Discussion Paper Series

No.218

Trends in Worker Displacement Penalties in Japan: 1991-2005

Michael Bognanno
Ryo Kambayashi

July 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/

Trends in Worker Displacement Penalties in Japan: 1991-2005

Michael Bognanno* and Ryo Kambayashi**

Draft: July 2007

ABSTRACT

We examine the period from 1991 to 2005 to document the effects of a changing Japanese labor market on trends in the cost of job change. During this period, job change penalties and the extent to which they were age-related grew. Evidence is also found of a diminishing specificity in human capital (in industry, occupation and firm size) for job changers in the Japanese labor market. As might be expected, older workers and workers leaving the largest firms suffered the largest wage losses from job change. Older workers were also harmed more by involuntary job separations. In percentage terms, young females have larger wage losses than young males but older females have smaller losses than older males. This pattern is masked in considering only the overall effect of gender on the cost of job change.

Theme: Microeconomics of unemployment
Keywords: Displacement
JEL Classification: J31, J41, J63, J6

*Temple University – Department of Economics; IZA
869 Ritter Annex (004-00), 1301 Cecil B. Moore Ave., Philadelphia, PA 19122, USA
E-mail: bognanno@temple.edu

**Institute of Economic Research, Hitotsubashi University
2-1 Naka, Kunitachi, Tokyo, 186-8603, JAPAN
E-mail: kambayas@ier.hit-u.ac.jp

1. Introduction

The Japanese labor market in the 1990s was one of both change and continuity. While the prolonged recession in Japan had an impact on measurable aspects of the labor market, including rising unemployment, a gradual reduction in training expenditures[1] and shifting employment shares across industries, scholars argue that the basic characteristics of the employment system did not change.[2] This paper examines one aspect of the effect of the changes in the labor market on workers, namely, trends in job displacement penalties. A second question addressed is whether evidence can be found for human capital that is firm, industry, occupation or career specific and whether trends in these can be identified in light of diminishing training expenditures at the firm level.

There are reasons to believe changes in job displacement penalties were taking place during the period under consideration. A rising level of unemployment presumably increases the cost of involuntary job change as continuously employed workers are somewhat shielded from conditions in the outside labor market relative to those who must find new employment. This is especially true in Japan where internal labor markets are particularly important and pay has been traditionally more determined by seniority and individual qualifications than by the market pay rate of the job. At the same time, falling job training expenditures should have the opposite effect as workers lose less firm specific human capital upon job change. The consequences of the changes taking place in the labor market on job displacement penalties in the world's second largest economy have been the subject of very little investigation.

---

[1] Japanese firms reduced training expenditures during the 1990s. The share of training expenditures in total labor cost declined from 0.36% in 1991 to 0.28% in 2002. However, the average share during 1980s was approximately 0.30%. Therefore, the decline in 1990s might be interpreted as the return to previous levels. [Ohki (2003) figure 2, originally from Survey on Working Condition, MHLW.]

[2] Rebick [2005] argues that dismissals that occurred during Japan's post-bubble period economic slump did not represent a departure from traditional employment practices. Furthermore, employment up to the age of mandatory retirement for regular employees in the primary sector (mainly men in full-time employment at medium and large firms) still exists though it never characterized the careers of most workers. Kato [2001] also argues against the notion of a substantial change in regards to lifetime employment. To cope with the difficult economic climate, Rebick cites firm adaptations including an increase in the importance of lower cost non-standard employment, including part-time and contract work, and more of an individualistic approach to human resource management, including performance pay.

A worker's return to firm tenure, often interpreted as a payment for the accumulation of firm specific human capital, has long been observed in wage equations. The results of some recent papers call into question whether specific capital accrues from firm tenure, as opposed to industry, occupation or career tenure. The increase in the cost of job displacement from industry change has been noted in several papers.[3] Neal (1995) argues that previous studies on the returns to experience have attributed returns to firm specific capital while overlooking the important effects of industry specific capital. Parent (2000) also finds wage profiles are more dependent on industry specific human capital than firm specific human capital. More recently, Kambourov and Manovskii (2005) note the importance of occupation specific human capital. They find returns to occupational tenure to be substantial and, when accounted for, that returns to firm or industry tenure are of much less importance. Finally, with data from the Danish labor market, Munch (2006) discounts notions of firm, industry or occupational specific capital in favor of the idea that the capital workers gain is actually career specific where career change is defined as a change in both industry and occupation.

We examine the period from 1991 to 2005 to document the effects of a changing labor market on the cost of job change and the source of and trends in specific capital. During this period, job change penalties and the extent to which they were age related grew. Evidence is also found of a diminishing specificity in human capital (in industry, occupation and firm size) for job changers in the Japanese labor market occurring around 2000 that perhaps reflected the gradual reduction in on the job training expenditures. As might be expected, older workers and workers leaving the largest firms suffered the largest wage losses from job change. Older workers were also harmed more by involuntary job separations. Young females have larger wage losses than young males but older females have smaller losses than older males. This pattern yields little overall gender difference in the cost of job change.

Numerous studies have investigated job displacement penalties in the US labor market. Surveys of this literature were conducted by Hamermesh (1989), Fallick (1996) and Farber (1997). Estimates of US job displacement penalties are in the range of 15 to 40% [Topel 1993]. Larger penalties are associated with more firm and labor market experience, periods of higher unemployment and changing industry upon re-employment. Owing to the difficulty of obtaining data, studies of job displacement penalties in the Japanese labor market are quite scarce. Since

[3] For instance, see Podgursky and Swaim (1987), Addison and Portugal (1989), and Kletzer (1991).

the comprehensive study by Abe, Higuchi, Nakamura, Kuhn and Sweetman [2002], there has been no research with nationally representative data to establish how changes taking place in the Japanese labor market have affected the wage implications of job change. Abe et al. studied the effects of job change on wages that took place in 1995, a period of moderate GDP growth (2.4%) and unemployment (3.2%). We examine the survey data from the same source but over the period from 1991 through 2005.

Wage changes in this survey data are classified into five categories: over 30%, 10% to 30%, 10% to -10%, -10% to -30% and over -30%. When the following values are assigned to workers in each of the these categories, 30%, 15%, 0%, -15% and -30%, the results of Abe et al. indicate that, when all sources of job separation both voluntary and involuntary are grouped together, on average male and female workers benefited slightly from job change. For both genders, the consequence of job change was an increase in income of about 2.2%. The gains of young workers were partially offset by the losses of older workers, especially for men. When only involuntary job changes are considered and those transferred temporarily to other companies are excluded (the practice of *shukko*), the average male lost 4.3% and the average female gained .3%. The mean loss for men results from the losses of men 45 and over more than offsetting the gains of younger men. Nearly 28% of men 45 and over suffered wage losses of more than 30%. Abe at al. attribute the large losses for men over 55 to the traditional practice of mandatory retirement in Japan, followed by low paid or part-time work after retirement. Large wage reductions for older female job changers are much less frequent. This is suggested by Abe et al. to result because females are less often subject to mandatory retirement.

Using data from 2000 through 2003, Bognanno and Delgado [2005] find much larger job displacement penalties in Japan than Abe et al. They also find evidence of job displacement penalties that are strongly age-related, suggesting severe consequences for older workers losing jobs in the primary sector. However, their data includes only workers successfully re-employed through the services of a job placement firm. Because of the specialized sample, the generality of their results is unknown. A study with nationally representative data is necessary to substantiate whether job displacement penalties have grown larger over time and whether these penalties have become more strongly related to age.

Theory offers several explanations for greater job displacement penalties for older workers. Four potential sources of job displacement penalties include the loss of specific human capital, the loss of a superior job match, the loss of possible union or industry wage premiums, and the loss of seniority [Fallick 1996]. If specific human capital, job match quality and wage premiums are increasing in job tenure, older workers should have greater losses upon job displacement. Regarding specific human capital, Koike [1988] has stressed the significance of on the job training in Japan and Rebick [2005] notes that, in contrast to formal education, on the job training is harder for employees to portray for a new employer, thus making employment change more costly.

Another explanation follows Lazear's [1979] model of delayed payment contracts. It offers both an explanation of the institution of mandatory retirement and of why mandatory retirement might be followed by large wage losses for older workers with greater tenure. Workers in the model are motivated by a contract that pays them below their marginal product early in their firm tenure and more than their marginal product later. Worker motivation derives from the incentive to remain with the firm in order to collect the premium at the end of the contract. Workers separated from their firms late in their tenure, lose the amount that they earn above their marginal product when they face the outside labor market. Mandatory retirement in the model is a device to protect the firm from employees wishing to collect wages exceeding their marginal products beyond the anticipated retirement date.

Lazear's model may be particularly applicable in Japan for a couple of reasons. First, mandatory retirement is both legal and prevalent [Clark and Ogawa, 1992]. As of 2002, almost all firms had mandatory retirement [JILPT, 2005, p.53, Table 3-27]. Second, relative to the US and the OECD, firm tenure in Japan is longer [Hashimoto and Raisian, 1985], especially for men [Rebick]. Long tenure provides a basis from which delayed payment contracts are feasible.

In support of the operation of delayed payment contracts in Japan, Clark and Ogawa [1992] found that earnings profiles were steeper in firms with earlier ages of mandatory retirement. More support for the model comes from the observation that workers reemployed by their firm after mandatory retirement typically take wage reductions of 50-70% [Rebick]. That workers accept such reductions may indicate that they have little opportunity to maintain their prior earnings level in the outside labor market and lends credibility to the notion that they were receiving wages in excess of their marginal products prior to mandatory retirement. Additionally, Japanese firms provide workers a substantial payment upon retirement. The amount of this payment is heavily reduced should separation occur for workers with little tenure, for workers who voluntarily quit or for workers who are dismissed.[4]

2. Employment Trend Survey Micro data: 1991-2005

The Ministry of Health, Labor and Welfare has been conducting the Employment Trend Survey twice a year at the end of June and at the end of December since 1964. The purpose of the survey is to observe labor mobility between regions, industries, establishment sizes and occupations. The survey encompasses 14,000 establishments with five or more regular employees sampled from all industries except Agriculture, Forestry and Fisheries, domestic services, educational services, and services by foreign governments and international agencies.[5] Following Abe et al., because the labor mobility in the public sector is so different from that in private sector, public sector employees have been deleted from the sample analyzed. We use the Employment Trend Survey micro-data with the permission of the Economic and Social Research Institute (ESRI), a Cabinet Office in the Japanese government.

An average of 83,316 newly hired workers per year were sampled in the establishments surveyed in the years from 1991 to 2005. Newly hired workers are separated into three categories: (1) school leavers (graduates in the survey year); (2) unemployed and inexperienced (those having been unemployed more than one year or those in their first job); (3) job changers (the focus of this paper). Only job changers have information collected about their previous employment and the wage changes resulting from job change. From the overall sample of newly hired workers from 1991 to 2005, totaling 1,249,735 workers, 661,560 are job changers. From this group, 562,844 job changers have relatively complete information. Table 1 provides sample means for the variables used in this analysis.

