



**Discussion Paper Series**

No.201

**Familial Support for Unemployed Youth**

Kazuyasu Sakamoto

January 2007

**Hitotsubashi University Research Unit  
for Statistical Analysis in Social Sciences**

*A 21st-Century COE Program*

Institute of Economic Research  
Hitotsubashi University  
Kunitachi, Tokyo, 186-8603 Japan  
<http://hi-stat.ier.hit-u.ac.jp/>

# Familial Support for Unemployed Youth \*

Kazuyasu SAKAMOTO †

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## Abstract

Between the late 90's and the beginning of the 21st century in Japan the unemployment rate among young people (under the age of 30) grew from 4.7% in 1993 to 9.8% in 2002. However, the high unemployment rate of young people (9.8%, compared to an average rate of 5.4% in 2002) did not turn into a major social issue in the mass media because it is considered that familial support is enough to keep the life of the young unemployed stable.

This paper investigates the relationship between the unemployment of young never-married women and the financial situation of their parents, using The Japanese Panel Survey of Consumers (JPSC) from 1994 to 2004. I use the reform of the eligibility age(only for male) as the instrumental variable, to identify the parental economic strength. The result shows the decrease of the discretionary expenditure of the unemployed people and the financial strength of their parents are negatively correlated. Also, the financial strength of the parents negatively affects the re-employment rate of the respondents.

**JEL Classification Code :** J21 J64

**Keywords :** unemployment, familial transfer, the Japanese Panel Survey of Consumers, limited dependent variable model with endogenous variables

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\*I would like to thank Osamu Saito, Tomohiro Machikita, Masakazu Hojo, Kyosuke Kurita, Naohito Abe, Ryo Kambayashi, Takashi Kurosaki, Takeshi Amemiya, Kazuki Yokoyama, Yoko Yamamoto, Miki Kohara, Masaru Sasaki, Kengo Yasui, Jiro Nakamura, for their helpful suggestions. All errors remain my own.

†The Institute for Research on Household Economics, Ryoshin Hirakawacho Bldg. 6th.Fl., 1-3-13 Hirakawacho Chiyoda Tokyo, 102-0093 Japan, E-mail : sakamoto@kakeiken.or.jp

# 1 Introduction

This paper investigates the labor supply of young women who lived with their parents in Japan between the late 90's and the beginning of the 21st century.

Between the late 90's and the beginning of the 21st century in Japan the unemployment rate increased and hit an all-time high of 5.1% in 2002 (4.8% as of 2005), mainly young people under the age of 30 and old people between the ages of 60 and 64. In this time period the unemployment rate of young people, between the ages of 20 and 24, hit an all-time high of 8.3% in 2002, and for those between the ages of 25 and 29, it hit an all-time high of 7.7% in 2002.

[Table 1 The rate of unemployment by age group (Women)]

However, this phenomenon did not turn into a major social issue in the mass media as it did in the case of unemployed elderly people. Mass media trumpeted the unemployment of the middle-aged and older. There are three reasons why this phenomenon did not turn into a major social issue.

First, the reason why the unemployment of the middle aged is more serious. Most of this generation are heads of households, so they shoulder the responsibility of their dependants, such as a spouse, children and parents. If the middle age layer loses their income, their family become destitute, and lose thier home.

Second, the reason why young people's unemployment was considered less serious was that the main reason young people left their jobs was "Voluntary unemployment". "Voluntary unemployment" means that they do not want to stay in their jobs, and they are liable to leave if they are at all unsatisfied. Thus the young people's unemployment was considered to be one of personal choice.

And Finally, since their parents ensure the livelihood of their children, young people therefore do not have to be thrown onto the street.

In Japan slightly less than 70% of never married people live with their parents (63.0% for male, 72.5% for female). They are looked after by their parents, they pay less living expenses than those who live alone, so are able to enjoy leisure and shopping and other lifestyle benefits. If you compare the rate of the unemployed who live with their parents with the rate of the unemployed who live alone, you find that the number who live with their parents (10.5%) is higher than the number who live alone (4.8%)<sup>1</sup>.

What one can infer from this phenomenon is that unemployed young people are taken care of by their parents. Fortunately for young people,

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<sup>1</sup>Health, Labour and Welfare Ministry staff made Table 3 using the original Labor force survey data. As common researchers can not use the original governmental data, I can not investigate values from the year 2000.

their parental generation (between the ages of 44 and 59) earn relatively high wages on a seniority-based pay scale, and so can afford to their children.

[Table 2 The ratio of living with parents for youth]

[Table 3 The ratio of unemployment by relationship of heads of household]

I am concerned with the third reason in this paper. According to research conducted in foreign countries, it is recognized that living with parents discourages young people from entering the workforce (Holzer(1990)). McElory (1985) says that living with parents is the same as jobless insurance for young people. People who live with their parents are liable to remain in the state of unemployment if the provided wages are less than the wages they want. Card & Lemieux (2000) found that young people adjust to change in labor market forces through living arrangements. For example, in times of depression(the employment-population rate was low, lower wage) young men adapt by continuing to live with their parents and by attending school (young women adapt by continuing to live with their parents).

In Mediterranean Europe most young adults live with their parents too<sup>2</sup>. In Manacorda & Moretti (2005) the effect of parents' income on various children's behavior is estimated (living with parents, children's work, children's earnings). According to the results, parental income has a positive effect on living with parents, and a negative effect on children's work.

The goal of this paper is to investigate the evidence regarding the labor supply of never-married women who live with their parents and I validate the fact that the unemployment of young people is "lavish unemployment".

I used results from the Japanese Panel Survey of Consumers (hereafter JPSC, 1994-2004)<sup>3</sup> in this paper.

This article has two features. Firstly, I used the pension reform (rise in pension eligibility age) as the instrumental variable. In this study I analyzed the effect of parental income on the re-employment of their unemployed children never married women who live with them. Parental income and economic strength is strongly associated with children's educational achievement, which correlate with labor supply. And parental income is correlated with error term of the labor supply equation. It causes a positive spurious correlation. Facing the difficulty of how to identify parental economic strength on children's output, I used the reform of eligibility age as an instrumental variable, which effect parental income, but does not effect children's labor supply. The estimation results show that parental economic strength has a negative effect on children's labor re-employment. As parental income

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<sup>2</sup>Data from the European Community Household Panel Survey (1996), around 80% of Italian men aged 18-30 live with their parents, and in Spain 65%, in Portugal 78%.

<sup>3</sup>The Institute for Research on Household Economics provides the data (<http://www.kakeiken.or.jp/english/index.html>).

increases by 1 million yen ( \$ 5,555 ) , the rate of re-employment of their children decreases 7.4-8.1%.

Secondly, in Japan most of the previous research about the labor supply of women is focused on married women. Recently, the rate of never-married women has grown rapidly, therefore research about women in this group has enormous significance.

[Table 4 the rate of unmarried by age group]

The rest of this paper is organized as follows. Section 2 describes the changes in household behavior after leaving a job. Section 3 describes why unmarried women who live with their parents leave their jobs, how they cope with the state of unemployment. Section 4 describes the reasons of reemployment. Section 5 describes the theory that examining, the effect of the parents economic strength toward their children's employment. Section 6 describes the empirical model, explaining the data. Section 7 introduces the estimation results, and discusses the relationship between the stated preference and the action taken, and the conclusions are presented in the last section.

## 2 Data, Descriptive Statistics

### 2.1 Data

The Japanese Panel Survey of Consumers has been conducted by the Institute for Research on Household Economics(hereafter IRHE) since 1993. JPSC targeted 1,500 females aged 24 to 34 nationwide (cohortA)in 1993. Furthermore, 500 females of same generation aged 24 to 27 (cohortB) were added to survey subjects in 1997, and 836 females aged 24 to 29 (cohortC) were also added in 2003. The survey aims to figure out lifestyle condition of young females from the perspectives of income, expenditure and saving, working behavior, family relationship, time allocation within couple, and satisfaction.

[Table 5 The age composition of respondent to JPSC survey]

### 2.2 Leaving a job

In this section, I observed the current status of leaving a job for young never-married women.

In the JPSC an averaged 8.5% of the never-married sample changed their job, and 5.0% stopped working, and 4.6% began working again (they were unwaged the previous year). To put it the other way around, the averaged fixation percentage is more than 75.8% during the suvey year.

