the job training is the most efficient mean to obtain these skills. This suggests that, compared to OLMs, while ILMs are likely to offer more opportunities for upgrading the (firm-specific) skills and promotion to low-skilled young workers, in such an economy, if workers failed to obtain regular full-time jobs at their early career stage, the opportunity to obtain the regular full-time jobs later may greatly decrease irrespective to the current labor market conditions.

Summing up the discussions, I would expect to find in this study that, in Japan where ILM is well developed, entry via non-regular job is likely to function as a trap and will have damaging effects on employment prospects in the future. This is because access to the regular full-time skilled jobs is only available to internal workers with firm specific skills and tenures, who succeeded to enter larger and more prestigious firms in early stages of their careers.

3) However it does not mean that educational qualifications have trivial role for worker's career in Japan. Japanese employers use educational credentials as a main screening device when they make hiring decisions (Genda, 2001).

III. Data and Methods

1. Data and Variables

The data used in this analysis are derived from the Japanese General Social Survey (JGSS) started in 2000. The JGSS is a national cross-sectional sample survey conducted by the Osaka University of Commerce and the Institute of Social Science at the University of Tokyo.⁴⁾ I pooled the surveys in 2000, 2001, and 2002 for analysis. Among the 8,386 observations contained in the pooled data, the sample is restricted to individuals who finished school completely after 1983 in order to exclude possible measurement errors that are occurred by inaccurate memories of respondents. And I also exclude the respondents whose potential labor market experience (defined as survey year-year of finishing school) is less than 3 years to take into account the possible temporal inertia of the initial employment status. Additionally, I exclude the respondents who were self-employed or family workers at their first jobs, as well as those who do not have any work experiences. Samples with missing or inconsistent data are also excluded, thus the final samples contain 1,472 workers who aged 19 to 33 years old and finished final schools between 1983 and 1999.

Table 1 explains the main variables used in this analysis and provides mean values on the sub-samples divided by employment statuses of first jobs. As dependent variables, I use two qualitative thresholds of regular full-time current employment status—educationally appropriate regular full time job and adequate regular full-time job—, as well as formal employment statuses derived from original data of JGSS.⁵⁾ The educationally appropriate regular

4) For more detailed explanations for JGSS, see Iwai(2003).

full-time job (ESCE) and the adequate regular full-time job (ESCA) are defined by using the Japanese Occupational Prestige Score in 1995 conducted by the 1995 SSM (the Social Stratification and the Social Mobility⁶⁾) research groups (SSM Research Group, 1996).

If the prestige score of a current job is larger than the mean prestige scores of respective four educational groups of the sample — (1) junior high school graduate and high school dropout, (2) high school graduate and college dropouts, (3) two year college graduate and (4) 4 year university graduate and above — , then the job is defined as an “educationally appropriate regular full-time job.” Similarly, “adequate regular full-time job” is defined as a job in which case the prestige score of a current job is more than the mean prestige score of all current jobs in the sample, irrespective to educational levels. Using the latter two qualitative definitions may provide a test of whether non-regular initial employment has really disadvantageous effects on future career prospects.

Although JGSS is not a panel data, it contains a retrospective information of respondents on initial employment status upon leaving school. I use the initial employment status (ESF) as an explanatory variable of interest. Control variables include basic demographic characteristics like educational attainment dummies (EDU1, EDU2, EDU3, EDU4, EDU5, EDU6), potential labor market experience (LMEX), and genders crossed with marital statuses (MALES,

5) Employment statuses in JGSS are classified into 13 categories; executive, six regular full-time positions corresponding to different positions in job hierarchies, part-time, temporary, self-employment, family-worker, by-work and non-working. Among the categories, I classify the executive and six regular employments as regular full-time works, and the part-time and the temporary as non-regular works.

6) The first survey of the Social Stratification and the Social Mobility(SSM) was conducted in 1955 by the Japan Sociological Society. After that the surveys are repeated at intervals of ten years by temporary organizations of volunteer sociologists. The 5th survey was conducted in 1995 by the 1995 SSM Research Group, supported by Grants-in-Aid for Scientific Research by Ministry of Education, Science, Sports and Culture in Japan.

MALEM, FEMALES, FEMALEM). Survey year dummies are also included in all specifications to control for current labor market conditions. In addition, firm size of first job dummies (FS1, FS2, FS3) are also included in some specifications to take into account that better opportunities may be come from a larger firm size.