The survey collects categorical information in regards to wage change, age, firm size, educational attainment and cause of job separation. The wage change upon reemployment is categorized as a loss of 30% or greater (coded as -2), a loss of 10% to 30% (coded as -1), between a 10% loss and a 10% gain (coded as 0), a gain of 10% to 30% (coded as 1) and a gain of 30% or more (coded as 2). Age is provided in seven five year increments and includes those

[4] On average, a 40-year-tenure worker can receive 27.3 times as much as 3-year-tenure worker. (Statistics and Information Department, Minister's Secretariat, Ministry of Health, Labour and Welfare. "2003 Survey of Employment Management – Retirement Management 2003," table 7.

[5] Since 2003, educational services were included in the Employment Trend Survey. However, for consistency with prior years, we excluded this industry.

19 and under and 65 and over to form nine categories in total. Present firm size is divided into five categories (5-29, 30-99, 100-299, 300-999, 1000+). Previous firm size is divided into seven categories (public organization, 1-4, 5-29, 30-99, 100-299, 300-999, 1000+). Education is divided into four categories by graduation level (junior high, high school, junior college, university).

The cause of job separation is classified into one of eight categories: (1) job dissatisfaction; (2) bad human relations in the firm; (3) concern over the future of firm; (4) dissatisfaction over compensation; (5) dissatisfaction with working time and/or number of holidays; (6) marriage, maternity or family care; (7) mandatory retirement or dismissal; (8) other. We combine these categories into either voluntary or involuntary job separations. Categories 1–6 and 8 denote job separations initiated by the workers and are deemed "voluntary." Mandatory retirement and dismissals are coded as "involuntary."[6]

"Job displacement" in the US context has been defined as involuntary job separation for reasons such as mass layoffs or plant closure and excluding firings for cause (Kletzer 1998). Those dismissed or subject mandatory retirement in their previous job, workers that we classify as involuntarily separated from their jobs, do not exactly fit this definition for displaced workers. In these data, the various reasons for dismissal cannot be separated from one another. Reasons for dismissal include plant closings, layoffs and worker misconduct. We contend that, because Japanese labor law makes dismissals for misconduct difficult, the bulk of dismissals result from plant closings and layoffs due to financial difficulties faced by the firm.

While mandatory retirement is not a feature of the US labor market, workers released for this reason fit within the displaced worker definition as they found re-employment subsequent to mandatory retirement as a condition of entering our survey data, and, hence, would presumably have remained in their prior job if allowed. In any case, those subject to mandatory retirement are not specifically coded as such and no way to precisely identify them on the basis of age exists because the age of mandatory retirement varied across industry and over time. Despite the legal invalidation of mandatory retirement prior to the age of sixty in 1994, the

[6] These categories that define job separations in our data do not match exactly with the reasons for job separation listed in table 2 that come from a different source and are not tabulated from our data.

decline in firms with a mandatory retirement age below sixty adjusted gradually from 20% in 1994 to 11.7% in 1997 and 0.8% in 2000.[7]

Summary Statistics

Table 1 provides means for the numerous binary variables available in these data. Of job changers in the sample, 40% are female and 17% are subject to involuntary job change. Defining career change as a change of both industry and occupation, 26% of workers change careers, while 25% change only in industry and 7% change only in occupation. In terms of working hours, 12% of workers are part-time both before and after job change, 7% move from part-time to full-time and 7% move from full-time to part-time. While 71% of job changers move to a firm in a different size category, 54% move to larger firms.

Table 2 provides reasons for job separations by year and gender. A trend toward more involuntary separations for both males and females is clearly evident. Involuntary separations peak in the period from 1998-2002, the same period in which unemployment peaked (see table 7 for labor market statistics). The primary source of involuntary job separation growth prior to the start of improvement in the labor market in 2003-04 was management convenience, akin to a layoff in the US. Increasing trends in temporary transfer to another company (shukko), contract expiration and mandatory retirement are also evident. It is interesting to note that marriage and childbirth are decreasing in importance as a source of job separation for females and nursing care is increasing. This makes sense in light of the falling rates of fertility and marriage and the increasing share of the elderly in the population.

Table 3 examines wages changes by year, age, and gender, initially pooling all sources of job loss and using the full sample, and then separately examines wages changes from involuntary job loss and temporary transfer to another company by age and gender. To summarize the wage changes across the five categories in table 3, we followed Abe et al. and assigned values of -30%, -15%, 0%, 15% and 30% respectively to the five categories to compute a rough mean wage change in the second to last column. While not exact as a mean wage

[7]The ratio of firms with a mandatory retirement age less than 60 according to the annual Employment Administration Survey (Koyo-kanri Chosa) is as follows: 36.1% in 1991; 29.2% in 1992; 23.4% in 1993; 20.0% in 1994; 15.9% in 1995; 14.2% in 1996; 11.7% in 1997; 9.8% in 1998; 6.7% in 1999; 0.8% in 2000; 0.8% in 2001; 1.0% in 2002.

change, it facilitates consideration of time trends, age relationships and comparisons across panels.

The first panel of table 3 displays a clear trend towards less favorable job separation outcomes for workers between 1991 and 2005, though there is evidence of slight improvement in 2004-05. The fall in workers with pay increases of 10% to 30% is marked. Whereas 31% of workers had job change outcomes resulting in wage increases of 10% to 30% in 1991, this fell to 12% by 2003 and then improved to 14% by 2005. Most of the decline in this category's share showed up as an increase among those with more neutral wages changes of between -10% to +10% and, to a lesser extent, as an increase among those with wage losses over 30%. Wage changes between -10% to +10% increased in share from 46% to 61% between 1991 and 2005. During the same period, those with wage losses over 30% increased in share from 5% to 8.4%. The increasing wage penalties depicted in table 3 coincided with unemployment rates that rose from 2.1% in 1991 to 5.4% in 2002 and then receded to 4.4% by 2005 (see table 7).

The second, third and fourth panels of table 3 clearly show that older workers face larger job change costs, but more so for males than for females. Large negative wage changes are more likely for young females than young males and older males than older females. The potential impact of mandatory retirement for older workers appears significant for both genders but more so for males. Restricting the sample to involuntary job separations results in larger job change costs for both genders but more so for males. Panels 5 and 7 show large percentages of males and females from 60-64 who suffer wage decreases of 30% or more. Of males in this age group who undergo involuntary change, 53% lose 30% or more in wages, the corresponding figures for females is 24%.

Temporary transfer to another company (shukko), displayed in panels 6 and 8 of table 3, have implications for wage changes overall that are similar to job changes from all sources in the full sample but some differences should be noted. There is much greater wage stability for workers undergoing shukko than is present for workers in the full sample in panels 3 and 4. Correspondingly, there is a reduction in the advantage of young workers over older workers that was clearly displayed in the full sample. However, even with temporary transfers, it is still the case that male workers over 55 are more likely to suffer significant wage reductions.

3. Factors Influencing Job Change Costs: Empirical Estimates

3.1 Econometric Model

The dependent variable in this study, wage change, is an ordered, discrete variable and a technique that recognizes both of these characteristics is necessary. We define y_i to represent the observed percentage change in the wage for worker *i* and estimate an ordered logit model.

$$(1) \qquad y_i = \begin{cases} -2 & \text{if } \%\Delta w \leq -30\% \\ -1 & \text{if } -30\% < \%\Delta w \leq -10\% \\ 0 & \text{if } -10\% < \%\Delta w \leq 10\% \\ 1 & \text{if } 10\% < \%\Delta w \leq 30\% \\ 2 & \text{if } 30\% < \%\Delta w \end{cases}$$

Presented as a latent variable model and defining y^* as a latent variable, the model is then

$$(2) \qquad y_i^* = \boldsymbol{x}_i\boldsymbol{\beta} + \varepsilon_i$$

$$(3) \qquad y_i = m \text{ if } \tau_{m+2} \leq y_i^* < \tau_{m+3} \text{ for } m = -2, -1, 0, 1, 2.$$

where y_i^* denotes the unobserved percentage change in the wage for individual *i*, $\boldsymbol{x}$ is a vector of indicator variables for worker characteristics and the characteristics of the worker's initial and subsequent firms and ε is a random error term assumed to have a logistic distribution. The observable y_i occurs in five ordinal categories (m) with cut points from τ_0 to τ_5, assuming $\tau_0 = -\infty$ and $\tau_5 = +\infty$. With a normalization of $\tau_1 = 0$, the following probabilities result:

$P(y_i = -2 \mid \boldsymbol{x}_i) = \exp(-\boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(-\boldsymbol{x}_i\boldsymbol{\beta})]$

$P(y_i = -1 \mid \boldsymbol{x}_i) = \exp(\tau_2 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_2 - \boldsymbol{x}_i\boldsymbol{\beta})] - \exp(\tau_1 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_1 - \boldsymbol{x}_i\boldsymbol{\beta})]$

$P(y_i = 0 \mid \boldsymbol{x}_i) = \exp(\tau_3 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_3 - \boldsymbol{x}_i\boldsymbol{\beta})] - \exp(\tau_2 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_2 - \boldsymbol{x}_i\boldsymbol{\beta})]$

$P(y_i = 1 \mid \boldsymbol{x}_i) = \exp(\tau_4 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_4 - \boldsymbol{x}_i\boldsymbol{\beta})] - \exp(\tau_3 - \boldsymbol{x}_i\boldsymbol{\beta})/[1 + \exp(\tau_3 - \boldsymbol{x}_i\boldsymbol{\beta})]$

$P(y_i = 2 \mid \boldsymbol{x}_i) = 1/[1 + \exp(\tau_4 - \boldsymbol{x}_i\boldsymbol{\beta})]$

The results of the ordered logit estimations are presented in tables 4 and 5. The specifications in tables 4 and 5 estimate the effects of individual characteristics (age, gender and education level), whether the termination was involuntary, and job characteristics in both the present and previous job (part-time status, firm size, industry and occupation) on job displacement penalties. The coefficient estimates may be interpreted as the marginal effect on the latent variable y^*. A positive coefficient in table 4 or 5 indicates an increase in the variable results in an increase the probability of a wage gain of 30% or more and decrease the probability of a wage loss of 30% or more. The direction of change for the interior wage change categories requires the computation of the marginal effects. Marginal effects are provided for one pooled estimation in table 5 but not for all of the estimations in tables 4 and 5.