The average terms when they keep on working at present company is 5.5 years (median 4.5 years) <sup>4</sup>.

[Table 6 The change of employment status]

I investigated the change of job status among never-married women. About 62.0% of the women who changed their jobs kept working fulltime and went to other companies.

I could not find definitive evidence of "labor supply as a hobby", which is where young people are likely to change from a regular job which is demanding and inflexible, to part-time work which is relatively more relaxed.

[Table 7 The change of job status]

Why do never-married women leave their jobs? I looked at the 11 years (1994-2004) of data for reasons for job change and turn over (quitting a job). Most reasons for changing jobs were to do with dissatisfaction with the conditions of employment and dissatisfaction with the contents of work ("because working conditions were bad there" (37.4%), "the job was unsuitable for me" (28.5%)).

The most common reason for turnover was the same reason as job change ("because working conditions were bad there" (24.4%), "the job was unsuitable for me" (19.3%)). And the second-most common reason was "because I was married" (quit after getting married) (24.44%). I came to the conclusion that the most common reason for job change and turnover for young never-married is voluntary resignation from the results mentioned above. This fact is consistent with previous work.

[Table 8 The reasons for changing a job and quitting a job]

### 2.3 The changes in household behavior after leaving a job

In this section I noted that the changes in household behavior (income, savings, expenditure) after leaving a job.

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<sup>4</sup>According to age brackets, between the ages of 25 and 29 : 4.3 years(average), 4.1 years(median), between the ages of 30 and 34 : 6.5 years(average), 6.5 years(median), between the ages of 35 and 39 : 10.3 years(average), 11.5 years(median), between the of ages 40 and 44 : 14.1 years(average), 15.5 years(median)

### 2.3.1 Income

In the case of changing jobs, there was a slight decrease in yearly income. The average change account was a decrease of 18,780yen(about \$ 160). At the same time, in the case of quitting jobs, there was a large decrease in income by 1,120,000yen(about \$ 9,700). It is a very serious decrease in income when quitting a job.

[Table 9 The change of income]

### 2.3.2 Savings

Generally, the savings of unmarried women who left their jobs increased slightly (increase in saving 59,444yen = \$ 512 for changing a job, 229,791yen = \$ 1980). It is noteworthy that the savings of those who quit their jobs (became unemployed) is larger than the savings of those who changed their jobs (employed).

Under ordinary circumstances out-of-work employees reach into their savings to get by, therefore their savings are suppose to decrease. The increase in saving reflected that the unemployed kept up with their living cost by means other than their savings.

In the second place I distributed the saving according to their parental income brackets(except "parents were dead", "No Answer"). If parental income is less than 5 million yen(about \$ 43,100), there was an increase of 174,615yen (about \$ 1,500). If parental income is 5 million yen and over, there was an increase of 220,952yen(about \$ 1,900).

[Table 10 The change of savings]

### 2.3.3 Expenditure

The average expenditure<sup>5</sup> of those who changed their job increased 6,174 yen (\$ 50). The averaged expenditure of those who quit their job (became unemployed) decreased significantly by 20,570 yen (\$ 180). Generally, people who have just lost their jobs decreases their expenditure slightly, because most of them have saved money for the unexpected, and recieved unemployment insurance.

But as mentioned above, unemployed unmarried women did not spend their savings, and the unemployment benefit payment in Japan is half of the

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<sup>5</sup>This survey defines expenditure of unmarried women as "the expenditure which take out of their purse at last month(September)"

wage which they earned (in the case of voluntary unemployment, the period of unemployment benefit payments is three months ). It is not abundant.

Then I distributed the expenditure according to parents' income brackets. If parental income is less than 5 million yen, there was a decrease of 7,250yen (about \$ 60). If parental income is 5 million yen and over, there was a decrease of 23,950yen (about \$ 210).

About 91% of never-married women who are unemployed live with their parents. So they can make their parents shoulder all life expenses for them(unemployed women). And they can trim the costs of their living which they have to pay. Furthermore, never-married women who are unemployed and have wealthy parents get more parental transfers (e.g. allowance and remittance, etc.) than other people.

[Table 11 The change of expenditure]

[Table 12 The change of familial transfer]

### 3 The ways of coping with unemployment

I investigated their ways of coping of the young unemployed during their jobless periods (multiple answers).

The most common way of coping with no pay for those who quit a job is withdrawing their savings (49.45%)<sup>6</sup>. The second most common way is retirement allowance and/or insurance benefits (43.96%)<sup>7</sup>, the third is parental revenue (24.18%)<sup>8</sup>.

Next I distributed "The ways of coping with unemployment" according to parents' income brackets. If parental income is less than 5 million yen, the most common way of that is retirement allowance and/or insurance benefit (57.89%). While if income is 5 million yen and over, the most common way is parental revenue (42.0%), and withdrawing their savings (46.0%). The results show that unmarried women who have wealthy parents take advantage of family support which functions as unemployment insurance in Japan.

Tachibanaki (1999) said that, "In the Japanese policy of joblessness, it has been practiced that family functions as a form of income security for the unemployed in Japan. demand for unemployment insurance has been scarce." It is believed that the system of unemployment insurance has not developed enough, family help is very important.

[Table 13 The response to costs of living by the unemployed]

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<sup>6</sup>"I drew my savings."

<sup>7</sup>"I could go well with a retirement allowance and/or insurance benefit for a while."

<sup>8</sup>"I could go well with my parent's revenue."



Lastly, I checked the unemployed womens' desire for employment and actual job-hunting. I watched their desire for employment according to parental income. The results show that in the case of less than 5 million yen 68.75% of unemployed wanted to start to work, while in the case of more than 5 million yen 50.00% of that wanted to start work.

And in a similar way I watched their job-hunting according to parental income. These results show that unemployed people who have wealthy parents are reluctant to work.

What it comes down to is that women who live with their parents are blessed with parental support. Thus they do not feel the need, and they are reluctant to restart work.

[Table 14 The desire for employment and job hunting ]

## 4 Reentering the workforce

In this section, I observed the reason of reemployment <sup>9</sup>. The most common reason is "Because I was interested in the work offered to me." (38.24%). The second most reason is "Because the company or organization was closer to my house or the commuting distance was shorter." (29.41%).

Next, I distributed "The reasons of reemployment" according to parental income brackets. But in both group (less than 5 million yen, more than 5 million yen) the most reason is same ("Because I was interested in the work offered to me."), there is not much difference in rate of response. If I pick up relative difference between both group, in case of more than 5 million yen children select the job, because interest in contents of job, making use of their ability and gaining a skill. These reason are more fastidious (particular) reasons than compelling that. parental support enable to search for fastidious job.

[Table 15 The reason of choosing the company ]

But results of descriptive statistical analysis in chapter 2 and 3 are tentative, because the number of sample are small. Therefore I did another analysis in the following chapters for complementing these results.

## 5 Model

To formalize the idea that parental income, economic strength, affects the re-employment behavior of the never-married women. I constructed a simple search model that captures the effect of parental income on the re-employment behavior of their children (never-married women).

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<sup>9</sup>"Why did you choose the company or organization in which you are now working?" (This question is Multiple Answers.)