Table 1. Descriptive Statistics

Variable name	Definition	ESF=1		ESF=0	
		Mean	(std.dev.)	Mean	(std.dev.)
ESC	Dummy; =1 if current job is regular full-time, 0 otherwise	0.24	(0.43)	0.61	(0.49)
ESC1	Dummy; =1 if current job is family worker/self employed or non-working, 0 otherwise	0.41	(0.49)	0.13	(0.34)
ESC2	Dummy; =1 if current job is non-regular, 0 otherwise	0.35	(0.48)	0.26	(0.44)
ESCE	Dummy; =1 if current job is educationally appropriated regular full-time, 0 otherwise	0.16	(0.37)	0.47	(0.50)
ESCA	Dummy; =1 if current job is adequate regular full-time, 0 otherwise	0.13	(0.33)	0.46	(0.50)
ESF	Dummy; =1 if initial job is non-regular, 0 regular full-time				
MALES	Dummy; =1 if respondent is male and currently not married, 0 otherwise	0.24	(0.43)	0.21	(0.41)
MALEM	Dummy; =1 if respondent is male and currently married, 0 otherwise	0.12	(0.33)	0.26	(0.44)
FEMALES	Dummy; =1 if respondent is female and currently not married, 0 otherwise	0.30	(0.46)	0.18	(0.39)
FEMALEM	Dummy; =1 if respondent is female and currently married, 0 otherwise	0.34	(0.48)	0.35	(0.48)
EDU1	Dummy; =1 if respondent's highest education is less than Jr. high school, 0 otherwise	0.07	(0.26)	0.02	(0.14)
EDU2	Dummy; =1 if respondent dropped out of high school, 0 otherwise	0.08	(0.27)	0.01	(0.09)
EDU3	Dummy; =1 if respondent's highest education is two year college graduation, 0 otherwise	0.20	(0.40)	0.24	(0.43)
EDU4	Dummy; =1 if respondent's highest education is high school	0.49	(0.50)	0.44	(0.50)
EDU5	Dummy; =1 if respondent dropped out of college	0.02	(0.15)	0.01	(0.08)
EDU56	Dummy; =1 if respondent's highest education is 4 year Univ. graduation and above	0.14	(0.35)	0.29	(0.46)
VGS	Dummy; = 1 if respondent found his/her first job through vocational guidance offered by school, 0 otherwise	0.19	(0.39)	0.56	(0.50)
FS1	Dummy; =1 if firm size of first job is 299 workers and fewer, 0 otherwise	0.71	(0.46)	0.57	(0.49)

Table 1. (Continue)

Variable name	Definition	ESF=1		ESF=0	
		Mean(std.dev.)	Mean(std.dev.)	Mean(std.dev.)	Mean(std.dev.)
FS2	Dummy; =1 if firm size of first job is 300-999 workers, 0 otherwise	0.07	(0.25)	0.14	(0.34)
FS3	Dummy; =1 if firm size of first job is 1,000 workers and more, 0 otherwise	0.14	(0.35)	0.25	(0.43)
LMEX	Potential labor market experience (average years, defined as year of survey-year of leaving school)	9.13	(4.97)	10.84	(4.55)
AGE	Age (average years, defined as year of survey-year of birth)	28.4	(5.27)	31.0	(4.83)
ESSI	Employment share of service industry at the prefecture level (average %)	61.54	(6.56)	58.90	(6.32)
IVQUIT	Involuntary Quit ratio at the prefecture level (average %)	11.50	(5.79)	10.84	(6.99)
No. of Obs.		138		1,334	

Notes : Survey year dummies are also included: Numbers of observations are 480 in 2000 survey, 474 in 2001 survey, and 518 in 2002 survey. Due to missing data, the numbers of observations are restricted to 1,126 for ESCE and ESCA, and 1,372 for firm size dummies (FS1, FS2, FS3).

Table 1 shows that, for all three different definitions of regular full-time current employment, a person whose first job was non-regular is about three times less likely to be a regular full-time worker at present compared with others who entered the labor market via regular full-time jobs. That table also indicates that most of demographic variables show considerable differences in mean values across initial employment statuses. Individuals who held non-regular jobs at entry are more likely to be female, currently unmarried and the less educated or dropouts of school relative to others whose first jobs were regular full-time.

2. Instrumental Variables

With regard to the instrumental variables for the initial employment status, I select two prefecture level's indices of the labor market conditions at the year

of finishing school: involuntary quit rate and employment share of the service industry at the prefecture level.⁷⁾ Valid instrumental variables must be correlated with the probability of being non-regular worker upon leaving school but be independent of unobserved personal heterogeneity. These instruments use that the possibility of being non-regular worker at first job is highly dependent on the employment demand conditions at the year of leaving school. However, since these instruments are types of macro indices of the labor market condition, both are likely to be independent from potential personal heterogeneity. This idea is mainly from Neumark (2002) in the sense of using regional employment demand condition indices as instrumental variables.

The involuntary quit rate at the prefecture level is taken from the Annual Report on Employment Insurance (Koyouhoukenrenpo) published by the Employment Service Agency. It is calculated as the ratio of the number of individuals who are no longer adequate for employment insurance as a result of lay-offs, plant closures, downsizing or other factors out of the employee's control, to the total number of the individuals who lost the qualification of employment insurance at the prefecture level at the year of leaving school. Intuitively, the involuntary quit rate is likely to be highly sensitive to the unemployment rate, and thus, it is likely that these rate are highly correlated with the probability of getting non-regular job at entry.