The estimations in table 4 are performed separately for each year in all but the last column that pools the data. Its purpose is to document basic static results regarding the effects of age, gender, education, firm size, industry and occupation. Table 5 estimates are based on data pooled across the years 1991 to 2005. Table 5 focuses on key variables interacted with year dummy variables, the effect of changes in firm size, industry, occupation, career and employment status and differences that result when the sample is divided by age, particularly in regards to gender. To allow time trends to be clearly identified, the last column of table 5 uses interactions with a year trend variable in place of interactions with individual year dummy variables. Table 5A presents the marginal effects associated with the last column of table 5.

3.2 Basic Results

The results in table 4 suggest that in any given year, older workers suffer larger job change penalties than younger workers. This owes to the negative sign on age squared. No clear sign pattern emerges with respect to gender in table 4 and parameter estimates are insignificant in most years. The influence of gender on job change penalties receives more attention in table 5.

Workers with more education tend to have larger job change penalties relative to those with a junior high education. However, this pattern is not orderly as junior college graduates have larger penalties than college graduates do and, later in the sample period, table 4 shows college graduates to have outcomes not significantly different from junior high graduates. Statistically significant evidence of university graduates having worse wage change outcomes than junior high graduates do disappears in the mid-90s.

In terms of present employment, the results in table 4 suggest that better outcomes exist for those reemployed at larger firms. Coefficient estimates are positive and significant for firms with more than 300 employees relative to those with fewer than 30. The coefficients are more than twice as large for reemployment at firms of over 1000 employees. The benefits of finding reemployment at a larger firm are consistent with Rebick's finding that pay is 14% higher for males and 23% higher for females at firms with over 1000 employees in comparison to firms with 10 to 100 employees. Table 4 also implies that job loss penalties are the largest for workers finding jobs in the wholesale/retail/restaurant and service industries or administration and sales occupations.

In terms of previous employment, the results in table 4 suggest that workers leaving the mining and finance/insurance/real estate industries or managerial occupation fare worse than other job changers. In terms of firm size, only leaving a large firm with employment over 1000 carries a larger penalty than leaving a public organization. The smaller the previous firm, the more favorable is the wage change upon reemployment.

The part-time dummy is coded as a 1 when re-employment is part-time. Not surprisingly, those accepting part-time work have larger penalties, as do those involuntary separated from their previous employment. Table 4 also illustrates that workers leaving jobs that were previously part-time do increasingly well later in the sample.

3.3 Trends, Specific Capital, Gender and Age

Table 5 pools all of the sample years and in the center two columns provides separate estimates for those workers less than 35 years of age and those 35 years of age and over. We confine our discussion of table 5 primarily to the time trends results in columns 1 and 4, different notions of specific capital and the key differences between columns 2 and 3 that divide the sample by age.

Considering columns 1 and 4 of table 5 first, we see that the age-related job change penalty is increasing over time during the sample period. After controlling for age and age-squared, the age-year interaction variables change from positive in the early sample years to generally negative in later years in column 1 and the age-year trend interaction variable is significantly negative in column 4, showing that job change penalties are increasingly age-related. This supports the results of Bognanno and Delgado that suggested increasingly large job loss penalties for older workers in Japan.

Interestingly, a comparison of the US and Japan in table 6 shows that the countries do not share the same trends in job loss penalties. We report Farber's [2003] results using the Displaced Worker Survey and tailor our sample and estimation to match his as closely as possible.[8] The base category for the US is white males from 20-24 with 12 years of education and less than one year of tenure. Given the base category, insignificant results for the age group

[8] Both samples are restricted to those between 20 and 64 and undergoing full-time to full-time job transitions. Rather than ordered logit, our estimates in table 6 are OLS to facilitate a comparison to Farber's estimates.

dummy variable of those 25-34 is not surprising. Those aged 35-44 in the US sample ending in 1993 lose 13% in earnings relative to the base category. In the later sample years for the US, this age category has results that are statistically insignificant, though the coefficients become positive and close to significant in 2001. Similarly, for US workers aged 45-54, job change penalties are significantly greater in the 1993 and 1995 samples but lose significance thereafter. For US workers aged 55-64, significantly negative effects are only evidenced in 1993 and 1995. They become insignificant and positive by 2001. There is no evidence of increasingly age-related job change penalties in the US, rather age-related penalties appear to decrease.

The base category for Japan is males from 20-24 with 12 years of education. Just as with the US, the dummy variable estimates for Japanese males 25-34 are insignificant. For all of the older age categories in Japan, workers have larger wage losses than those 20-24.[9] Moreover, an increasing trend in the job loss penalty for the oldest workers is evident. The job change penalty grows from 12.2% for workers 55-64 in 1993 relative to the base category to 15.5% by 2001. This contrasts with the US where workers 55-64 lost an additional 22.2% in earnings in 1993 relative to the base category but had no significant difference beginning in 1997 and continuing to 2001.

Table 5A reports the marginal effects corresponding to pooled estimates in column 4 of table 5. The interpretation of most of the marginal effects is straightforward. In the case of the marginal effect of age, ignoring the year trend, there are two terms to evaluate. First, recall that age in these data is categorical (1:under 19, 2: 20-24, 3: 25-29, 4: 30-34, 5: 35-44, 6: 45-54, 7: 55-59, 8: 60-64, 9: over 65) and that increasing age by one unit is a change of 5 years. To get an idea of the size of the effect of age on wage outcomes from job change, we consider moving from the sample mean in age (4.4 ≈ 32 years) to one unit higher (5.4 ≈ 37 years) and approximate through a linear extrapolation of the marginal effects on age and age^2. The first order marginal effect of age is simply -0.78% and the second order marginal effect of age is (0.18%)($5.4^2 - 4.4^2$). Combining these two effects, we compute that the effect of ageing five years from the sample mean is to increase the probability of losing 30% or more in wages by about 1.0%. Similarly computed, it increases the probability of a wage loss of 10-30% by 1.7%,

---

[9] Because we employ a categorical wage change variable, interpretation of our coefficients requires minor calculation. For example in the period 1992-93 for workers aged 55-64 the parameter is -0.810, assuming a 15% wage change between categories, the job change penalty for these workers is 12.2% (-0.801x15%) above the base category.

a wage change of -10 to 10% by 0.2%, a wage gain of 10-30% by -2.3% and a wage gain of 30% or more by -0.6%. Due to the positive sign on the coefficient of age^2, the increase in the probability of losing 30% in wages from a unit increase in age grows larger with the starting age level.

To consider whether human capital is industry, occupation or career specific, we code three variables for workers changing only their industry, changing only their occupation or changing their career. A career change constitutes a change of both industry and occupation. The omitted category is workers remaining in the same industry and occupation. First, it is clear that workers remaining in the same industry and occupation fair better than workers changing in one or both dimensions. Second, penalties from changing industry or occupation still exist after separately accounting for career changes. In terms of the marginal effects, table 5A shows that the probability of losing 30% or more in wages is increased by 1.3% for industry change alone, 2.4% for occupational change alone and 1.2% for career change.

Our results are not in accord with those of Munch [2006] who found support for career specific human capital using Danish data. The penalty for changing careers in our data is less than the penalty for changing only one's industry or occupation. Occupation change carries the most significant penalty in the Japanese labor market. This finding is confirmed in the simple summary statistics in table 8 that show the largest wage declines occur after occupation change and a neutral effect for career change. Interestingly, though suffering the least in terms of wage changes, career changers had the longest average unemployment duration. The effect of unemployment duration on wage change is not necessarily negative since more time spent in job search could be beneficial to wages. Table 8 also shows the rate of involuntary quits to be lower among career changers, perhaps explaining part of why career changers fare better in wage changes. Even controlling for involuntary separation in table 5, career changers suffered less than occupation changers.

While industry change was initially disadvantageous as indicated by the negative dummy variable in both columns 1 and 4 of table 5, the penalty associated with these changes was diminishing. It disappears entirely in 2001 and industry change is actually beneficial in 2005. Occupation change exhibits a pattern similar to industry change in that it increases wage losses and the losses are diminishing during the sample period. However, unlike industry change, the penalty from occupational change does not vanish entirely even by the end of the sample.

There are two forces potentially related to the fall in the cost of industry change. First, wage differentials between industries were declining as displayed in figure 3. This would at least reduce the cost of industry change for those leaving jobs in higher paid industries. Second, regarding the falling cost of both industry and occupation change, it is possible that industry-specific and occupation-specific human capital diminished in importance due to falling training expenditures at the firm level that took place during the 1990s (see footnote 1).

Table 5A shows the marginal effects of changing firm size. The probability of losing 30% or more in wages is increased 3.5% by moving to a smaller new firm and diminished by 2.1% for moving to a new larger firm. However, the firm-size change cells in columns 1 and 4 of table 5 shows that firm size fell in importance during the sample period. The consequences of a change in firm size diminished both in the rewards of moving to a larger firm and in the penalties of moving to a smaller firm, suggesting a diminishment of the firm-size premium.

Changes in employment status are considered through three dummy variables in table 5. Workers losing full-time employment status are coded as ones for the "from full-time to part-time" dummy variable. Workers gaining full-time employment status are coded as ones for the "from part-time to full-time" dummy variable. Those workers who were initially employed part-time and remained part-time in subsequent employment are coded as ones for the "continuously part-time" dummy variable. The status omitted from this coding scheme represents those who retain full-time employment status through their job change. Naturally, the penalty from leaving full-time employment status is large. In table 5A, we see that the probability of a 30% wage drop increases by 22% for workers moving from full-time to part-time jobs. However, there is a weak positive trend diminishing this penalty. The substantial gain in moving from part-time to full-time employment grows slightly larger during the period. Those remaining in part-time status through job change have increasingly positive outcomes in wage changes.

The year dummy variables in the last panel of table 5 illustrate the rising overall job change costs during the sample. This rise is largely attributable to the increasingly negative effects on those 35 years of age and older. The slight reversal in overall penalties in column 1 in 2004-05 appears driven by better outcomes for workers under 35.

In columns 2 and 3 of table 5 that divide the sample by age, we consider the effects of gender, involuntary job change and changes in industry, occupation and career. In general, gender exerts more influence on wages in Japan than in other developed countries [Tachibanaki 1998] and the median weekly earnings ratio of female to male earnings in Japan (.64) is substantially lower than the OECD average (.78) or the US average (.76) [Blau and Kahn, 2000, p.92, table 3]. Although women earn less on average in Japan, they do not suffer more from job change. Overall, in these data, females in the pooled estimations in columns 1 and 4 have better outcomes than males in terms of the percentage wage change.

Columns 2 and 3 indicate that, while females under 35 have less favorable wage changes than males, females over 35 have more favorable wage changes than males. This pattern makes sense if male workers are more likely to be on delayed payment contracts than female workers are. Young female workers, earning close to their marginal product, may be harmed more by job loss relative to young males if males had accepted underpayment initially as part of a delayed payment contract. Older females fare better because older males are losing the premium paid towards the end of the delayed payment contract. This notion of a difference between males and females in terms of delayed payment contracts is supported by the fact that the influence of gender on pay grows with age in Japan. The earnings of full-time females aged 20-24 relative to males is .89, this drops to .60 for those aged 40-44 [Rebick]. There are other explanations for our finding besides males being on delayed payment contracts. If men receive more firm-specific training, it is possible that older males fare worse relative to females than younger males because of a greater loss of firm-specific capital.