Let us consider  $V_e(w)$  denotes the present value, which worker receive the best offer,  $w$  denotes wage. Denoting  $V_u$  as her discounted expected utility when she is unemployment,  $r$  as her discount factor,  $\delta$  as the probability that the worker receives offer.

$$V_u = \frac{1}{1+r}[b + \delta E\max\{V_e(w), V_u\} + (1-\delta)V_u] \quad (1)$$

It is assumed she get  $b$  instantaneous utility while unemployment, and  $\delta E\max\{V_e(w), V_u\}$  is the discounted expected value of following the optimal policy if she receives offer,  $(1-\delta)V_u$  is the expected value which she continues to search if she receives no offer. Multiplying  $1+r$  on both sides, rearranging the equation(1),

$$V_u = \frac{1}{r+\delta}[b + \delta E\max\{V_e(w), V_u\}] \quad (2)$$

The optimal policy is for job searcher to accept the offer when  $V_e(w)$  bigger than  $V_u$ . Let define  $w^*$  as the threshold wage, the value of threshold point means  $V_e(w) = V_u$ .

$$w^* = rV_u \quad (3)$$

Next the discounted expected utility of employed is defined by,

$$V_e(w) = \frac{1}{1+r}(w + (1-q)V_e(w) + qV_u) \quad (4)$$

$q$  denote the rate of losing employment,  $w$  denote instantaneous utility(e.g. wage). Rearranging the equation(4), we arrived at,

$$V_e(w) = \frac{w + qV_u}{r+q} \quad (5)$$

Substituting the discounted expected utility of unemployed for equation(3), equation(4), we arrive at,

$$w^* = b + \frac{\delta}{r+q}\{E\max(w, w^*) - w^*\} \quad (6)$$

We arrive at the reseavation wage equation,

$$w^* = b + \frac{\delta}{r+q} \int_{w^*}^{\infty} (w - w^*) dH(w) \quad (7)$$

Let  $H(\cdot)$  denotes the cumulative distribution function of all possible wages. And  $H(w)$  denotes the probability of offered wage. We obtain the direction of the variations in the reservation wage,

$$\frac{\partial w^*}{\partial b} > 0, \frac{\partial w^*}{\partial \delta} > 0, \frac{\partial w^*}{\partial r} < 0, \frac{\partial w^*}{\partial q} < 0 \quad (8)$$

I am concerned with  $b$ , which means the  $b$  instantaneous utility of unemployment. The utility is effect by non-market effects, which are defined as familial effects here. I focused on two points in this model. Firstly, I marked  $tr_c$  transfers from parent to children (housework which are provided by their mother, pocket money and allowance provided by parent). I assumed as parental income  $y_p$  increases, children are given with more transfers(non labor income). When children's non labor income increases, it affects labor supply. In particular in the case of living with parents, children enjoy the benefits of not only financial transfer, but also material transfer (overall household work, e.g. cleaning, cooking, etc. ).

I checked the relationship between parental income and financial transfer(see Table 16). The result shows that there was positive correlation. I wanted to examine the relation between parental economic strength and children's labor supply:

$$tr_c = 1.540(0.399)y_{pt-1} + \beta X + \mu + u \quad (9)$$

where parenthetical values denote standard deviation, and  $\mu$  denotes individual characteristic effects (I analyzed the equation using random-effects tobit model).

[Table 16 The parental income effect on financial transfer]

Secondly, I noted the relative bargaining power of never married women. I assumed that the determinants of bargaining power are the number of siblings, the order of birth, the presence of male child(ren), etc.. If the sample is a single child, she is sole recipient of her parents' attention, if she is the eldest child, she is given preferential treatment by the parents. Since Asian parents tend to give preferential treatment to male children, if she had no brothers, she could get more of her parents' attention than children who have brothers.

## 6 Empirical model

This model has a problem in empirical estimate in that parental income would be endogenous to children's labor supply. It causes estimations to

be inconsistent. For example, following Manacorda & Moretti (2005), I assumed unobserved shocks to market conditions. When there is a recession, parental income decreases, and employment opportunities for children decrease. It seems there is a positive spurious correlation between parent's income and children's labor supply. Conversely, in an economic boom, there would seem to be a positive correlation parental income rises, there are more jobs available for children.

Through parental investment in children<sup>10</sup>, rich family's children have more choices available in employment due to being highly-educated. It seems there is a positive spurious correlation.

Thus, to execute a more precise estimation, it is necessary to exploit the variation of parental income, parental economic strength, due to the exogenous shock by the instrumental variable estimation. The instrument variables should be correlated to parent's income and uncorrelated to children's labor supply.

I used the reform of the social security system in Japan as an instrumental variable. Manacorda & Moretti (2005) used "changes in social eligibility and retirement age introduced in Italy in 1992" (p15), as a measured instrument for parent's income. They assumed the reform is uncorrelated with determining factors of children's labor supply. In Japan the age of pension payment eligibility has been raised in phases (from 60 years old in 2001 to 65 years old in 2013<sup>11</sup>).

The reform would promote the parental labor supply, because some people would have to work to compensate for the period of time when pensions were not provided. The Japanese government also promotes the elderly labor supply through the Law for the Stabilization of Employment of the Aged in 2000, this law mandates companies to extend the age of retirement from 60 to 65 whenever possible(Article 9 of the Law).

The reform of pensionable age does not have a direct connection with the behavior of unmarried women. I used father's under the eligibility age dummy (planholder = 0, not planholder = 1) as an instrumental variable in this article.

In fact, the findings in Table 16 already suggest that parental income may have a negative effect on the labor supply of children (unmarried women).

I estimated the following probit model with instrumental variables.

$$Y_i = \begin{cases} \frac{1}{2} & \text{if } Y_i^* > 0 \\ 0 & \text{if otherwise} \end{cases} \quad (10)$$

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<sup>10</sup>Behrman & Taubman(1990), Ermisch & Francesconi(2001a), Ermisch & Francesconi(2001b)investigated association between Parental income or attainment and child earning or achivement

<sup>11</sup>For men. While for women, from 60 years old in 2006 to 65 years old in 2018

$$Y_i^* = \alpha_1 + \alpha_2 P_i + \alpha_3 X_i + u_i \quad (11)$$

which  $Y^*$  represents a latent variable,  $Y^*$  represents the re-employment dummy (If the individual  $i$  gains re-employment, 1. If the individual  $i$  remains unemployed, 0.),  $P_i$  represents endogenous variable (parental income),  $X_i$  represents other characteristics.

$$P_i = \beta_1 Z_i + \beta_2 X_i + v_i \quad (12)$$

$$(v_i, u_i) \sim N(0, \Sigma) \quad (13)$$

Other characteristics include age, age (squared), unemployment periods, regional active opening rate<sup>12</sup>, city-size where the respondent lives (top 14 cities<sup>13</sup>, other cities [reference], towns and villages), education achievements (junior high school, high school [reference], vocational college, junior college, university & graduate school), qualifications<sup>14</sup>, the receipt of unemployment insurance benefits in previous year, year dummies<sup>15</sup>.

The subsample which was used in this analysis is restricted to (1) never-married women who did not work in the previous year and changed jobs during the year (soon after the previous year's survey to right before reference year's survey, e.g. November.1999-October.2000), and (2) never-married women living with their parents. The restriction causes the sample selection to be bias. So I used the inverse probability of "the probability of getting to be unemployed people" and "people who change jobs" as weight for avoiding sample selection bias.

And I use the survival model to check the effect of familial transfer from parents on childrens' reemployment directly.

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<sup>12</sup>I use the regional active opening ratio (<http://www.dbtk.mhlw.go.jp/toukei/kouhyo/data-rou16/jikei/jikeiretu09.xls>).

<sup>13</sup>Sapporo, Sendai, Saitama, Chiba, Tokyo in 23 wards, Kawasaki, Yokohama, Nagoya, Osaka, Kobe, Kyoto, Hiroshima, Kitakyushu, Fukuoka.

<sup>14</sup>medical doctor, pharmacist, clinical nurse, dental hygienist, dental mechanic, clinical technologist, social welfare counselor, dietitian, teacher, childminder, attorney, judicial scrivener, administrative scrivener, chartered accountant, enrolled agent, architect, interior coordinator, advisory specialist for consumers' affairs, hairdresser, data processing specialist, etc..

<sup>15</sup>Here we use maximum likelihood estimation. Because the estimation has some advantages in comparison with two step estimation (Wooldridge 2002, p476). The advantages means more efficient, and getting direct estimates of the parameters.

## 7 Empirical Results

Table 18 reports the results of estimations on the determination of re-employment of nevermarried women (Table 17 reports descriptive statistics).

The result of the IV estimation that uses the father's age dummy indicates that parental income decreases the rate of re-employment of their unmarried children, and the effect is significant in all cases. As parental income increases by 1 million yen (about \$ 5,555) , the rate of re-employment decreases by about 8%. The result of normal probit estimation is about 3% (Appendix Table 1). We indentified the underestimation by endogeneity.

The test statistics in the Wald test of the exogeneity of the instrumented variables is significant (significant level 5-10%)<sup>16</sup>.

The effects of other variables is seen as follows. The higher the rate of educational achievement, the higher the rate of re-employment. The top 14 cities dummy decreased the rate of re-employment.