The prefecture-level's employment share of the service industry at the year of leaving school is taken from the Employment Statue Survey (Shuugyokouzokihonchousa), which is conducted by the Statistics Bureau every five years.⁸⁾ The share is also likely to be positively correlated with the

7) Apart from these, various alternative instrumental variables were considered, including the previous years and further lags of involuntary quit rate, the proportional change in the involuntary quit ratio from the previous year $(IQ_{it} - IQ_{i,t-1})/IQ_{i,t-1}$, regional unemployment rates, the prefectural deviations of employment share of the service industry from the national average, and job opening rates at the prefecture level, which was used in Kondo(2007). Most of these measures are, however, insignificant or weaker than these two indices used in this analysis (results are not shown).

probability of obtaining non-regular job at the year of finishing school, since such non-regular jobs are highly concentrated within the service industry, particularly in retail trade and food and accommodation. Since this data is only available every five years, the figures of the intervening years are estimated by using linear interpolation. This approximation might be problematic due to the estimation errors; however, I believe they are likely to be minor because the employment shares of the service industry in most prefectures have increased almost linearly during the analysis period between 1983 and 1999. I matched these two labor market indices with the prefectures where each respondent lives at the year of survey.⁹⁾

3. Empirical Models

Let ESC and ESF be binary variables for current and initial employment statuses, respectively ($ESC_i = 1$ if current job is regular full-time, and 0 otherwise; $ESF_i = 1$ if initial job upon leaving school is non-regular, and 0 regular full-time). Then, ESC_i and ESF_i can be expressed through the following two equation models:

$$ESC_i = 1 \text{ if } ESC_i^* = X_i'\beta + ESF_i\alpha + \varepsilon_i > 0 \dots\dots\dots (1)$$

$$ESF_i = 1 \text{ if } ESF_i^* = X_i'\gamma + f_i\delta + \nu_i > 0 \dots\dots\dots (2)$$

8) The survey began in 1956, and the last one was conducted in 2007.

9) Although, ideally, the two instrumental variables should be matched with the prefectures where respondents lived at the year of leaving school, JGSS does not provide the information. However, since about 81% of the respondents of the sample live in the same prefectures they lived when they were 15 years old and moreover, as Kondo (2007) suggests, a large proportion of the highly educated (college graduation and above) may moves to other prefectures for entering higher educational institutions and get jobs there, matching the instrumental variables with the current prefectures may not be problematic.

where ESC_i^* and ESF_i^* are latent variables representing the probabilities of holding regular full-time job at present and non-regular job at entry, respectively, X_i' is a vector of control variables, f_i is a vector of instrumental variables that identify the initial employment status equation, β, α, γ , and δ are the respective vectors of the estimated coefficients, and ε_i and ν_i are the stochastic error terms, containing omitted and unobserved characteristics of individuals, with $E[\varepsilon_i] = E[\nu_i] = 0$ and $Var[\varepsilon_i] = Var[\nu_i] = 1$.

A likelihood function for the single-equation specification of ESC_i , if initial employment status (ESF_i) is exogenous, is the univariate probit model that can be expressed as follows:

$$\Pr(ESC_i = 1) = \Phi(X_i'\beta + ESF_i\alpha) \dots\dots\dots (3)$$

where Φ is the cumulative normal distribution.

Intuitively, however, ESF_i^* may be negatively correlated with ε_i due to the unobserved (time-invariant) heterogeneity: i.e., motivation or preference to works. If the endogeneity is not accounted for and if this is the only source of correlation between ESF_i^* and ε_i , the negative correlation between ESF_i^* and ε_i is likely to result in upwardly biased estimates (the negative effects are over-estimated) of α in equation (1). Due to this concern, this paper uses a simultaneous probit model with instrumental variables.

Estimating this simultaneous probit model is straightforward because the likelihood function of the simultaneous specification of ESC_i and ESF_i is identical to that of a bivariate probit model of equations (1) and (2) (Greene, 1998; Greene, 2000). The bivariate probit maximum likelihood estimator is consistent and fully efficient when applied to this model, as long as there is at least one regressor (instrumental variable) included in equation (2) that is not included in equation (1) (Maddala, 1983, pp.120~123). The bivariate

probit model can be written as follow (Greene, 1998; Greene, 2000):

$$\Pr(ESC_i = 1, ESF_i = 1) = \Phi_b(X_i'\beta + ESF_i\alpha, X_i'\gamma + f_i\delta, \rho) \dots (4)$$

where Φ_b is the bivariate cumulative distribution function and $\rho = \text{cov}(\varepsilon_i, \nu_i)$ is the correlation coefficient between the error terms of the equations. Maximum likelihood estimates of the coefficient vectors $\beta, \alpha, \gamma, \delta$ as well as ρ are derived by maximizing the log-likelihood of the two jointly determined ESC_i and ESF_i variables.¹⁰⁾

Then I test whether the estimated ρ , the correlation between ε_i and ν_i in equations (1) and (2), is statistically significant and whether the bivariate probit is the most appropriate model. A statistically significant negative sign of ρ implies that unobserved heterogeneity of individuals is likely to increase the probability of obtaining regular full-time job at both entry and present, and therefore, the univariate probit model will overstate the negative effect of initial employment status. If ρ is not significantly different from 0, however, it implies that maximum likelihood estimation of the univariate probit of equation (3) is preferable because bivariate probit is less efficient (Greene, 2000, pp.853 ~854). Knapp & Seaks (1998) show that a likelihood ratio test of ρ is equal to zero can be used as Hausman endogeneity test.