Involuntary job change harms older workers more than younger workers. Columns 2 and 3 show that the coefficient on involuntary job change is substantially larger in absolute value for older workers than their younger counterparts. The greater cost imposed on older workers in terms of wage change would to some extent mitigated by a larger severance payment upon job separation.

Not surprisingly, as illustrated by the industry change dummy variable in columns 2 and 3, older workers finding reemployment in a different industry are harmed, while industry change has little discernable effect on the wage change of younger workers. This is reasonable since older workers lose more industry specific human capital than younger workers. The same pattern appears for occupation changes and career changes, though occupation changes do impose a penalty on younger workers.

3.5 Discussion

The analysis to this point raises two important questions. First, why are job change penalties becoming more age-related? Second, why are job change penalties growing? These questions are related in the sense that growing job change penalties for older workers during the period are contributing to, but do not fully explain, the growth in overall job change penalties.

Figure 1 is insightful in depicting the changing consequences of job loss for older workers. The figure plots age-wage profiles for newly hired workers and career workers who have all of their labor market experience within the same firm. These profiles are generated from estimations on cross-sectional micro data from 1993 and 2003 for regular workers in the private sector.[10] The age-wage profiles for career workers are virtually identical in 1993 and 2003 and diverge with age from the profiles of newly hired workers. The disparity in wages between career workers and the newly hired workers grows strongly with age. This is consistent with our estimates pointing to job loss penalties that increase with age.

While the profiles for career workers in 1993 and 2003 are similar, the slope of the wage profile for newly hired workers in 2003 fell significantly from the wage profile in 1993. As a result, the penalty for older job changers was increasing. This is also consistent with our finding in table 5 of an increasingly negative outcome for older workers during the sample period.

We can only speculate as to why older job changers were treated increasingly less favorably in the labor market. It may be that prior to Japan's long recession, firms could afford to honor the delayed payment contracts entered into by older workers at their prior firms. This is not profit-maximizing behavior on the part of the individual firm. We are suggesting firms held to a social contract and paid older newly hired workers above their marginal product, despite it being the previous employer who benefited from the underpayment earlier in the worker's career.

A second potential explanation is that technological change induced a loss of human capital for older workers relative to younger workers between 1993 and 2003. The effects of a loss in human capital for older workers would be felt by those changing jobs. Implicit contracts

[10] Kawaguchi and Kambayashi [2007] report these estimations from their analysis of the Basic Survey of Wage Structure. The estimations included controls for gender, educational level, age, age^2, firm size, industry and prefecture. The effect of age on wages is calculated and then standardized so that an 18-year-old worker has wages equal to one in each of the profiles. Career workers are those with firm tenure equal to their age minus the years required to attain their educational level.

would protect workers remaining in continuous employment. This explanation is consistent with wage profiles remaining the same for career workers but falling in slope for the newly hired workers in 2003. However, if the technological change was global, we are at a loss to explain why job change penalties were not also increasing in the US.

To explain the increasing trend in job displacement penalties remaining after accounting for the increasing penalties on older workers, we first examine the trends in basic labor market conditions. Figure 2 displays Japanese turnover rates. In the period from 1974 to 2005, the gross turnover rate fluctuates between 25 and 35% with no trend during the period.[11] Similarly, the inflow rate of job changers in the labor market fluctuates between 5 and 10% with no trend.[12] The increasing trend in overall job displacement penalties cannot be related to turnover rates in any readily apparent way.

Another avenue for investigation concerns the potential loss of specific capital. Did a larger percentage of workers lose specific capital during the sample period due to industry change? Table 7 shows that over the sample period there was very little change in the percentage of workers finding reemployment in the same industry and occupation. The percentage of workers changing industry fell by 0.3% between 1991 and 2005. In the same period, occupation changes increased 1.1%. These small changes were offset by a fall in career changes of 4.5%. The net effect is that 3.8% more workers undergoing job change remained in the same industry and occupation. There is no support for the argument that an increase in the percentage of job changers losing specific capital explains the increase in job displacement penalties.

If the about same percentage of workers remained in their industry and occupation through job change, was it the case that the penalties associated with industry change grew? Figure 3 displays two points. First, industry change penalties actually fell during the sample period. Second, wage differentials between industries were falling. Hence, increasing job displacement penalties do not appear to be driven by increasing penalties for changing industry. This point was also evident in table 5. Table 5 showed that the costs of changing industry and occupation diminished, as did the cost of going to a smaller firm upon reemployment.

[11] The gross turnover rate is the number of workers leaving employment and the number of workers entering employment divided by the total number of workers in the beginning of the year.

[12] The inflow rate of job changers is the number of workers entering employment from previous employment with unemployment duration of less than a year divided by the number of workers at the beginning of the year.

The only labor market conditions that we can point to in suggesting a reason for the increasing job change penalties is the rising unemployment rate and the slight increase in the percentage of involuntary job changes displayed in table 7.

4. Conclusion

Few studies of job displacement in the Japanese labor market appear in the literature. This is largely due to the difficulty of obtaining worker level data. We study a large national sample of workers to document basic trends regarding the wage implications of job change. In doing so, we uncover both anticipated and novel results.

Because of a worsening in the labor market conditions during the period studied, at least in terms of the unemployment rate, it is not surprising that workers changing jobs had increasingly less favorable outcomes between 1991 and 2005. Given the strong returns to seniority in Japan, it was also not surprising that older workers had larger job displacement penalties than younger workers. As well, the costs of changing industry, occupation and involuntary job separation were larger for older workers.

Other findings point to more nuanced changes taking place within the Japanese labor market in regards to the value assigned to workers changing jobs. Education does not provide a buffer against the cost of job change in Japan. The percentage wage losses of high school and junior college graduates exceeded those of junior high graduates. College graduates did not suffer larger losses later in the sample period but also were not significantly shielded from the costs of job change.

It is interesting to note that hidden in the small gender differences in job change penalties overall were larger penalties for young females in comparison with males and smaller penalties for older females. While the gender wage gap for younger females is smaller than for older females, younger females suffer comparatively more from job change. A potential explanation is that male workers accept delayed payment contracts that result in reduced job loss penalties for the young and larger penalties for the old.

The diminishing firm size wage premium suggests that the wage structures of larger and smaller firms may be gradually converging at least for newly hired workers. Falling industry and occupation change penalties could be the result of less specific human capital, perhaps reflecting a gradual decline in firm training expenditures. Career change carried a smaller cost than industry or occupation change alone, even with the longer unemployment spells associated with it. We find no evidence that human capital is more career specific than specific to occupation or industry as has been suggested recently in the literature.

The extent to which older workers suffered reduced wages from job change grew during the sample period. Correspondingly, there was a reduction in the return to age for those finding new employment in the Japanese labor market. We offered two hypotheses for these findings. First, the reluctance of firms to honor the delayed payment contracts that workers had entered into with their previous employers may have been increasing. Second, technological change may have eroded the human capital of older workers. The effects of this would be felt by the older workers needing to find new employment since continuously employed workers are shielded by the implicit contracts operating within the firm. Both of these hypotheses merit further investigation as we can say nothing conclusively about why older workers are receiving a lower return on their experience.

5. References

Abe, M., Higuchi, Y., Nakamura, M., Kuhn, P. and Sweetman, A., 2002. "Worker Displacement in Japan and Canada." In: Kuhn, P. J. (Ed.), Losing Work, Moving On: International Perspectives on Worker Displacement, Chapter 3. Upjohn Institute for Employment Research.

Addison, John T.; Portugal, Pedro, 1989. "On the Costs of Worker Displacement: The Case of Dissipated Firm-Specific Training Investments." *Southern Economic Journal*, 56, (1), 166 - 182.

Blau, Francine and Kahn, Lawrence, 2000. "Gender Differences in Pay," *The Journal of Economic Perspectives*, Vol. 14, No. 4. (Autumn, 2000), pp. 75-99.

Bognanno, Michael and Delgado, Lisa, 2005. "Job Displacement Penalties in Japan." Institute for the Study of Labor (IZA) Working Paper No. 1650. Forthcoming in *Research in Labor Economics*.

Clark, R. L. and Ogawa, N., 1992. "The Effect of Mandatory Retirement on Earnings Profiles in Japan," *Industrial and Labor Relations Review* 45:2, 258-266.

Fallick, B. C., 1996. "A Review of the Recent Empirical Literature on Displaced Workers," *Industrial and Labor Relations Review* 50:1, 5-16.

Farber, H. S., 1997. "The Changing Face of Job Loss in the United States, 1981-1995." *Brookings Papers on Economic Activity. Microeconomics*, 55-142.

Farber, H. S., 2003. "Job Loss in the United States, 1981-2001." Princeton University, Industrial Relations Section, Working Paper #471.

Hamermesh, D. S., 1989. "What Do We Know About Worker Displacement in the United States?" *Industrial Relations* 28(1): 51-59.

Hashimoto, M. and Raisian, J., 1985. "Employment Tenure and Earnings Profiles in Japan and the United States," *American Economic Review* 75:4, 721-735.

Japan Institute of Labor, Policy and Training, (2005). "Labor Situation in Japan and Analysis, 2004/2005," http://www.jil.go.jp/english/laborinfo/library/situation2004.htm

Kawaguchi, Daiji and Kambayashi, Ryo, (2007). "Age-Wage Profiles in Japan," Manuscript Hitotsubashi University.

Kambourov, Gueorgui and Manovskii, Iourii, 2005. "Occupational Specificity of Human Capital," Manuscript, University of Toronto.

Kato, T., 2001. "The End of Lifetime Employment in Japan?: Evidence from National Surveys and Field Research," *Journal of the Japanese and International Economies*. 15:4, 489-514.

Kletzer, Lori G., 1991. “Earnings after Job Displacement: Job Tenure, Industry, and Occupation.” In John T. Addison, ed. *Job Displacement: Consequences and Implications for Policy*. Ch. 4. Detroit, Mich.: Wayne State University Press.

Kletzer, Lori G., 1998. “Job Displacement,” *The Journal of Economics Perspectives*, Vol. 12, No. 1 (Winter), 115-136.

Koike, K., 1988. *Understanding Industrial Relations in Modern Japan*. London: Macmillan.

Munch, Jakob Roland, 2006. “Career Changes and the Loss of Human Capital,” Manuscript, University of Copenhagen.