Next I checked the familial attributes effects (e.g. the order of birth, the number of siblings, the presence of male siblings) on reemployment of never married women. Column (2) reports the IV Probit results including the eldest child dummy ( $E_i = 1$ , if the never-married woman was the eldest child.  $E_i = 0$ , otherwise). The coefficient of the eldest child dummy was negative, but was not significant. Column (3) reports the IV Probit results including the single child dummy ( $S_i = 1$ , if the never-married woman did not have brothers and sisters.  $S_i = 0$ , otherwise). The coefficient of the single child dummy was positive, and was not significant.

Column (4) reports that including the single child / sister dummy ( $SS_i = 1$ , if the never-married woman was a single child, or had sister(s).  $SS_i = 0$ , otherwise.) It is believed that men have more power in the household. They are likely to be the primary beneficiary of their parents' legacy. Thus, male children receive more money than female children.

Our major findings are summarized as follows. First, the father's age dummy (IV) indicates that parental income decreases the rate of re-employment of their unmarried children, and the effect is significant. This result complements the result in chapter 3 (as parental income increases, the desire for employment decreases, and they are reluctant to go job hunting ). Second, the familial attributes effects (no brother dummy) decreased the rate of re-employment. It is believed that compared to women who have male siblings, they can get more of their parents' love. So they can enjoy the benefit of parental economic strength, and they are reluctant to reenter the workforce.

Lastly I used cox proportional hazard model, and I checked the effect of finacial transfer and parent income on the reemployment rate separately

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<sup>16</sup>Appendix Table1 reports the results of pooled probit estimation. The pooled probit estimated effect of parental income is much smaller.

( Appendix Table 3, 4 ). In consequence, not parent income but financial transfer has significantly effect. For an increase in transfer increases by 10,000 yen (about \$ 90), the hazard is multiplied by 0.974.

[Table 17 Descriptive Statistics]

[Table 18 The Re-employment Function (IV Probit)]

[Appendix Table 1 The Re-employment Function (Pooled Probit 1) ]

[Appendix Table 2 The Re-employment Function (Pooled Probit 2) ]

[ Appendix Table 3 The Re-employment Function (Cox Model Analysis 1) ]

[Appendix Table 4 The Re-employment Function (Cox Model Analysis 2)]

## 8 Conclusion

This paper investigated the effects of the parental economic strength on labor supply of never-married unemployed women, using “Japanese Panel Survey of Consumers” data (1994-2004) .

In chapter 2 and 3, I analyzed descriptive statistics to investigate the changes of household behavior (expenditure, saving, job-hunting, etc.) by the unemployed and those who are changing jobs. These results show that never-married unemployed women, especially those who have rich parents, made their parents shoulder all living expenses for themselves (unemployed women). Furthermore, never-married women who are unemployed and have rich parents got more parental financial assistance (e.g. allowances and remittances, etc.) than other people. They were also more reluctant to start to looking for a new job.

In chapter 7, I estimated the effect of parental income on labor supply of unemployed women. The estimation is very difficult because the parental income is endogenous. I used the reform of the social security system as an instrumental variable. The result of the estimation is that the parental income has a negative effect on the labor supply of unemployed women.

It is believed that familial support works well for never-married women who live with their parents in Japan, but familial support represses the desire of the never-married unemployed women to look for a new job, and consequently exacerbates Japan’s labor shortage.

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**Table 1 The Rate of Unemployment by Age Group(Women)**

Year	Ratio of unemployed in labour force (%)											
	Total	15 ~ 19 years old	20 ~ 24	25 ~ 29	30 ~ 34	35 ~ 39	40 ~ 44	45 ~ 49	50 ~ 54	55 ~ 59	60 ~ 64	65 ~ or more
1990	2.2	5.7	3.7	3.7	2.5	2.1	1.6	1.5	1.5	1.4	1.4	-
1991	2.2	5.8	3.8	4.0	2.5	2.2	1.5	1.3	1.4	1.8	1.4	-
1992	2.2	6.0	3.7	3.5	3.0	1.9	1.8	1.6	1.4	1.3	1.4	0.6
1993	2.6	6.3	5.1	4.5	3.4	2.4	1.9	1.8	1.4	1.3	2.0	0.6
1994	3.0	6.8	5.0	5.4	3.8	2.5	2.4	2.0	1.6	1.8	2.0	0.6
1995	3.2	7.5	5.8	5.2	4.7	3.0	2.2	2.1	2.0	1.7	2.6	0.6
1996	3.3	9.1	6.2	5.5	4.6	3.0	2.3	2.0	2.1	2.1	2.6	0.6
1997	3.4	7.6	6.1	6.3	4.4	2.9	2.1	2.0	2.0	2.0	2.5	0.6
1998	4.0	9.1	6.9	6.7	5.6	3.7	2.9	2.4	2.2	2.8	3.1	0.6
1999	4.5	9.5	7.9	7.1	5.8	4.2	3.3	2.9	3.0	3.0	3.8	0.5
2000	4.5	9.8	7.5	6.7	6.0	4.1	3.3	3.1	3.1	3.1	4.5	1.1
2001	4.7	11.1	8.2	7.2	6.4	4.8	3.3	3.2	3.2	3.2	4.4	1.1
2002	5.1	10.2	8.3	7.7	7.1	5.2	4.0	3.7	3.6	3.2	4.3	1.1
2003	4.9	10.5	8.2	6.9	6.6	5.3	4.0	3.1	3.2	3.3	4.2	1.1
2004	4.4	11.1	7.7	5.9	5.7	5.2	3.6	3.1	3.1	2.8	3.4	1.1

Sources: Health, Labour and Welfare Ministry, *Labor force survey* (<http://www.stat.go.jp/data/roudou/longtime/zuhyou/lt03-03.xls>)

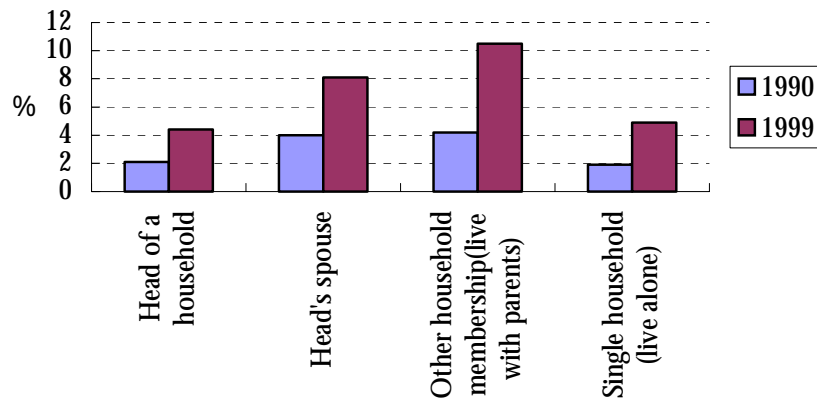
**Table 2. The Ratio of Living with Parents for Youth(Between the ages of 20 and 34 )  
in Japan**

	# of Youth(10,000person)	# ofPeople who livie with Parent(s)(10,000person)	the rate of living with parent(s)(%)
<b>Total</b>	<b>2,699</b>	<b>1,308</b>	<b>48.46</b>
<b>Unmarried People</b>	<b>1,672</b>	<b>1,124</b>	<b>67.22</b>
male	935	589	62.99
female	737	534	72.46
<b>Married People</b>	<b>976</b>	<b>164</b>	<b>16.80</b>

Source :