Greene (1998) argues that the bivariate probit model is more efficient than widely used two step approach¹¹⁾ because the latter does not account for the possible correlation between the error terms of the two equations.

10) The likelihood function for the bivariate probit model is shown in Greene(2000, p. 850)

11) A two-step approach involves estimating the predicted probability of being a non-regular worker at entry from a binary choice or a linear probability model, and then including these predicted values in a binary choice model estimating the probability of being a regular full-time worker at current job.

IV. Impact of Initial Employment Status on Later Employment Prospect

1. Effects of Non-regular Initial Employment Status on Determining Current Employment Status

Maximum likelihood estimates of the parameters from the univariate probit and bivariate probit models for current and initial employment statuses are reported in Table 2. The results, to a large extent, are consistent with expectations. The non-regular initial employment status significantly reduces the probability of obtaining regular full-time job at present. The marginal effects of initial non-regular employment, calculated as the difference in expected probabilities of obtaining regular full-time job at present between people who entered via non-regular jobs and others via regular full-time jobs at the mean of other explanatory variables, indicate that the non-regular entry reduces the probability of being regular full-time worker at present by about 43% points for the univariate probit and about 57% points for the bivariate probit model, respectively.

In both the univariate and the bivariate models, the probability of obtaining regular full-time job at present is prominently lower in married female (FEMALEM) than in married male, and the highly educated whose final education are four year university graduation and above (EDU6) are more likely to get regular full-time employments at present as well as entry than high school graduate, as expected. Somewhat interestingly, in all models in Table 2 high school dropouts (EDU2) significantly reduce the probability of being regular full-time worker at both present and entry. The negative effect of high school dropouts may be partly due to the fact that the vocational

Table 2. Estimation Results for Initial and Current Employment Statuses

	Univariate probit		Bivariate probit	
	Coeff.	(Std Err.)	Coeff.	(Std Err.)
Current employment status(ESC) equation (ESC=1 if regular fulltime, 0 otherwise)				
ESF	-1.161**	(0.141)	-1.768**	(0.479)
MALES (Ref.= married male)	-0.625**	(0.130)	-0.629**	(0.130)
FEMALES	-0.826**	(0.135)	-0.776**	(0.139)
FEMALEM	-2.212**	(0.121)	-2.149**	(0.138)
LMEX	0.009	(0.046)	-0.004	(0.048)
LMEX*LMEX	-0.001	(0.002)	-0.001	(0.002)
EDU1 (ref.= high school grad.)	-0.021	(0.265)	0.105	(0.278)
EDU2	-1.033**	(0.353)	-0.804*	(0.396)
EDU4	0.088	(0.101)	0.064	(0.103)
EDU5	0.336	(0.491)	0.404	(0.511)
EDU6	0.242*	(0.099)	0.207*	(0.103)
Constant	0.824**	(0.246)	0.954**	(0.279)
Initial Employment status(ESF) equation (ESF=1 if non-regular, 0 regular full time)				
MALES	0.201	(0.166)	0.209	(0.165)
FEMALES	0.416*	(0.169)	0.405*	(0.169)
FEMALEM	0.334*	(0.154)	0.327*	(0.154)
LMEX	0.006*	(0.003)	0.006*	(0.003)
LMEX*LMEX	0.078	(0.218)	0.090	(0.218)
EDU1	0.926**	(0.244)	0.913**	(0.246)
EDU2	1.312**	(0.293)	1.315**	(0.296)
EDU4	-0.301*	(0.128)	-0.285*	(0.128)
EDU5	0.854	(0.441)	0.849	(0.443)
EDU6	-0.490**	(0.136)	-0.450**	(0.136)
ESSI	0.039**	(0.009)	0.036**	(0.009)
IVQUIT	0.015*	(0.007)	0.015*	(0.007)
Constant	-2.647**	(0.640)	-2.754**	(0.645)
N	1,472		1,472	
LR Chi2 of ESF equation	119.26**			
LR Chi2 or Wald Chi2 of ESC equation	634.68**		604.85**	
Marginal effect of ESF	-0.428**	(0.042)	-0.569**	(0.084)
ρ			0.273	(0.277)
LR test of $\rho=0$			P=0.347	
Test of Over identifying restriction of Chi2(1) [95% critical value]			1.485	[3.84]

Notes : N: number of observations. Year of survey dummies are included. Significant levels: ** 1%, * 5%, † 10%.

services offered by high schools, which is regarded to lead better job matching to high school graduates, are not available for school quitters. I examine more the role of the vocational service of high school in sub-section IV.3.