Neal, Derek, 1995. “Industry-Specific Human Capital: Evidence from Displaced Workers Derek Neal,” *Journal of Labor Economics*, Vol. 13, No. 4, 653-677.

Parent, Daniel, 2000. “Industry-Specific Capital and the Wage Profile: Evidence from the National Longitudinal Survey of Youth and the Panel Study of Income Dynamics,” *Journal of Labor Economics*, Vol. 18, No. 2., 306-323.

Podgursky, Michael and Swaim, Paul, 1987. “Job Displacement and Earnings Loss: Evidence from the Displaced Worker Survey,” *Industrial and Labor Relations Review*, Vol. 41, No. 1, 17-29.

Rebick, Marcus, 2005. *The Japanese Employment System: Adapting to a New Economic Environment*, Oxford: Oxford University Press.

Tachibanaki, T., 1998. ‘Introduction to Wage Differentials: An International Comparison,’ in T. Tachibanaki (ed.), *Wage Differentials: An International Comparison*. London: Macmillan Press.

Topel, R., 1993. "What Have We Learned from Empirical Studies of Unemployment and Turnover?" *American Economic Review* 83:2, Papers and Proceedings of the Hundred and Fifth Annual Meeting of the American Economic Association, 110-11.

Table 1: Summary Statistics

Variable			N	Mean	
Wage change			562844	-0.013	-2: -30%, -1: -10%, 0: 0%, 1: +10%, 2: +30%
Age			562844	4.389	1:under 19, 2: 20-24, 3: 25-29, 4: 30-34, 5: 35-44, 6: 45-54, 7: 55-59, 8: 60-64, 9: over 65
Female			562844	0.395	1=female, 0=male
Graduation level		Junior high	562844	0.118	1=junior high, 0=other
		High school	562844	0.527	1=high school, 0=other
		Junior college	562844	0.155	1=junior college, 0=other
		University	562844	0.200	1=university, 0=other
Involuntary quit			562844	0.169	1=if reason of quit is mandatory retirement, dismissal or end of contract, 0=other.
Industry dummy variables	Present industry	Mining	562844	0.011	1=mining, 0=other
		Construction	562844	0.045	1=construction, 0=other
		Manufacturing	562844	0.475	1=manufacturing, 0=other
		Electricity/ gas	562844	0.010	1=electricity/ gas, 0=other
		Communication/ transportation	562844	0.058	1=communication/ transportation, 0=other
		Wholesale/ retail/ restaurants	562844	0.061	1=wholesale/ retail/ restaurants, 0=other
		Finance/ insurance	562844	0.024	1=finance/ insurance, 0=other
		Real estate	562844	0.023	1=real estate, 0=other
		Service	562844	0.293	1=service, 0=other
	Previous industry	Agriculture	562036	0.007	1=agriculture, 0=other
		Mining	562036	0.005	1=mining, 0=other
		Construction	562036	0.069	1=construction, 0=other
		Manufacturing	562036	0.333	1=manufacturing, 0=other
		Communication/ transportation	562036	0.071	1=communication/ transportation, 0=other
		Wholesale/ retail/ restaurants	562036	0.106	1=wholesale/ retail/ restaurants, 0=other
		Finance/ insurance	562036	0.047	1=finance/ insurance, 0=other
		Service	562036	0.236	1=service, 0=other
		Other	562036	0.126	Other
Only industry change dummy			562,036	0.250	1=change of industry & same occupation, 0=other
Occupation dummy variables	Present occupation	Technician	562844	0.143	1=technician, 0=other
		Manager	562844	0.054	1=manager, 0=other
		Administration	562844	0.174	1=administration, 0=other
		Sales	562844	0.063	1=sales, 0=other
		Service	562844	0.120	1=service, 0=other
		Communication/transportation	562844	0.042	1=communication/transportation, 0=other
		Production	562844	0.322	1=production, 0=other
		Others	562844	0.083	1=other, 0=occupation listed above
	Previous occupation	Technician	562751	0.148	1=technician, 0=other
		Manager	562751	0.064	1=manager, 0=other
		Administration	562751	0.158	1=administration, 0=other
		Sales	562751	0.100	1=sales, 0=other
		Service	562751	0.144	1=service, 0=other
		Communication/transportation	562751	0.043	1=communication/transportation, 0=other
		Production	562751	0.256	1=production, 0=other
		Other	562751	0.086	1=other, 0=occupation listed above
Only Occupational change dummy			562036	0.074	1=change of occupation & same industry, 0=other
Career change dummy			562036	0.260	1=change of industry & occupation, 0=other
Working time		Present part time dummy	562844	0.186	1=part time, 0=full time
		Previous part time dummy	562844	0.190	1=part time, 0=full time
Change in working hours dummy		continuing part time	562844	0.120	1=changed, 0=others
		from part time to full time	562844	0.070	1=changed, 0=others
		from full time to part time	562844	0.067	1=changed, 0=others
Firm size dummies	Present firm size	5 - 29	562844	0.062	1=employment of 5 - 29, 0=other
		30 - 99	562844	0.178	1=employment of 30 - 99, 0=other
		100 - 299	562844	0.224	1=employment of 100 - 299, 0=other
		300 - 999	562844	0.206	1=employment of 300 - 999, 0=other
		over 1000	562844	0.328	1=employment of over 1000, 0=other
	Previous firm size	Public organization	560527	0.023	1=public organization, 0=other
		1 - 4	560527	0.026	1=employment of 1 - 4, 0=other
		5 - 29	560527	0.213	1=employment of 5 - 29, 0=other
		30 - 99	560527	0.233	1=employment of 30 - 99, 0=other
		100 - 299	560527	0.187	1=employment of 100 - 299, 0=other
		300 - 999	560527	0.123	1=employment of 300 - 999, 0=other
		over 1000	560527	0.195	1=employment of over 1000, 0=other
Dummy for firm size change			560527	0.709	1=up or down, 0=invariant
		up	560527	0.539	1=up, 0=down or invariant
		down	560527	0.170	1=down, 0=up or invariant
Year		1991	562844	0.081	1=1991, 0=other
		1992	562844	0.069	1=1992, 0=other
		1993	562844	0.056	1=1993, 0=other
		1994	562844	0.053	1=1994, 0=other
		1995	562844	0.060	1=1995, 0=other
		1996	562844	0.068	1=1996, 0=other
		1997	562844	0.075	1=1997, 0=other
		1998	562844	0.065	1=1998, 0=other
		1999	562844	0.059	1=1999, 0=other
		2000	562844	0.068	1=2000, 0=other
		2001	562844	0.069	1=2001, 0=other
		2002	562844	0.064	1=2002, 0=other
		2003	562844	0.071	1=2003, 0=other
		2004	562844	0.069	1=2004, 0=other
		2005	562844	0.073	1=2005, 0=other

Table 2: Reasons for Job Separations (%)

Total		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Shukko assignments		1.8	1.8	2.7	3.1	3.1	3.2	3.1	2.7	2.9	2.9	3.1	3.0	3.2	2.7	2.8
Contract finished	(1)	8.2	8.6	9.0	8.4	10.1	10.4	10.7	12.3	10.7	10.5	10.2	11.9	10.5	13.1	11.4
Management convenience	(2)	4.5	5.2	7.0	7.5	8.7	6.9	7.4	10.0	11.1	9.3	12.0	12.3	9.8	8.1	6.9
Mandatory retirement	(3)	3.3	4.2	4.5	5.5	5.5	5.9	5.8	5.4	5.1	5.2	5.4	5.7	5.9	4.9	4.5
Firing	(4)	3.3	2.9	5.0	4.6	5.0	4.8	5.5	5.7	5.5	6.3	4.4	3.8	2.9	2.1	1.3
Death or injury	(5)	2.1	2.1	2.8	2.6	2.4	1.9	1.8	2.0	1.8	1.7	1.6	1.4	1.8	1.4	1.9
Total involuntary	(1)-(5)	21.4	23.0	28.3	28.6	31.7	29.9	31.2	35.4	34.2	33.0	33.6	35.1	30.9	29.6	26.0
Marriage	(7)	4.3	4.5	4.2	4.6	4.3	4.5	3.6	3.0	3.0	2.5	2.6	2.6	2.1	2.4	2.2
Childbirth	(8)	2.7	2.7	2.6	2.6	2.6	2.2	2.5	2.2	2.5	2.2	2.2	2.1	2.0	1.8	2.0
Nursing care	(9)	n.a.	n.a.	0.5	0.6	0.5	0.6	0.5	0.4	0.5	0.6	0.7	0.6	1.0	0.8	1.0
Total voluntary	(7)-(9)+other	78.8	77.0	71.6	71.5	68.2	70.1	68.7	64.5	65.8	67.0	66.3	65.0	69.3	70.4	74.0
Male		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Shukko assignments		3.1	3.3	4.3	5.0	5.3	5.4	5.3	4.4	4.9	5.1	5.2	5.0	5.5	4.3	4.6
Contract finished	(1)	10.3	10.7	10.7	9.4	11.6	11.8	13.1	13.9	13.3	10.6	10.0	12.3	11.1	11.4	9.2
Management convenience	(2)	6.2	7.1	9.1	9.2	11.3	8.9	10.3	13.4	14.6	12.2	16.1	16.8	13.8	11.4	9.2
Mandatory retirement	(3)	5.4	7.1	7.0	8.2	7.8	8.9	8.3	7.6	7.6	7.7	8.0	8.1	8.5	7.1	6.6
Firing	(4)	4.0	3.7	5.6	6.4	6.5	5.6	6.1	5.8	6.3	7.4	5.0	4.5	3.7	2.6	1.8
Death or injury	(5)	2.3	2.6	3.4	2.9	3.2	2.3	2.4	2.7	2.1	2.0	2.2	1.5	2.1	1.8	1.8
Total involuntary	(1)-(5)	28.2	31.2	35.8	36.1	40.4	37.5	40.2	43.4	43.9	39.9	41.3	43.2	39.2	34.3	28.6
Marriage	(7)	0.1	0.1	0.1	0.1	0.2	0.0	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Childbirth	(8)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Nursing care	(9)	n.a.	n.a.	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.2	0.3	0.2
Total voluntary	(7)-(9)+other	71.9	68.8	64.3	63.9	59.6	62.5	59.9	56.7	56.1	60.1	58.7	56.7	60.8	63.2	69.2
Female		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Shukko assignments		0.5	0.4	1.1	1.3	0.7	0.9	0.6	1.0	0.8	0.8	1.0	0.9	0.9	1.2	1.2
Contract finished	(1)	6.1	6.6	7.3	7.5	8.6	8.8	8.0	10.7	8.1	10.5	10.4	11.4	9.9	12.2	11.4
Management convenience	(2)	2.9	3.3	4.9	5.6	6.0	4.7	4.2	6.5	7.5	6.3	7.9	7.8	5.9	4.9	4.7
Mandatory retirement	(3)	1.3	1.5	2.0	2.7	3.0	2.7	3.0	3.1	2.6	2.7	2.8	3.3	3.3	2.9	2.6
Firing	(4)	2.6	2.2	4.3	2.7	3.5	3.8	4.9	5.7	4.6	5.2	3.7	3.1	2.1	1.6	0.8
Death or injury	(5)	1.9	1.7	2.3	2.3	1.6	1.6	1.2	1.3	1.5	1.3	1.1	1.2	1.5	1.0	2.0
Total involuntary	(1)-(5)	14.8	15.3	20.8	20.8	22.7	21.6	21.3	27.3	24.3	26.0	25.9	26.8	22.7	22.6	21.5
Marriage	(7)	8.2	8.6	8.6	9.2	8.7	9.3	7.3	6.0	6.0	5.0	5.1	5.1	4.1	4.6	4.2
Childbirth	(8)	5.3	5.2	5.4	5.2	5.5	4.5	5.3	4.5	5.0	4.4	4.5	4.2	3.9	3.6	3.9
Nursing care	(9)	n.a.	n.a.	0.9	1.2	1.0	1.1	1.1	0.8	0.8	1.0	1.3	1.1	1.9	1.2	1.8
Total voluntary	(7)-(9)+other	85.3	84.6	79.2	79.2	77.4	78.4	78.7	72.6	75.7	74.0	74.0	73.2	77.4	77.4	78.6