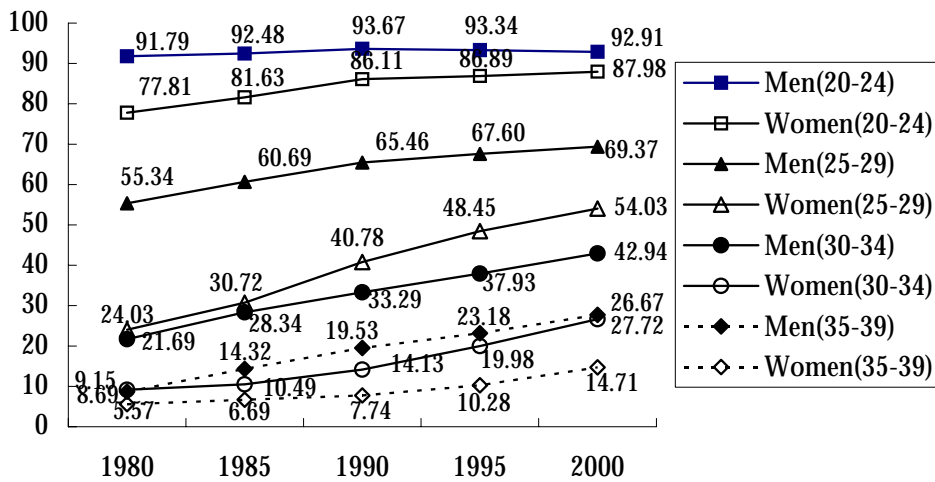
<http://www5.cao.go.jp/seikatsu/whitepaper/h15/honbun/html/15311010.html#15031>

**Table 3. The Ratio of Unemployment by Relationship of Head's of Household**



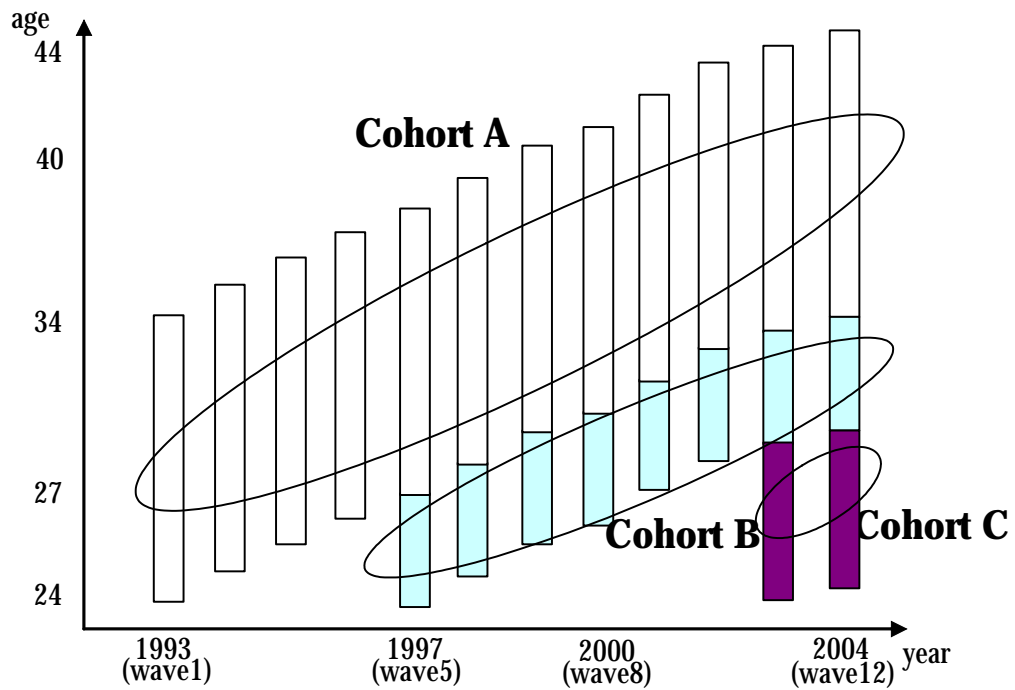
Source: Health, Labour and Welfare Ministry, *Labor White Paper 2000 year*, Table2-(1)-10.

**Table 4. The Percentage of Unmarried People in Japan(1980 - 2000)**



Source: Ministry of Internal Affairs and Communications, *National population census* (<http://www.stat.go.jp/data/kokusei/2000/kako/danjo/zuhyou/da04.xls>)

**Table5. The Age Composition of Respondent to JPSC Survey**



CohortA: 24 ~ 34years old Women(in 1993)  
 CohortB: 24 ~ 27years old Women(in 1997)  
 CohortC: 24 ~ 29years old Women(in 2003)

**Table6 The Change of Employment Status**

		Number	Percent
keep employed	(employed employed)	2,078	75.8
job change	(employed employed)	232	8.5
getting employed	(unemployed employed)	125	4.6
leaves a job	(employed unemployed)	137	5.0
keep unemployed	(unemployed unemployed)	156	5.7
No answer		13	0.47
<b>Total</b>		<b>2,741</b>	<b>100.0</b>

**Table7 The Change of Job Status (Only Employee who Changed Their Job)**

full-time employment 92 (100.0%)	→	full-time employment	57 (61.96%)
	↘	part-time jobber / temporary employee	35 (38.04%)
part-time jobber / temporary employee 111 (100.0%)	→	full-time employment	27 (30.68%)
	↘	part-time jobber / temporary employee	60 (68.18%)
	↘	No Answer	1 (1.14%)

**Table8. The Reasons of Change a Job and Quit Job**

			Parental Income less than 5 million yen		Parental Income 5 million and over	
	change job Percent	quit job Percent	change job Percent	quit job Percent	change job Percent	quit job Percent
personnel reduction, or company dissolution or bankruptcy	(10.61)	(11.11)	(12.82)	(20.51)	(3.39)	(5.56)
work was temporary and unstable	(13.41)	(9.63)	(8.97)	(10.26)	(18.64)	(12.96)
working conditions were bad there	(37.43)	(24.44)	(32.05)	(23.08)	(47.46)	(24.07)
the job was unsuitable job for me	(28.49)	(19.26)	(26.92)	(12.82)	(27.12)	(22.22)
the member of my household found a job, changed his or her job, or was transferred to another office, or because the office in which he or she was working was transferred to another place.	(1.12)	(0.74)	(1.28)	(0.00)	(0.00)	(1.85)
For marriage	(0.00)	(21.48)	(0.00)	(10.26)	(0.00)	(35.19)
I was pregnant and took care of my health	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
I was sick	(6.70)	(9.63)	(3.85)	(7.69)	(10.17)	(14.81)
I had to care for the member of my household	(1.12)	(3.70)	(2.56)	(5.13)	(0.00)	(3.70)
I could not make effective use of my abilities for my work there	(15.64)	(2.22)	(12.82)	(2.56)	(20.34)	(1.85)
I was not in a good human relationship with my boss and comrades there.	(15.08)	(15.56)	(14.10)	(15.38)	(15.25)	(11.11)
I was dismissed.	(4.47)	(2.96)	(5.13)	(7.69)	(3.39)	(1.85)
I wanted to learn in a university, college or professional school, or to prepare for studying abroad.	(1.68)	(5.93)	(1.12)	(7.69)	(0.00)	(1.85)
Other	(16.76)	(17.04)	(15.38)	(20.51)	(18.64)	(11.11)
	total=179	total=135	total=78	total=39	total=59	total=54

\*Multiple Answers

**Table.9 The Change of Income(Change a Job & Quit a Job)**

		<b>change a job</b>			<b>quit a job</b>			
Variable		Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
all	income(previous year, t-1, 10,000yen)	164	232.79	116.79	88	242.52	129.77	
	income(reference year, t, 10,000yen)	164	230.91	110.20	88	130.38	129.41	
	difference(10,000yen)*1	164	-1.88	89.58	88	-112.15	147.50	
	the rate of change(%)*2	164	15.86	83.82	88	-32.05	78.46	
Parental income	less than 5 million yen	income(previous year, t-1, 10,000yen)	43	225.53	130.87	32	237.69	153.72
		income(reference year, t, 10,000yen)	43	218.14	120.65	21	181.67	200.33
		difference(10,000yen)*1	43	-7.40	114.06	21	-88.86	184.78
		the rate of change(%)*2	42	21.19	117.84	20	-13.48	114.03
	5 million and over	income(previous year, t-1, 10,000yen)	41	258.54	115.89	39	238.87	140.35
		income(reference year, t, 10,000yen)	39	257.28	109.25	25	101.12	79.81
		difference(10,000yen)*1	39	-4.00	97.56	24	-145.88	133.12
		the rate of change(%)*2	39	22.47	106.32	23	-47.14	40.70

\*1( $income_{t}-income_{t-1}$ )

\*2( $(income_{t}-income_{t-1})/income_{t-1}$ )