As an exogeneity test of the initial employment status, I conducted a likelihood ratio test of the null hypothesis that ρ is equal to zero. The likelihood ratio statistic, distributed as chi-squared with one degree of freedom, does not reject the null hypothesis that the initial and the current employment status equations are independent ($\chi^2(1) = 0.501$; $\rho = 0.273$). This implies that initial and current employment statuses can be consistently estimated separately without being affected by the correlation of unobserved factors across two univariate probit specifications.¹²⁾

I also tested the instrumental variables criteria. If instrumental variables are valid, then (1) these must be correlated with the probability of being non-regular workers at entry, but (2) be independent of unobserved personal heterogeneity; that is, these must not be correlated with the error term ε_i in equation (1). The results of the initial employment status equations in table 2 show that the instrumental variables—the employment share of service industry (ESSI) and the involuntary quit rate (IVQUIT) at the prefecture level—are positively correlated with the probability of being non-regular worker at entry at 1% and 5% levels, respectively. In addition, in a univariate probit model where the non-regular initial employment status is regressed on the two instrumental variables, the joint significance of the instrumental variables is also valid at 1% level. These results suggest that the instrumental variables are reasonably good indicators of the non-regular initial employment status.

Thus, the credibility of the bivariate probit results depends on the assumption that the instrumental variables are not correlated with unobserved personal heterogeneity. The potential correlation could be likely if, for example, failure

12) Note that the result of the endogeneity test also hold true in all specifications shown in Table 5 through Table 2 in this paper.

to obtain regular full-time job at the time of finishing school due to the slack labor market condition tends to decrease job search motivation of someone and if the discouraging effects last long. if the instrumental variables are correlated with the unobserved factors of individuals in this way, the instrumental variables may not be valid.

The most straightforward way to address this issue is to include two instrumental variables in the univariate probit model of equation (1) in subsection III.2 (Evans & Schwab, 1995, pp.965~967). Including the instrumental variables in the univariate probit model of current employment status in the upper portion of column 3 in Table 3, the estimated coefficients of the instrumental variables are both statistically insignificant, and the marginal effects of the instrumental variables are also insignificant at any statistical levels.¹³⁾ It implies that the two instrumental variables of this analysis are not significantly correlated with unobserved personal heterogeneity or the probability of obtaining regular full-time job at present.

Lastly, in order to test whether the instrumental variables can be excluded from the structural equation of current employment status, I performed a test of over-identifying restriction. The test has been developed in the context of the two stage least squares estimation (2SLS), and proposed by Davidson & Mackinnon (1993, pp.232~237) and Evans & Schwab (1995, pp.966~967). The null hypothesis in this test is that the exclusion restriction is valid; that is, the identifying variables do not appear in the structural equation of current employment status. In this test the residual calculated from the 2SLS model are regressed on all exogenous variables in table 2 that includes the excluded instrumental variables. The number of observations (N) times the R^2 from this regression is distributed as a chi-square density function with degrees of freedom equal to the degree of over-identification (the number of instrumental variables minus the number of endogenous variables in the structural equation

13) The results are not shown. The estimate results are available upon request.

of interest). As reported in the bottom line of column 2 in Table 2, the null hypothesis that the exclusion restrictions are valid cannot be rejected at 95% level. That is, the excluded variables do not belong in the structural equation of current employment status, and thus it appears that the test for over-identifying restrictions supports that the choice of instruments is appropriate.

2. Alternative Definitions of Regular Full-time Current Employment

In this sub-section I test whether the negative effects of the non-regular entry are also valid for the two qualitative thresholds of regular full-time current employment: educationally appropriate (ESCE) and adequate regular full-time current employment (ESCA).

Table 3. Estimates of Alternative Definitions of Regular Full-time Employment

Dependent variable	Univariate probit		Bivariate probit		Univariate probit		Bivariate probit	
	ESCE.		ESCE		ESCA		ESCA	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
ESF	-0.919**	(0.065)	-1.787**	(0.579)	-0.992**	(0.180)	-1.780**	(0.605)
N	1,126		1,126		1,126		1,126	
LR Chi2/wald Chi2	199.78**		192.22**		100.08**		276.84**	
Marginal effect of ESF	-0.308**	(0.042)	-0.460**	(0.064)	-0.316**	(0.040)	-0.441**	(0.065)
ρ			0.554	(0.337)			0.472	(0.325)
LR test of $\rho = 0$			P=0.172				P=0.220	
Test of Over identifying restriction of Chi2(1)			2.625	[3.84]			2.312	[3.84]

Notes: ESCE and ESCA are equivalent to educationally appropriate regular full time job and adequate regular full-time job, respectively. N: number of observations. Other explanatory variables include those listed in Table 2. Significant levels: ** 1%, * 5%, † 10%. 95% critical value of Chi2 are in brackets.