Notes: This table replicates one in Abe et al. (2002) computed with 1995 data. *Shukko* refers to temporary transfer to another company. This information comes from public sources & was not computed with our microdata.
Source: http://wwwdbtk.mhlw.go.jp/toukei/kouhyo/data-rou14/jikei/kd-jikeiretu-13.xls

Table 3: Wage changes (Δ) by Year, Age and Gender

Year	Δ<-30%	-30%<Δ<-10%	-10%<Δ<+10%	10%<Δ<30%	Δ>30%	Mean*	N
Full Sample by Year (1)							
All	8.04	12.39	57.07	17.83	4.66	-0.20	562,844
1991	5.15	12.25	45.99	30.66	5.96	3.01	45,836
1992	5.75	12.96	49.90	26.59	4.80	1.76	38,815
1993	6.89	13.97	50.60	23.89	4.66	0.82	31,710
1994	7.25	14.50	52.16	21.52	4.58	0.25	29,811
1995	7.17	13.79	53.92	20.64	4.47	0.22	33,514
1996	7.66	14.25	52.02	21.32	4.75	0.19	38,270
1997	7.39	14.31	51.41	22.26	4.63	0.37	42,209
1998	7.99	10.83	65.67	11.55	3.96	-1.10	36,287
1999	9.68	12.04	62.82	11.48	3.98	-1.79	33,103
2000	8.85	10.98	62.46	13.10	4.61	-0.95	38,478
2001	9.01	10.58	64.02	12.22	4.16	-1.21	38,606
2002	10.02	11.79	62.34	11.50	4.35	-1.75	36,209
2003	10.07	11.21	62.61	11.71	4.40	-1.62	39,949
2004	9.76	11.96	60.27	13.07	4.95	-1.28	38,962
2005	8.40	11.20	61.03	14.19	5.18	-0.52	41,085
Full Sample by Age (2)							
0-19	3.63	9.83	48.30	28.01	10.23	4.71	14,694
20-24	4.72	12.33	51.56	24.08	7.32	2.54	96,792
25-29	6.15	12.53	55.35	20.63	5.34	0.97	99,644
30-34	5.40	11.62	58.72	19.51	4.75	0.99	71,755
35-44	5.22	11.21	60.34	18.48	4.75	0.95	113,738
45-54	7.80	11.77	64.91	12.83	2.69	-1.37	95,763
55-59	15.11	15.12	59.46	8.71	1.60	-5.01	36,752
60-64	37.05	18.47	38.25	5.23	1.00	-12.80	27,668
65+	16.02	14.06	61.69	7.04	1.19	-5.50	6,038
Full Sample of Males (3)							
All	8.48	11.72	58.32	17.35	4.12	-0.46	340,574
0-19	3.66	8.90	47.14	28.54	11.76	5.37	8,413
20-24	3.65	10.12	50.70	26.88	8.65	4.02	49,719
25-29	3.76	10.57	56.99	23.01	5.68	2.44	59,319
30-34	3.77	10.65	61.48	20.01	4.08	1.50	46,893
35-44	4.51	10.76	65.11	16.64	2.98	0.42	64,182
45-54	8.35	11.26	67.94	10.77	1.68	-2.07	58,315
55-59	17.75	16.37	57.10	7.57	1.22	-6.28	27,038
60-64	42.52	19.33	32.80	4.46	0.89	-14.72	22,032
65+	17.93	15.01	59.08	6.76	1.22	-6.25	4,663
Full Sample of Females (4)							
All	7.37	13.42	55.16	18.56	5.48	0.20	222,270
0-19	3.60	11.07	49.85	27.30	8.18	3.81	6,281
20-24	5.85	14.67	52.46	21.12	5.90	0.98	47,073
25-29	9.67	15.42	52.94	17.12	4.84	-1.19	40,325
30-34	8.47	13.45	53.51	18.56	6.01	0.03	24,862
35-44	6.13	11.79	54.16	20.86	7.05	1.64	49,556
45-54	6.95	12.55	60.18	16.04	4.27	-0.28	37,448
55-59	7.74	11.65	66.05	11.90	2.66	-1.49	9,714
60-64	15.65	15.08	59.56	8.25	1.45	-5.28	5,636
65+	9.53	10.84	70.55	8.00	1.09	-2.96	1,375

Table 3 (continued)							
Involuntary Male Job Change - excluding shukko (5)							
Age	Δ<-30%	-30%<Δ<-10%	-10%<Δ<+10%	10%<Δ<30%	Δ>30%	Mean*	N
All	25.00	18.21	47.70	7.34	1.76	-8.60	58,511
0-19	8.75	13.86	52.48	16.34	8.58	0.32	606
20-24	5.66	12.97	56.31	17.80	7.26	1.20	4,186
25-29	5.08	13.43	60.99	16.11	4.40	0.20	4,960
30-34	6.24	14.20	63.10	13.31	3.15	-1.06	4,409
35-44	7.54	16.00	64.46	10.43	1.57	-2.63	7,639
45-54	19.30	18.57	55.43	5.86	0.83	-7.45	10,590
55-59	31.60	23.36	40.97	3.53	0.54	-12.29	8,537
60-64	52.83	20.76	24.42	1.74	0.25	-18.62	14,915
65+	22.93	17.01	55.98	3.22	0.86	-8.69	2,669
Males Temporarily Transferred to Another Company - shukko (6)							
All	2.14	3.53	91.34	2.61	0.37	-0.67	59,588
0-19	0.93	3.03	90.44	4.90	0.70	0.21	429
20-24	1.20	3.46	89.73	4.93	0.68	0.06	2,657
25-29	0.85	2.47	92.20	3.39	1.09	0.21	5,873
30-34	0.93	2.64	92.94	2.94	0.54	-0.07	7,607
35-44	0.81	2.10	93.99	2.86	0.24	-0.06	15,836
45-54	1.70	3.31	92.75	2.05	0.18	-0.65	19,603
55-59	6.36	8.27	83.57	1.56	0.25	-2.84	6,919
60-64	34.21	15.06	46.97	2.95	0.82	-11.83	611
65+	16.98	11.32	71.70	0.00	0.00	-6.79	53
Involuntary Female Job Change - excluding shukko (7)							
All	8.99	14.79	62.57	10.79	2.85	-2.44	36,604
0-19	4.71	10.09	57.40	21.97	5.83	2.12	446
20-24	5.64	14.44	58.79	16.01	5.12	0.08	4,611
25-29	7.47	15.60	60.17	13.39	3.38	-1.56	5,385
30-34	8.43	15.39	59.92	12.71	3.55	-1.87	3,690
35-44	7.35	14.13	62.41	12.60	3.51	-1.38	7,855
45-54	8.32	14.10	67.96	7.82	1.80	-2.90	8,128
55-59	9.49	13.36	70.60	5.38	1.17	-3.69	3,068
60-64	24.49	19.61	51.68	3.86	0.36	-9.60	2,769
65+	11.66	13.34	70.71	4.14	0.15	-4.83	652
Females Temporarily Transferred to Another Company - shukko (8)							
All	1.07	3.52	89.91	4.28	1.22	0.16	5,234
0-19	0.00	1.20	95.18	2.41	1.20	0.54	83
20-24	0.90	3.87	88.65	5.29	1.29	0.33	775
25-29	0.52	2.52	90.72	3.56	2.69	0.81	1,153
30-34	0.90	2.25	92.33	3.49	1.01	0.22	887
35-44	0.69	3.65	90.54	4.95	0.17	0.04	1,152
45-54	1.77	5.43	87.26	4.98	0.55	-0.43	903
55-59	2.60	4.76	87.88	2.60	2.16	-0.46	231
60-64	7.32	4.88	85.37	0.00	2.44	-2.20	41
65+	22.22	0.00	66.67	11.11	0.00	-5.00	9

*Mean Δ is calculated by assigning values -30%, -15%, 0%, 15% & 30% to the five categories.