**Table10. The Change of Savings**

		<b>change a job</b>			<b>quit a job</b>		
Variable		Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
all	savings(previous year, t-1, 10,000yen)	126	228.74	214.07	96	240.46	274.19
	savings(reference year, t, 10,000yen)	126	234.68	220.44	96	263.44	354.35
	difference(10,000yen)*1	126	5.94	103.64	96	22.98	151.94
	the rate of change(%)*2	126	32.17	153.75	96	50.62	221.12
less than 5 million yen	savings(previous year, t-1, 10,000yen)	43	242.00	197.64	26	176.15	121.64
	savings(reference year, t, 10,000yen)	43	247.44	216.46	26	193.62	145.75
	difference(10,000yen)*1	43	5.44	82.23	26	17.46	85.14
	the rate of change(%)*2	43	22.25	87.10	26	32.02	116.88
5 million and over	savings(previous year, t-1, 10,000yen)	41	202.56	222.15	42	257.81	244.66
	savings(reference year, t, 10,000yen)	41	233.17	232.48	42	279.90	248.42
	difference(10,000yen)*1	41	30.61	111.03	42	22.10	112.80
	the rate of change(%)*2	41	75.99	247.47	42	87.25	311.19

\*1(savings\_{t}-savings\_{t-1})

\*2(savings\_{t}-savings\_{t-1})/savings\_{t-1}

\* except "parents were dead", "No.Answer" in parental income brackets.



**Table11. The Change of Expenditure\*3**

Variable		change a job			quit a job		
		Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
all	expenditure(previous year, t-1, 1,000yen)	218	99.927	61.958	93	93.796	49.650
	expenditure(reference year, t)	218	106.101	59.354	93	73.226	64.125
	difference(1,000yen)*1	218	6.174	64.060	93	-20.570	69.092
	the rate of change(%)*2	218	46.072	190.281	93	-2.143	103.068
less than 5 million yen	expenditure(previous year, t-1, 1,000yen)	90	89.211	49.862	32	87.375	46.551
	expenditure(reference year, t)	90	92.644	59.170	32	80.125	54.144
	difference(1,000yen)*1	90	3.433	63.007	32	-7.250	58.476
	the rate of change(%)*2	90	60.144	249.506	32	18.865	123.559
5 million and over	expenditure(previous year, t-1, 1,000yen)	71	110.634	71.124	40	94.925	51.828
	expenditure(reference year, t)	71	122.042	61.542	40	70.975	67.403
	difference(1,000yen)*1	71	11.408	67.181	40	-23.950	66.562
	the rate of change(%)*2	71	26.812	64.536	40	-19.355	67.627

\*1(expenditure\_{t}-expenditure\_{t-1})

\*2(expenditure\_{t}-expenditure\_{t-1})/expenditure\_{t-1}

\*3 expenditure from their own wallet in last month.

\* except "parents were dead", "No.Answer" in parental income brackets.

## Table12 The Change of Familial Transfer

		Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
		<b>Unemployed people</b>			<b>Change a job</b>			<b>Keep working</b>			
all		Transfer(previous year, t-1, 1,000yen)	24	10.25	11.86	50	12.00	31.33	296	7.80	12.17
		Transfer(reference year, t, 1,000yen)	24	8.25	12.27	50	3.82	9.11	296	3.62	7.89
		difference(1,000yen)*1	24	-2.00	13.88	50	-8.18	31.47	296	-4.18	12.62
		the rate of change*2(%)	24	69.31	331.75	50	-56.39	88.77	296	-27.09	184.77
less than 5 million yen		Transfer(previous year, t-1, 1,000yen)	4	3.25	2.06	20	6.00	8.28	82	5.02	5.13
		Transfer(reference year, t, 1,000yen)	4	0.50	1.00	20	3.40	7.98	82	1.60	2.52
		difference(1,000yen)*1	4	-2.75	2.87	20	-2.60	3.72	82	-3.43	5.40
		the rate of change*2(%)	4	-50.00	100.00	20	-56.42	64.27	82	-54.51	74.38
5 million and over		Transfer(previous year, t-1, 1,000yen)	14	12.29	14.25	11	29.64	64.11	110	10.03	12.25
		Transfer(reference year, t, 1,000yen)	14	13.71	13.70	11	2.45	4.61	110	5.55	11.02
		difference(1,000yen)*1	14	1.43	16.38	11	-27.18	63.24	110	-4.48	12.98
		the rate of change*2(%)	14	147.38	407.86	11	-84.79	26.81	110	-12.10	195.48

\*1(transfer\_{t}-transfer\_{t-1})

\*2(transfer\_{t}-transfer\_{t-1})/transfer\_{t-1}

\* except "parents were dead", "No.Answer" in parental income brackets.

**Table13 The Response to Costs of Living by The Unemployed**

			I could go well with my parent's revenue.	I could go well with retirement allowance or/and insurance befits for a while.	I drew my savings.	I made purchases with may credit card, or borrowed money.	Other
<b>Change a job</b>							
	all	%	9.52	18.52	24.87	2.65	1.59
		#	18/189	35/189	47/189	5/189	3/189
parental income	less than 5 million yen	%	13.95	24.42	24.42	2.33	2.33
		#	12/86	21/86	21/86	2/86	2/86
	5 million and over	%	13.33	11.67	21.67	1.67	1.67
		#	8/60	7/60	13/60	1/60	1/60
<b>quit a job</b>							
	all	%	24.18	43.96	49.45	1.11	2.2
		#	22/91	40/91	45/91	1/91	2/91
parental income	less than 5 million yen	%	21.05	57.89	47.37	0	0
		#	8/38	22/38	18/38	0/38	0/38
	5 million and over	%	42.00	36.00	46.00	2.00	0.00
		#	21/50	18/50	23/50	1/50	0/50

\* except "parents were dead", "No.Answer" in parental income brankets.

**Table14 The Desire for Employment and Job Hunting**

			I want to start to work promptly.	I am going to start working in 2 or 3 years.	I want to start in the future.	I am not going to work.	N. A.	I am really going to hunting a job.
	all	%	58.06	6.45	24.73	9.68	1.08	32.53
		#	54/93	6/93	23/93	9/93	1/93	27/83
parental income	less than 5 million yen	%	68.75	6.25	21.88	3.13	-	38.71
		#	22/32	2/32	7/32	1/32	-	12/31
	5 million and over	%	50	7.89	21.05	18.42	2.63	26.67
		#	19/38	3/38	8/38	7/38	1/38	8/30

**Table 15 The reason of choosing the company**

	all	Parental Income less than 5 million yen	Parental Income 5 million and over
	Percent	Percent	Percent
Because a higher salary or wage was offered to me.	(17.65)	(24.14)	(16.67)
Because employees enjoyed more holidays and a longer vacation there.	(17.16)	(19.54)	(16.67)
Because employees had less working hours and shorter overtime work there, working hours were flexibly scheduled there.	(18.75)	(26.92)	(10.53)
Because the company or organization was closer to my house or the commuting distance was shorter.	(29.41)	(27.59)	(30.00)
Because employees were little or not transferred to other offices.	(2.45)	(3.45)	(1.67)
Because its activities were so stable that I had no fear of unemployment there.	(13.24)	(17.24)	(8.33)
I was pregnant and took care of my health	(9.31)	(9.20)	(10.00)
Because I expected that I might continue to work there even if I would be married, I expected that I might continue to work there after my childbirth.	(6.25)	(0.00)	(10.53)
Because I expected that I might learn a skill there.	(22.55)	(21.84)	(28.33)
Because I anticipated that I might make effective use of my abilities.	(26.47)	(26.44)	(31.67)
Because I was interested in the work offered to me.	(38.24)	(35.63)	(46.67)
Other	(15.20)	(12.64)	(18.33)
	total=204	total=87	total=60