Column 1 to 4 in Table 3 show that, compared to the basic results of Table 2, these changes in the definition of regular full-time current employment decrease the marginal effects of the non-regular entry about 11% points in the univariate probit model and about 12% points in the bivariate probit models for ESCA equations, and about 10% points in the univariate probit model and about 13% points in the bivariate probit model for ESCA equations, as expected. However, the marginal effects still remain roughly -31% points in the univariate probit models and -45% points in the bivariate probit models, and they are both highly significant at 1% level and thus, the negative effects of non-regular entry shown in Table 2 appear to be robust.

3. Sensitivity Tests for the Effect of Non-regular Initial Employment Status

The estimates for the effect of non-regular initial employment in sub-section IV.1 are subjected to several sensitivity tests. In this sub-section I implement other tests of whether or not the basic results in Table 2 are robust. The primary concern here is that the basic models in Table 2 have omitted important characteristics of respondents that are negatively or positively correlated with the probability of holding non regular job at entry and, therefore, the results in Table 2 are under or over-estimated. The results of these robustness tests are shown in Table 4. The basic results in Table 2 are reproduced in the first line of Table 4 for comparison purposes.

Let me begin by asking whether including the dummies of first job's firm size would change the basic results of Table 2. Since non-regular jobs tend to concentrate in small and medium sized firms in Japan and, as noted in section II, larger firms are more likely to provide better chances of overcoming the disadvantageous positions for their non-regular workers, I would expect to find that the probabilities of holding non-regular jobs at both entry and present are likely to be reduced with firm sizes of first jobs. Therefore it is possible that

the effects of non-regular initial employment are over-estimated in Table 2 by ignoring the effects of the firm sizes. In line (2) of Table 4 I included two dummies of first job's firm size (FS2, FS3 shown in Table 1) in the basic models. Although FS2 variable (300–999 workers) is positively significant at 5% level (results not shown), and, as the results in line (2) indicate, including these dummies reduces slightly the marginal effect of non-regular initial employment in the bivariate model, the coefficients and the marginal effects in both the univariate and the bivariate probit models remain substantially large and significant at 1% level.

Table 4. Tests for Omitted Variable Bias

Added Variables	N	Univariate Probit		Bivariate probit			
		Coeff. On ESF	Marginal Effect	Coeff. on ESF	Marginal Effect	ρ	Test of Over identification
(1)	1,472	-1.161** (0.141)	-0.428** (0.042)	-1.763** (0.479)	-0.569** (0.084)	0.273 (0.277)	1.485 [3.84]
(2) Dummies of first job's Firm size	1,372	-1.148** (0.149)	-0.427** (0.045)	-1.505** (0.410)	-0.522** (0.126)	0.204 (0.297)	1.869 [3.84]
(3) Father's education dummies	1,342	-1.154** (0.141)	-0.426** (0.042)	-1.818** (0.497)	-0.578** (0.083)	0.381 (0.288)	1.913 [3.84]
(4) Year of leaving school dummies	1,472	-1.181** (0.144)	-0.434** (0.042)	-1.786** (0.545)	-0.574** (0.093)	0.348 (0.310)	1.619 [3.84]
(5) Prefecture dummies	1,472	-1.241** (0.151)	-0.451** (0.043)	-1.643** (0.592)	-0.542** (0.102)	0.234 (0.338)	1,462 [3.84]
(6) Dummies of Vocational guidance by school	992	-1.056** (0.181)	-0.394** (0.056)	-1.538** (0.453)	-0.519** (0.096)	0.280 (0.243)	1.984 [3.84]

Notes : Significant levels: ** 1%, * 5%. Other explanatory variables include those listed in Table 2. N: Number of observations. Standard errors are in parentheses. 95% critical values of Chi2 are in brackets.

Family backgrounds variables are also likely to be a significant factor in influencing employment prospects of individuals. As the results in line (3) of Table 4 indicates, however, including father's educational attainment dummies¹⁴⁾ as proxy of the family backgrounds do not change significantly the basic results.

Given the variations of aggregate labor market conditions when workers leave school, it is possible that there are strong cohort effects that are likely to be correlated with the probabilities of obtaining regular full-time at present as well as entry. A number of previous studies have found that an increase in the unemployment rate at the year of leaving school significantly reduces the probability of obtaining regular full-time job at present as well as entry (Genda, 2001). In line (4) of Table 4 I included 16 year of leaving school dummies (Ref. = 1991) in the basic models. However the coefficients and the marginal effects are very similar to those in line (1) of Table 4.

Next, in order to control the potential prefecture specificities, I included 46 prefecture dummies in the basic models. If these prefecture effects are correlated with the probability of getting non-regular initial employment, they also may lead us to overestimate the negative effects of non-regular entry. As the results in line (5) of Table 4 show, however, including the prefecture dummies also does not bring about significant changes to the basic results in line (1) of Table 4.