Table 4: Basic Results

Dependent variable	Wage variation (five categories: -2: -30%, -1: -10%, 0: 0%, 1: +10%, 2: +30%)															
Estimation method	Ordered logit															
Data	(1) 1991	(2) 1992	(3) 1993	(4) 1994	(5) 1995	(6) 1996	(7) 1997	(8) 1998	(9) 1999	(10) 2000	(11) 2001	(12) 2002	(13) 2003	(14) 2004	(15) 2005	(16) pooled
Control	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture	prefecture year
Age	0.241	0.110	0.124	0.133	0.099	0.043	0.104	0.018	0.081	0.109	0.212	-0.022	0.200	0.137	0.153	0.144
	(0.022)**	(0.023)**	(0.026)**	(0.027)**	(0.026)**	(0.025)	(0.024)**	(0.029)	(0.030)**	(0.028)**	(0.028)**	(0.028)	(0.028)**	(0.028)**	(0.028)**	(0.007)**
Age^2	-0.045	-0.024	-0.028	-0.029	-0.027	-0.022	-0.031	-0.021	-0.032	-0.036	-0.045	-0.024	-0.045	-0.041	-0.043	-0.036
	(0.002)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.001)**
Female dummy	-0.006	0.041	0.047	0.075	0.013	-0.027	-0.065	0.009	0.033	-0.090	-0.070	-0.038	0.016	-0.043	-0.062	-0.013
	(0.023)	(0.025)	(0.028)	(0.029)**	(0.028)	(0.026)	(0.025)**	(0.029)	(0.030)	(0.028)**	(0.028)*	(0.027)	(0.027)	(0.027)	(0.027)*	(0.007)
Graduate level dummy (Base=junior high): High school	-0.133	-0.068	-0.162	-0.147	-0.184	-0.093	-0.155	-0.195	-0.124	-0.053	-0.149	-0.154	-0.183	-0.051	-0.079	-0.167
	(0.026)**	(0.028)*	(0.032)**	(0.033)**	(0.033)**	(0.033)**	(0.033)**	(0.040)**	(0.041)**	(0.040)	(0.041)**	(0.042)**	(0.044)**	(0.045)	(0.042)	(0.009)**
Junior college	-0.323	-0.255	-0.337	-0.330	-0.449	-0.209	-0.282	-0.342	-0.283	-0.192	-0.318	-0.222	-0.257	-0.161	-0.183	-0.305
	(0.041)**	(0.046)**	(0.049)**	(0.052)**	(0.048)**	(0.042)**	(0.041)**	(0.049)**	(0.050)**	(0.048)**	(0.049)**	(0.049)**	(0.051)**	(0.051)**	(0.049)**	(0.012)**
University	-0.052	-0.094	-0.204	-0.165	-0.243	0.020	-0.055	-0.088	-0.054	0.097	-0.073	0.054	-0.046	0.044	0.025	-0.090
	(0.040)	(0.044)*	(0.047)**	(0.050)**	(0.047)**	(0.045)	(0.043)	(0.052)	(0.053)	(0.050)	(0.051)	(0.051)	(0.052)	(0.052)	(0.050)	(0.012)**
Present firm size dummy (Base = 5 - 29): 30 - 99	0.023	-0.021	0.060	0.076	-0.106	0.090	0.054	0.066	-0.005	-0.006	-0.050	-0.020	-0.018	-0.129	-0.048	-0.010
	(0.041)	(0.042)	(0.047)	(0.047)	(0.046)*	(0.045)*	(0.045)	(0.053)	(0.051)	(0.049)	(0.051)	(0.050)	(0.056)	(0.056)*	(0.057)	(0.012)
100 - 299	-0.016	-0.042	0.030	0.034	-0.057	0.042	0.032	0.079	-0.181	-0.009	-0.176	0.114	0.035	-0.117	0.087	-0.021
	(0.040)	(0.042)	(0.047)	(0.047)	(0.046)	(0.046)	(0.044)	(0.053)	(0.051)**	(0.049)	(0.050)**	(0.049)*	(0.055)	(0.054)*	(0.055)	(0.012)
300 - 999	0.112	0.088	0.211	0.192	0.003	0.101	0.224	0.181	0.122	0.204	-0.020	0.171	0.127	0.063	0.249	0.113
	(0.041)**	(0.043)*	(0.049)**	(0.049)**	(0.047)	(0.047)*	(0.046)**	(0.054)**	(0.053)*	(0.050)**	(0.051)	(0.051)**	(0.056)*	(0.055)	(0.056)**	(0.013)**
over 1000	0.443	0.336	0.432	0.321	0.200	0.269	0.321	0.342	0.211	0.249	0.164	0.320	0.285	0.253	0.396	0.288
	(0.041)**	(0.043)**	(0.049)**	(0.049)**	(0.046)**	(0.046)**	(0.045)**	(0.053)**	(0.052)**	(0.049)**	(0.050)**	(0.050)**	(0.056)**	(0.054)**	(0.055)**	(0.012)**
Part time dummy	-1.309	-1.571	-1.599	-1.665	-1.678	-1.516	-1.515	-1.784	-1.639	-1.518	-1.594	-1.614	-1.639	-1.546	-1.578	-1.570
	(0.036)**	(0.039)**	(0.041)**	(0.041)**	(0.038)**	(0.034)**	(0.032)**	(0.036)**	(0.035)**	(0.032)**	(0.032)**	(0.030)**	(0.031)**	(0.032)**	(0.033)**	(0.009)**
Involuntary quit dummy	-0.915	-0.665	-0.591	-0.640	-0.619	-0.642	-0.639	-0.701	-0.709	-0.763	-0.571	-0.573	-0.748	-0.644	-0.606	-0.656
	(0.031)**	(0.034)**	(0.034)**	(0.035)**	(0.032)**	(0.032)**	(0.032)**	(0.034)**	(0.033)**	(0.030)**	(0.030)**	(0.035)**	(0.027)**	(0.027)**	(0.027)**	(0.008)**
Present industry dummy (Base = mining): Construction	-0.005	0.134	-0.282	0.556	0.129	0.193	0.283	0.031	-0.238	-0.088	-0.034	-0.016	0.008	0.177	0.004	0.087
	(0.089)	(0.089)	(0.109)**	(0.111)**	(0.109)	(0.104)	(0.103)**	(0.114)	(0.135)	(0.125)	(0.144)	(0.142)	(0.140)	(0.176)	(0.166)	(0.030)**
Manufacturing	-0.328	-0.290	-0.635	0.127	-0.167	-0.115	-0.036	-0.239	-0.420	-0.316	-0.216	-0.069	-0.187	0.133	0.054	-0.181
	(0.078)**	(0.079)**	(0.099)**	(0.100)	(0.101)	(0.096)	(0.097)	(0.105)*	(0.126)**	(0.117)**	(0.136)	(0.134)	(0.130)	(0.168)	(0.154)	(0.027)**
Electricity/gas	-0.376	-0.461	-0.823	0.326	-0.219	-0.245	-0.245	-0.210	-0.547	-0.443	-0.499	-0.157	-0.429	-0.241	-0.105	-0.326
	(0.131)**	(0.121)**	(0.136)**	(0.143)*	(0.135)	(0.134)	(0.149)	(0.160)	(0.178)**	(0.177)*	(0.184)**	(0.164)	(0.161)*	(0.191)	(0.180)	(0.038)**
Communication/ transportation	-0.140	0.024	-0.498	0.473	-0.077	-0.030	0.020	-0.007	-0.415	-0.398	-0.201	-0.066	-0.232	0.041	-0.088	-0.099
	(0.093)	(0.095)	(0.111)**	(0.115)**	(0.114)	(0.106)	(0.107)	(0.117)	(0.138)**	(0.128)**	(0.148)	(0.146)	(0.141)	(0.172)	(0.158)	(0.030)**
Wholesale/ retail/ restaurants	-0.446	-0.331	-0.815	0.056	-0.332	-0.349	-0.322	-0.435	-0.772	-0.623	-0.685	-0.294	-0.600	-0.328	-0.162	-0.434
	(0.091)**	(0.093)**	(0.114)**	(0.117)	(0.116)**	(0.107)**	(0.108)**	(0.116)**	(0.135)**	(0.125)**	(0.143)**	(0.141)*	(0.136)**	(0.172)	(0.158)	(0.030)**
Finance/ insurance	-0.580	-0.482	-0.550	0.092	-0.379	0.048	-0.145	-0.184	-0.421	-0.185	-0.279	-0.209	-0.183	0.046	0.056	-0.171
	(0.105)**	(0.114)**	(0.129)**	(0.128)	(0.128)**	(0.117)	(0.116)	(0.121)	(0.147)**	(0.135)	(0.152)	(0.149)	(0.149)	(0.183)	(0.170)	(0.033)**
Real estate	-0.266	-0.042	-0.582	0.313	-0.194	-0.225	-0.225	-0.357	-0.505	-0.194	-0.501	-0.130	-0.284	-0.255	0.254	-0.220
	(0.101)**	(0.108)	(0.119)**	(0.122)*	(0.121)	(0.114)*	(0.114)*	(0.126)**	(0.146)**	(0.132)	(0.151)**	(0.158)	(0.155)	(0.186)	(0.172)	(0.032)**
Service	-0.446	-0.312	-0.604	0.125	-0.209	-0.182	-0.281	-0.410	-0.607	-0.531	-0.388	-0.292	-0.464	-0.108	-0.041	-0.319
	(0.081)**	(0.081)**	(0.100)**	(0.102)	(0.103)*	(0.098)	(0.099)**	(0.107)**	(0.128)**	(0.118)**	(0.137)**	(0.135)*	(0.131)**	(0.169)	(0.155)	(0.028)**
Present occupation dummy (Base = technician): Manager	0.405	0.268	0.395	0.371	0.322	0.480	0.446	0.400	0.546	0.348	0.462	0.515	0.391	0.446	0.467	0.422
	(0.072)**	(0.079)**	(0.081)**	(0.085)**	(0.082)**	(0.073)**	(0.072)**	(0.081)**	(0.081)**	(0.076)**	(0.075)**	(0.073)**	(0.073)**	(0.072)**	(0.072)**	(0.019)**
Administration	-0.506	-0.612	-0.553	-0.675	-0.610	-0.574	-0.568	-0.683	-0.498	-0.463	-0.443	-0.616	-0.583	-0.495	-0.472	-0.541
	(0.047)**	(0.054)**	(0.061)**	(0.066)**	(0.062)**	(0.054)**	(0.050)**	(0.058)**	(0.061)**	(0.056)**	(0.053)**	(0.053)**	(0.055)**	(0.053)**	(0.053)**	(0.014)**
Sales	-0.330	-0.426	-0.269	-0.466	-0.416	-0.363	-0.385	-0.538	-0.387	-0.519	-0.352	-0.535	-0.538	-0.474	-0.370	-0.413
	(0.059)**	(0.067)**	(0.074)**	(0.077)**	(0.072)**	(0.065)**	(0.063)**	(0.070)**	(0.072)**	(0.065)**	(0.067)**	(0.065)**	(0.065)**	(0.064)**	(0.064)**	(0.017)**
Service	0.195	-0.205	-0.215	-0.318	-0.436	-0.452	-0.372	-0.472	-0.414	-0.425	-0.374	-0.471	-0.552	-0.325	-0.494	-0.331
	(0.076)**	(0.058)**	(0.063)**	(0.066)**	(0.062)**	(0.057)**	(0.054)**	(0.061)**	(0.063)**	(0.058)**	(0.057)**	(0.053)**	(0.057)**	(0.058)**	(0.059)**	(0.015)**
Communication/ transportation	-0.343	0.188	0.168	0.230	0.316	0.205	0.117	-0.223	-0.053	-0.071	-0.106	-0.063	-0.174	-0.249	-0.181	0.010
	(0.092)**	(0.081)*	(0.087)	(0.093)*	(0.089)**	(0.079)**	(0.076)	(0.090)*	(0.096)	(0.092)	(0.095)	(0.093)	(0.092)	(0.080)**	(0.084)*	(0.022)
Production	0.010	-0.173	-0.154	-0.250	-0.304	-0.206	-0.229	-0.347	-0.410	-0.267	-0.360	-0.378	-0.392	-0.328	-0.236	-0.254
	(0.052)	(0.053)**	(0.060)*	(0.062)**	(0.059)**	(0.053)**	(0.048)**	(0.058)**	(0.059)**	(0.053)**	(0.054)**	(0.052)**	(0.053)**	(0.051)**	(0.051)**	(0.014)**
Others	-0.085	-0.484	-0.425	-0.367	-0.500	-0.480	-0.445	-0.564	-0.539	-0.312	-0.347	-0.607	-0.641	-0.440	-0.503	-0.350
	(0.045)	(0.062)**	(0.067)**	(0.071)**	(0.068)**	(0.063)**	(0.060)**	(0.071)**	(0.079)**	(0.075)**	(0.074)**	(0.069)**	(0.072)**	(0.082)**	(0.092)**	(0.016)**