**Table. 16 The Parental Income Effect on Financial Transfer**

Dependent Variable : Transfer Dummy(have an allowance=1, otherwise=0)	Pooling Estimate(Probit)				Panel Estimate(Probit,Random Effect)			
	dy/dx	Std. Err.	z		dy/dx	Std. Err.	z	
Income(1million, t-1)	-0.085	0.082	-3.42	***	-0.378	0.140	-2.70	***
Parental Income(1million, t-1)	0.018	0.217	2.73	***	0.125	0.042	3.01	***
Constant	-0.366	0.353	-1.04		-0.951	-0.578	-1.64	*
Year Dummy		Yes				Yes		
Number of obs		255				255		
Number of groups		-				164		
Wald chi2(10)		21.08				16.52		
Prob > chi2		0.0123				0.0568		
Pseudo R2		0.0773				-		
Log (pseudo)likelihood		-133.56				-122.65		
Likelihood-ratio test of rho=0: chibar2(01)		-				21.81		
Prob >= chibar2		-				0.000		
Dependent Variable : Account of Transfer	Pooling Estimate(Tobit)				Panel Estimate(Tobit, Random Effect)			
	dy/dx	Std. Err.	z		dy/dx	Std. Err.	z	
Income(1million, t-1)	-8.543	2.465	-3.47	***	-5.067	1.5237	-3.33	***
Parental Income(1million, t-1)	2.341	0.639	3.66	***	1.540	0.399	3.86	***
Constant	-20.415	9.836	-2.08	**	-6.264	6.067	-1.03	
Year Dummy		Yes				Yes		
Number of obs		255				255		
Number of groups		-				164		
Uncensored obs		65				65		
LR chi^2		27.62						
Prob > chi^2		0.0011						
Pseudo R2		0.0346						
Log likelihood		-385.192				-560.099		
Wald chi^2		-				24.68		
Prob > chi^2		-				0.0033		

Note: \*\*\* : Significant at 1% level, \*\* : 5%level, \* : 10%level.

**Table17 Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
reemployment dummy	259	0.687	0.465	0	1
qualification dummy	259	0.521	0.501	0	1
the jobless period	259	22.178	34.701	0	199
active opening rate	259	0.671	0.234	0.36	1.4
insurance	259	0.220	0.415	0	1
education background (junior high school)	259	0.042	0.202	0	1
education background (high school)	259	0.371	0.484	0	1
education background (vocational college)	259	0.112	0.316	0	1
education background (junior college)	259	0.278	0.449	0	1
education background (university)	259	0.197	0.398	0	1
Top14 city	259	0.363	0.482	0	1
other city	259	0.544	0.499	0	1
towns and villages	259	0.093	0.291	0	1
age	259	30.645	4.637	25	43
parental income(10,000yen)	259	555.994	406.538	124.5	1500
the eligibility dummy	259	0.421	0.495	0	1
the eldest child	259	0.718	0.451	0	1
single child	259	0.490	0.501	0	1
the eldest child/having only female sibling	259	0.502	0.501	0	1
pocket money(10,000yen)	259	4.201	12.660	0	120

**Table18 The Re-employment Function(IV Probit : ML)**

	(1)				(2)				(3)				(4)			
	dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z	
Parental Income(1 million)	-0.080	0.046	-5.75	***	-0.074	0.056	-4.55	***	-0.081	0.045	-5.9	***	-0.078	0.047	-5.79	***
eldest child					-0.083	0.362	-0.84									
single child									0.044	0.214	0.68					
no male sibling													-0.177	0.228	-2.65	***
qualification	0.059	0.250	0.77		0.065	0.255	0.87		0.057	0.250	0.74		0.052	0.249	0.71	
jobless period	-0.017	0.023	-2.34	**	-0.017	0.026	-2.27	**	-0.017	0.023	-2.34	**	-0.016	0.023	-2.3	**
active opening rate	0.438	0.623	2.29	**	0.413	0.633	2.24	**	0.446	0.618	2.36	**	0.470	0.654	2.47	**
insurance	0.042	0.355	0.4		0.058	0.387	0.55		0.044	0.356	0.41		0.053	0.359	0.53	
junior high school	0.037	0.427	0.29		-0.021	0.515	-0.13		0.052	0.419	0.44		0.093	0.459	0.82	
high school																
vocational college	0.248	0.467	2.42	**	0.244	0.515	2.39	**	0.260	0.462	2.64	***	0.248	0.485	2.63	***
junior college	0.400	0.463	4.39	***	0.389	0.519	4.15	***	0.393	0.456	4.36	***	0.379	0.465	4.46	***
university	0.332	0.347	4.27	***	0.322	0.357	4.36	***	0.333	0.342	4.38	***	0.313	0.355	4.24	***
Top14 city	-0.285	0.327	-2.66	***	-0.291	0.358	-2.58	***	-0.286	0.325	-2.68	***	-0.246	0.324	-2.42	**
other city																
towns and villages	0.188	0.360	2.24	**	0.182	0.382	2.24	**	0.174	0.356	2.05	**	0.152	0.369	1.8	*
age	0.083	0.354	0.76		0.085	0.385	0.76		0.096	0.346	0.91		0.083	0.350	0.82	
age square	-0.002	0.005	-0.94		-0.002	0.006	-0.89		-0.002	0.005	-1.1		-0.002	0.005	-0.96	
constant	-1.731	5.634	-0.31		-1.926	6.118	-0.31		-2.516	5.489	-0.46		-1.946	5.577	-0.35	
Year Dummy		Yes				Yes				Yes				Yes		
Wald chi2		160.66				142.79				161.22				144.58		
Prob > chi2		0.00				0.00				0.00				0.00		
Log pseudolikelihood		-19820.28				-19813.3				-19815				-19785		
Wald test of exogeneity:																
chi2(1)		4.88				3.13				5.1				4.7		
Prob > chi2		0.0272				0.077				0.024				0.0302		
Number of obs		259				259				259				259		

Note: \*\*\* : Significant at 1% level, \*\* : 5%level, \* : 10%level.

## Appendix Table1 The ReEmployment Function(Pooled Probit 1)

	(1)				(2)				(3)				(4)			
	Robust		z		Robust		z		Robust		z		Robust		z	
dy/dx	Std. Err.	dy/dx			Std. Err.	dy/dx			Std. Err.	dy/dx			Std. Err.	dy/dx		
Parental Income(1 million)	-0.028	0.036	-2.88	***	-0.025	0.037	-2.78	***	-0.028	0.037	-2.89	***	-0.028	0.038	-3.00	***
eldest child					-0.129	0.319	-1.88	*								
single child									0.065	0.253	0.98					
no male sibling													-0.141	0.261	-2.18	**
qualification	0.003	0.277	0.04		0.024	0.283	0.34		-0.002	0.277	-0.03		-0.001	0.281	-0.01	
jobless period	-0.023	0.020	-4.30	***	-0.021	0.020	-4.20	***	-0.023	0.020	-4.36	***	-0.021	0.021	-4.16	***
active opening ratio	0.416	0.740	2.14	**	0.366	0.739	2.00	**	0.430	0.725	2.27	**	0.438	0.767	2.36	**
insurance	0.089	0.334	1.12		0.100	0.338	1.38		0.089	0.342	1.11		0.091	0.334	1.28	
junior high school	-0.001	0.503	-0.01		-0.108	0.523	-0.71		0.022	0.502	0.18		0.050	0.535	0.43	
high school																
vocational college	0.220	0.414	3.12	***	0.214	0.443	3.18	***	0.227	0.396	3.50	***	0.212	0.445	3.29	***
junior college	0.356	0.449	4.98	***	0.342	0.461	5.07	***	0.347	0.445	4.92	***	0.329	0.473	4.84	***
university	0.258	0.413	3.25	***	0.253	0.401	3.61	***	0.257	0.407	3.33	***	0.238	0.410	3.36	***
Top14 city	-0.276	0.306	-3.08	***	-0.281	0.308	-3.25	***	-0.273	0.307	-3.06	***	-0.242	0.305	-2.91	***
other city																
towns and villages	0.143	0.484	1.49		0.140	0.491	1.59		0.126	0.481	1.28		0.108	0.494	1.15	
age	0.072	0.426	0.64		0.075	0.457	0.66		0.082	0.424	0.74		0.069	0.438	0.66	
age square	-0.001	0.007	-0.70		-0.001	0.007	-0.69		-0.001	0.007	-0.81		-0.001	0.007	-0.69	
constant ( coefficient)	-2.572	6.701	-0.38		-2.803	7.189	-0.39		-3.383	6.649	-0.51		-2.786	6.882	-0.40	
Year Dummy		Yes				Yes				Yes				Yes		
Wald chi2		83.50				80.37				86.95				77.05		
Prob > chi2		0.00				0.000				0.000				0.000		
Pseudo R^2		0.67				0.6745				0.6692				0.677		
Log pseudolikelihood		-49.05				-47.98				-48.75				-47.61		
Number of obs		259				259				259				259		

Note: \*\*\* : Significant at 1% level, \*\* : 5% level, \* : 10% level.