Lastly, I examined whether including VGS dummy (shown in Table 1) indicating whether or not respondent found his/her first job through vocational guidance offered by school changes the basic results of line (1) of Table 4 significantly. As noted in section II, the vocational guidance offered by school is likely to be negatively correlated with the probability of getting non-regular job at entry, and therefore, omitting this variable in basic models may lead to

14) The model in line (3) of Table 4 includes three dummies of father's educational attainment: Jr. high school graduation and less, two year college graduation, Four year university graduation and above. Reference is high school graduation.

overestimate the effect of non-regular entry. Since information on whether or not respondent found their first job through school's vocational guidance is not available in 2000 survey of JGSS, I estimated the effects of the vocational guidance with sub-sample pooled by 2001 and 2002 surveys. I found here that the vocational guidance of school (VGS=1) significantly contributes to increasing the probability of obtaining regular full-time jobs at entry, but the positive effects disappear in the current employment equation.¹⁵⁾ Also as the results in line (6) of Table 4 show, although including VGS dummy somewhat decrease the negative effects of non-regular entry, the marginal effects still remain about -39% points in the univariate probit model and -52% points in the bivariate probit model.

Although there are some variations across the specifications in Table 4, the negative effects of non-regular entry are substantially large and highly significant in the univariate and bivariate probit models. The results in this sub-section, therefore, appear to support the robustness of the basic results in Table 2.

4. Heterogeneity in The Effects of Non Regular Initial Employment Status

I also explore the impacts of the non-regular entry for different subgroups of the sample. The primary concerns here are whether or not the negative effects of non-regular initial employment are homogeneous across different subgroups. Dividing the sample into various subgroups leads to several implausible and insignificant results for bivariate probit models due to small sample sizes and diminished outcome variability. I therefore focus on univariate probit model in this sub-section.¹⁶⁾ Table 5 presents univariate probit

15) The results are not shown. The full estimates in lines (6) through (2) of Table 4 are available upon request.

16) Note that the endogeneity tests also fail to reject the null hypothesis of $\rho = 0$ for

estimates of the marginal effects of non-regular entry for various subgroups.

I begin by estimating for two subgroups that are divided on whether or not the year of leaving school was before 1991 when the economic bubble started to burst in Japan. The results in line (1) and (2) of Table 5 show that, for all three differently defined regular full-time job equations, the negative effects of non-regular entry are more than two times larger in the younger group who entered the labor market between 1991 to 1999, than in the older group who did before 1991.

Table 5. Heterogeneity of the Marginal Effects : Univariate Probit Models

Dependent Variable	ESC		ESCE		ESCA	
	Mean of ESC=1	Marginal Effect	Mean of ESCE=1	Marginal Effect	Mean of ESCA=1	Marginal Effect
(1) Leaving school between 1983-1990	0.515 [753]	-0.266** (0.080)	0.424 [544]	-0.165* (0.082)	0.423 [544]	-0.174† (0.089)
(2) Leaving school between 1991-1999	0.637 [719]	-0.526** (0.052)	0.459 [582]	-0.401** (0.041)	0.438 [582]	-0.408** (0.042)
(3) Firm size of first job=299 and fewer	0.564 [862]	-0.388** (0.052)	0.419 [731]	-0.273** (0.049)	0.398 [731]	-0.279** (0.046)
(4) Firm size of first job=300 and more	0.621 [512]	-0.548** (0.079)	0.486 [395]	-0.417** (0.073)	0.491 [395]	-0.417** (0.074)
(5) High school Grad. and less	0.531 [718]	-0.350** (0.055)	0.348 [540]	-0.213** (0.053)	0.257 [540]	-0.174** (0.138)
(6) Two year Coll. Grad. and above	0.615 [754]	-0.547** (0.059)	0.529 [586]	-0.212** (0.053)	0.590 [586]	-0.459** (0.067)

Notes : Significant levels : ** 1%, * 5%, † 10%. Other explanatory variables include those listed in Table 2. Only the equations in line 3 and 4 are estimated on more broadly defined educational attainment dummies: 2 year college graduation, 4 year university graduation and above, and others (Reference). The model of line (5) includes respondents of university dropouts. Standard errors are in parentheses. Number of observations is in brackets.

all subgroups in Table 5. The results of bivariate probit models and endogeneity tests are available upon request.

What could explain these differences in the two groups? The larger negative effects in the younger group are likely to be explained by the changes of Japanese labor market after the economic bubble collapse. Non-regular works has risen significantly in Japan since the mid of 1990s and thus, growing number of young students have started their career as non-regular workers. On the other hands, although the rhetoric of the end of lifelong employment has become popular in mass media, a number of authors have found that the Japanese lifelong employment practice still has been endured without significant changes until recent years (Watanabe, 2000; Kato, 2001). Combined with economic recession in the 1990s, these two labor market trends led to the increased labor market dualism and therefore, smaller proportion of non-regular workers have had chance to obtain regular jobs in the 1990s than in the 1980s.