## Appendix Table2 The ReEmployment Function(Pooled Probit 2)

	(1)				(2)				(3)				(4)			
	dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z		dy/dx	Robust Std. Err.	z	
Pocket Money(10,000yen)	-0.007	0.009	-2.91	***	-0.006	0.009	-2.74	***	-0.007	0.009	-2.80	***	-0.007	0.009	-2.96	***
eldest child					-0.145	0.330	-1.99	**								
single child									0.051	0.243	0.76					
no male sibling													-0.132	0.278	-1.78	*
qualificationed	-0.044	0.296	-0.54		-0.016	0.301	-0.2		-0.047	0.293	-0.59		-0.057	0.309	-0.71	
jobless period	-0.023	0.023	-3.7	***	-0.021	0.023	-3.53	***	-0.023	0.022	-3.73	***	-0.022	0.023	-3.61	***
active opening ratio	0.481	0.747	2.34	**	0.421	0.756	2.18	**	0.494	0.736	2.44	**	0.503	0.755	2.53	**
insurance	0.097	0.283	1.39		0.111	0.287	1.74	*	0.096	0.288	1.35		0.097	0.282	1.48	
junior high school	-0.060	0.499	-0.41		-0.194	0.520	-1.16		-0.036	0.502	-0.25		-0.007	0.521	-0.05	
high school																
vocational college	0.195	0.351	2.78	***	0.189	0.376	2.85	***	0.201	0.331	3.09	***	0.197	0.357	3.03	***
junior college	0.341	0.503	3.87	***	0.327	0.509	4.05	***	0.335	0.488	3.88	***	0.324	0.527	3.69	***
university	0.231	0.366	2.95	***	0.231	0.357	3.38	***	0.230	0.362	2.97	***	0.219	0.353	3.05	***
Top14 city	-0.255	0.295	-2.88	***	-0.268	0.307	-3.04	***	-0.251	0.293	-2.85	***	-0.222	0.286	-2.69	***
other city																
towns and villages	0.163	0.471	1.72	*	0.158	0.487	1.82	*	0.152	0.454	1.62		0.139	0.465	1.49	
age	0.047	0.414	0.41		0.053	0.452	0.46		0.052	0.408	0.46		0.045	0.427	0.4	
age square	-0.001	0.006	-0.45		-0.001	0.007	-0.46		-0.001	0.006	-0.5		-0.001	0.007	-0.41	
constant ( coefficient)	-1.749	6.547	-0.27		-1.999	7.113	-0.28		-2.146	6.449	-0.33		-1.794	6.749	-0.27	
Year Dummy		Yes				Yes				Yes				Yes		
Wald chi2		59.49				58.29				60.07				57.59		
Prob > chi2		0.00				0.000				0.000				0.000		
Pseudo R^2		0.66				0.6704				0.663				0.6696		
Log pseudolikelihood		-49.85				-48.59				-49.68				-48.71		
Number of obs		259				259				259				259		

Note: \*\*\* : Significant at 1% level, \*\* : 5%level, \* : 10%level.

## Appendix Table3 Re-Employment Function (Cox Proportional Hazard 1)

	(1)			(2)			(3)			(4)		
	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z
Parent Income(1million)	1.000	0.000	0.17	1.000	0.000	0.17	1.000	0.000	0.22	1.000	0.000	0.22
eldest child				0.979	0.249	-0.08						
single child							1.261	0.268	1.09			
no male sibling										0.667	0.156	-1.74 *
qualificationed	1.919	0.456	2.74 ***	1.922	0.458	2.74 ***	1.921	0.461	2.72 ***	1.928	0.457	2.77 ***
active opening ratio	2.816	1.462	1.99 **	2.804	1.462	1.98 **	3.047	1.591	2.13 **	3.638	1.965	2.39 **
insurance	0.620	0.169	-1.76 *	0.620	0.169	-1.75 *	0.634	0.172	-1.68 *	0.618	0.168	-1.77 *
junior high school	0.844	0.528	-0.27	0.833	0.538	-0.28	0.944	0.599	-0.09	1.127	0.716	0.19
high school												
vocational college	2.470	0.824	2.71 ***	2.463	0.825	2.69 ***	2.625	0.892	2.84 ***	2.550	0.851	2.80 ***
junior college	2.668	0.804	3.26 ***	2.664	0.805	3.24 ***	2.673	0.799	3.29 ***	2.999	0.923	3.57 ***
university	1.672	0.533	1.61	1.676	0.537	1.61	1.729	0.549	1.72 *	1.719	0.549	1.70 *
Top14 city	0.531	0.138	-2.44 **	0.530	0.138	-2.44 **	0.550	0.143	-2.29 **	0.559	0.145	-2.24 **
other city												
towns and villages	1.513	0.489	1.28	1.511	0.490	1.27	1.486	0.479	1.23	1.451	0.471	1.15
age	1.951	0.887	1.47	1.949	0.887	1.47	1.943	0.891	1.45	1.768	0.815	1.24
age square	0.989	0.007	-1.48	0.989	0.007	-1.48	0.989	0.007	-1.47	0.991	0.008	-1.23
Year Dummy		yes			yes			yes			yes	
Log likelihood		-431.991			-431.987			-431.391			-430.452	
LR chi^2		41.11			41.11			42.31			44.18	
Prob >= chi^2		0.0023			0.0036			0.0025			0.0014	
Number of obs		167			167			167			167	

Note: \*\*\* : Significant at 1% level, \*\* : 5%level, \* : 10%level.

## Appendix Table4 Re-Employment Function (Cox Proportional Hazard 2)

	(1)			(2)			(3)			(4)		
	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z	Haz.Ratio	Std. Err.	z
Pocket money(10,000yen)	0.974	0.014	-1.87 *	0.974	0.014	-1.88 *	0.974	0.014	-1.85 *	0.972	0.013	-2.07 **
eldest child				1.071	0.273	0.27						
single child							1.241	0.262	1.02			
no male sibling										0.597	0.144	-2.14 **
qualified	1.819	0.436	2.5 **	1.811	0.435	2.47 **	1.816	0.439	2.47 **	1.853	0.442	2.59 ***
active opening ratio	3.437	1.794	2.37 **	3.490	1.835	2.38 **	3.666	1.920	2.48 **	4.779	2.589	2.89 ***
insurance	0.607	0.167	-1.82 *	0.607	0.166	-1.83 *	0.622	0.170	-1.74 *	0.608	0.166	-1.82 *
junior high school	0.803	0.494	-0.36	0.841	0.536	-0.27	0.893	0.557	-0.18	1.164	0.729	0.24
high school												
vocational college	2.318	0.771	2.53 **	2.333	0.778	2.54 **	2.450	0.829	2.65 ***	2.425	0.809	2.65 ***
junior college	2.523	0.749	3.12 ***	2.534	0.752	3.13 ***	2.544	0.751	3.16 ***	2.944	0.898	3.54 ***
university	1.761	0.533	1.87 *	1.747	0.531	1.84 *	1.820	0.552	1.97 **	1.913	0.585	2.12 **
Top14 city	0.579	0.150	-2.1 **	0.583	0.152	-2.07 **	0.597	0.155	-1.98 **	0.645	0.170	-1.67 *
other city												
towns and villages	1.585	0.516	1.42	1.597	0.520	1.44	1.549	0.503	1.35	1.525	0.496	1.3
age	1.878	0.861	1.37	1.881	0.864	1.38	1.893	0.876	1.38	1.607	0.755	1.01
age square	0.989	0.007	-1.42	0.989	0.007	-1.43	0.989	0.008	-1.43	0.992	0.008	-1.05
Year Dummy		yes			yes			yes			yes	
Log likelihood		-428.902			-428.866			-428.378			-426.542	
LR chi^2		47.28			47.36			48.33			52	
Prob >= chi^2		0.0003			0.0005			0.0004			0.0001	
Number of obs		167			167			167			167	

Note: \*\*\* : Significant at 1% level, \*\* : 5%level, \* : 10%level.