Next, I divided full sample into two subgroups by firm sizes of first job — more than 300 and fewer than 299 — and estimate for the two subgroups, respectively. As noted in section II and sub-section IV.3, I would expect to find that the negative effects of non-standard entry are smaller in those who started at larger firms with more than 300 workers. In contrast to my expectations, the results in line (3) and (4) of Table 5 report that, for all three different definitions of regular full-time job, the marginal effect are substantially larger in the starters at larger firms than in those at smaller firms.

In addition, I also examined whether or not the negative effects of non-regular entry are homogeneous across two educational groups: (1) two year college graduation and above and (2) high school graduation and less. As human capital theory suggests that the escape from ‘unqualified job’ depends on the levels of skills of individuals (Becker, 1993), it is possible to expect that workers with higher education are more likely to have chances of obtaining regular full-time job than those with less education. Somewhat surprisingly, however, the results in line (5) and (6) show that, for the regular full-time (ESC) and the adequate regular full-time job (ESCA) equations, non-

regular initial job has substantially larger negative impacts in the highly educated whose education are two year college graduation and above. I also found significantly negative effects of non-regular initial job for the educationally appropriate regular full-time job (ESCE) equations, although the difference in the marginal effects between two educational groups is trivial.

What could we interpret the results in lines (6) through (3) in Table 5? A straightforward explanation is likely that the damaging effects of non-regular entry offsets other factors that have positive impact on the probability of obtaining regular full-time position at present. Note that, however, since the results are based on individuals who aged 19 to 33 years old and entered the labor market between 1983 and 1999, the findings may not be generalized with respect to other age groups or those who entered the labor market in the 2000s in Japan.

V. Summary and Conclusions

Using retrospective data of JGSS, this paper has examined the effects of initial employment status of Japanese young workers on future employment prospects. In order to deal with the potential endogeneity of initial employment status, the empirical analyses used bivariate probit as well as univariate probit specifications. In bivariate probit models, however, I found almost no evidence that univariate probit estimates are subject to endogeneity bias.

The empirical results furnish a clear answer to the question 'stepping stone or trap'. For all different three definitions of regular full-time current job, getting non-regular job upon leaving school has large and significantly negative effects on future employment prospects. In addition, I implemented several sensitivity tests, and the findings was relatively stable. Most coefficients and marginal effects estimates maintained sign, magnitude and significance level

across all specifications that included different additional explanatory variables in sub-section IV.3. The negative effects of non-regular entry also hold true for several subgroups: workers who entered the labor market before 1991 and those did after that, the highly educated and the less educated, and workers who started at larger firms and those did at smaller firms. The main findings of this study are consistent with previous studies including Mitani (2001) and Sakai & Higuchi (2005) who use different econometric approaches, and Kondo (2007) who uses somewhat similar econometric approach but different instrumental variable.

This research leaves open a number of questions. First, if the negative effects are as large as this study shows, we need to examine that whether the negative effects also hold true on other aspects of employment like wage and job satisfaction. Second, if non-regular initial employment has really damaging impacts on future employment prospects, we need to know that whether entering labor market regardless of quality of job is better than none. That is, should students accept any jobs in order to escape unemployment after leaving schools, or should they wait until decent jobs appear? Finally, in order to draw further implications for labor market policies, we need to know more about the source of negative effects of initial non-regular works. While I suggested before that these negative effects are likely to be mainly come from the institutional characteristics of internal labor market of Japan, the process of subsequent employments after labor market entry also should be explored. This study did not address these issues due to the lack of available data, but these are obviously next steps.

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abstract

일본에서 첫 일자리 고용형태가 이후 고용전망에 미치는 영향에 관한 연구

김 준 영

일본 일반사회조사(JGSS)의 데이터를 이용해서, 본 연구는 일본에서의 첫 일자리의 고용형태가 이후의 고용전망에 미치는 효과를 분석하였다. 첫 일자리 고용 지위의 잠재적 내생성을 통제하기 위해서, 본 연구는 단일변량 프로빗 모델과 이변량 프로빗 모델을 함께 사용하여 분석하였으나, 첫 일자리 고용 지위의 내생성에 대한 증거는 발견되지 않았다. 최종 학교를 마친 후 비정규직으로 첫 취업을 한 노동자는 정규직으로 첫 취업한 노동자에 비해서 현재 정규 일자리를 가질 확률이 유의하게 낮았다. 또한 본 연구는 비정규직 첫 취업 효과의 민감도(sensitivity)를 평가하기 위해 여러 모형을 설정하여 분석하였으나, 비정규직 첫 취업의 부정적 효과는 대체로 안정적이었다.

핵심용어 : 일본 청년층 노동시장, 비정규 첫 일자리, 고용 지위의 내생성, 이변량 프로빗 모델