Table 4 (continued)

Data			(1) 1991	(2) 1992	(3) 1993	(4) 1994	(5) 1995	(6) 1996	(7) 1997	(8) 1998	(9) 1999	(10) 2000	(11) 2001	(12) 2002	(13) 2003	(14) 2004	(15) 2005	(13) pooled
Previous industry dummy	Base = agriculture	Mining	-0.497	-0.963	-0.351	-0.443	-0.842	-0.617	0.060	-0.572	-0.848	-0.573	0.146	-0.443	-0.550	-0.936	-0.455	-0.549
			(0.142)**	(0.152)**	(0.172)*	(0.199)*	(0.194)**	(0.190)**	(0.180)	(0.210)**	(0.221)**	(0.215)**	(0.234)	(0.212)*	(0.219)*	(0.252)**	(0.242)	(0.049)**
		Construction	-0.167	-0.617	-0.506	-0.520	-0.389	-0.438	-0.036	-0.600	-0.595	-0.574	-0.365	-0.554	-0.309	-0.769	-0.477	-0.442
			(0.094)	(0.111)**	(0.116)**	(0.127)**	(0.139)**	(0.132)**	(0.131)	(0.137)**	(0.145)**	(0.143)**	(0.157)*	(0.153)**	(0.156)*	(0.137)**	(0.148)**	(0.033)**
		Manufacturing	-0.053	-0.383	-0.429	-0.324	-0.454	-0.293	0.166	-0.475	-0.519	-0.558	-0.438	-0.624	-0.381	-0.733	-0.471	-0.385
			(0.089)	(0.105)**	(0.110)**	(0.121)**	(0.135)**	(0.128)*	(0.127)	(0.132)**	(0.141)**	(0.138)**	(0.153)**	(0.149)**	(0.151)*	(0.132)**	(0.142)**	(0.032)**
		Communication /transportation	-0.111	-0.519	-0.360	-0.563	-0.459	-0.444	0.106	-0.416	-0.586	-0.421	-0.318	-0.535	-0.282	-0.748	-0.394	-0.398
			(0.102)	(0.118)**	(0.124)**	(0.136)**	(0.146)**	(0.137)**	(0.136)	(0.142)**	(0.151)**	(0.148)**	(0.163)	(0.158)**	(0.160)	(0.137)**	(0.147)**	(0.034)**
		Wholesale/retail /restaurants	0.058	-0.377	-0.314	-0.324	-0.376	-0.253	0.229	-0.432	-0.492	-0.427	-0.327	-0.536	-0.177	-0.513	-0.311	-0.263
			(0.094)	(0.110)**	(0.115)**	(0.126)*	(0.139)**	(0.131)	(0.130)	(0.135)**	(0.143)**	(0.140)**	(0.155)*	(0.151)**	(0.155)	(0.135)**	(0.145)*	(0.033)**
		Finance/insurance /real estate	-0.311	-0.758	-0.716	-0.557	-0.703	-0.627	-0.058	-0.480	-0.768	-0.433	-0.509	-0.715	-0.450	-0.857	-0.566	-0.578
			(0.099)**	(0.115)**	(0.121)**	(0.135)**	(0.144)**	(0.136)**	(0.135)	(0.171)**	(0.178)**	(0.170)*	(0.188)**	(0.182)**	(0.159)**	(0.142)**	(0.153)**	(0.034)**
		Service	0.019	-0.357	-0.332	-0.312	-0.290	-0.292	0.281	-0.351	-0.377	-0.422	-0.232	-0.401	-0.190	-0.509	-0.316	-0.256
			(0.092)	(0.107)**	(0.110)**	(0.122)*	(0.136)*	(0.128)*	(0.128)*	(0.133)**	(0.141)**	(0.139)**	(0.153)	(0.150)**	(0.152)	(0.133)**	(0.143)*	(0.032)**
		Others	-0.099	-0.568	-0.492	-0.375	-0.518	-0.444	0.124	-0.425	-0.519	-0.517	-0.350	-0.466	-0.223	-0.590	-0.315	-0.397
			(0.092)	(0.105)**	(0.108)**	(0.120)**	(0.134)**	(0.128)**	(0.128)	(0.132)**	(0.141)**	(0.139)**	(0.153)*	(0.150)**	(0.152)	(0.135)**	(0.146)*	(0.032)**
Previous occupation dummy	Base = technician	Manager	-0.716	-0.610	-0.614	-0.616	-0.570	-0.713	-0.686	-0.737	-0.682	-0.619	-0.722	-0.669	-0.623	-0.617	-0.661	-0.643
			(0.068)**	(0.076)**	(0.078)**	(0.082)**	(0.078)**	(0.070)**	(0.069)**	(0.077)**	(0.077)**	(0.073)**	(0.071)**	(0.068)**	(0.069)**	(0.067)**	(0.067)**	(0.019)**
		Administration	0.268	0.403	0.199	0.302	0.282	0.264	0.141	0.138	0.128	0.161	0.191	0.217	0.250	0.338	0.362	0.258
			(0.048)**	(0.055)**	(0.060)**	(0.065)**	(0.061)**	(0.054)**	(0.050)**	(0.058)*	(0.060)*	(0.056)**	(0.056)**	(0.054)**	(0.056)**	(0.054)**	(0.054)**	(0.014)**
		Sales	0.220	0.370	0.203	0.430	0.323	0.243	0.185	0.294	0.339	0.388	0.269	0.343	0.398	0.280	0.225	0.293
			(0.052)**	(0.060)**	(0.066)**	(0.071)**	(0.065)**	(0.058)**	(0.054)**	(0.063)**	(0.065)**	(0.061)**	(0.062)**	(0.060)**	(0.061)**	(0.058)**	(0.059)**	(0.016)**
		Service	0.117	0.409	0.403	0.524	0.435	0.496	0.278	0.473	0.452	0.414	0.377	0.373	0.547	0.400	0.356	0.414
			(0.074)	(0.058)**	(0.064)**	(0.068)**	(0.063)**	(0.057)**	(0.053)**	(0.062)**	(0.063)**	(0.057)**	(0.058)**	(0.054)**	(0.057)**	(0.055)**	(0.056)**	(0.015)**
		Communication/ transportation	0.452	0.131	0.008	0.208	0.143	0.287	0.098	0.171	0.478	0.266	0.290	0.171	0.331	0.410	0.336	0.233
			(0.101)**	(0.085)	(0.092)	(0.098)*	(0.094)	(0.082)**	(0.077)	(0.092)	(0.096)**	(0.090)**	(0.095)**	(0.091)**	(0.093)**	(0.081)**	(0.083)**	(0.022)**
		Production	0.329	0.440	0.347	0.485	0.463	0.406	0.363	0.444	0.549	0.446	0.388	0.480	0.518	0.434	0.470	0.438
			(0.051)**	(0.054)**	(0.060)**	(0.063)**	(0.059)**	(0.053)**	(0.049)**	(0.059)**	(0.060)**	(0.055)**	(0.056)**	(0.054)**	(0.055)**	(0.052)**	(0.052)**	(0.014)**
		Others	0.277	0.513	0.402	0.520	0.458	0.385	0.335	0.335	0.468	0.433	0.391	0.348	0.382	0.350	0.152	0.413
			(0.044)**	(0.061)**	(0.066)**	(0.070)**	(0.067)**	(0.061)**	(0.057)**	(0.068)**	(0.074)**	(0.069)**	(0.069)**	(0.067)**	(0.067)**	(0.065)**	(0.074)*	(0.016)**
Previous firm size dummy	Base = public organization	1 - 4	0.895	1.077	0.885	0.823	0.599	0.746	0.751	0.778	0.712	0.505	0.866	0.993	0.946	0.837	0.820	0.805
			(0.085)**	(0.094)**	(0.106)**	(0.112)**	(0.108)**	(0.093)**	(0.090)**	(0.107)**	(0.109)**	(0.103)**	(0.106)**	(0.107)**	(0.102)**	(0.101)**	(0.104)**	(0.026)**
		5 - 29	0.667	0.789	0.703	0.596	0.647	0.557	0.507	0.607	0.524	0.363	0.677	0.630	0.690	0.593	0.470	0.598
			(0.069)**	(0.074)**	(0.084)**	(0.088)**	(0.086)**	(0.075)**	(0.072)**	(0.083)**	(0.086)**	(0.082)**	(0.082)**	(0.086)**	(0.079)**	(0.080)**	(0.081)**	(0.020)**
		30 - 99	0.502	0.662	0.513	0.431	0.465	0.381	0.361	0.473	0.384	0.187	0.532	0.555	0.637	0.426	0.357	0.460
			(0.069)**	(0.074)**	(0.083)**	(0.087)**	(0.086)**	(0.075)**	(0.072)**	(0.082)**	(0.085)**	(0.081)*	(0.081)**	(0.085)**	(0.078)**	(0.080)**	(0.081)**	(0.020)**
		100 - 299	0.342	0.445	0.334	0.237	0.255	0.218	0.198	0.378	0.190	0.037	0.309	0.330	0.416	0.304	0.208	0.283
			(0.069)**	(0.074)**	(0.084)**	(0.088)**	(0.086)**	(0.075)**	(0.072)**	(0.082)**	(0.085)*	(0.082)	(0.082)**	(0.085)**	(0.078)**	(0.080)**	(0.081)**	(0.020)**
		300 - 999	0.071	0.158	0.034	0.030	0.083	0.086	0.066	0.068	-0.063	-0.231	0.140	0.075	0.230	0.088	0.015	0.064
			(0.071)	(0.076)*	(0.086)	(0.090)	(0.089)	(0.077)	(0.074)	(0.084)	(0.088)	(0.084)**	(0.083)	(0.087)	(0.080)**	(0.082)	(0.082)**	(0.021)**
		over 1000	-0.371	-0.123	-0.165	-0.075	-0.049	-0.172	-0.258	-0.096	-0.246	-0.419	-0.130	-0.156	-0.068	-0.136	-0.230	-0.172
			(0.070)**	(0.075)	(0.084)	(0.088)	(0.086)	(0.075)*	(0.073)**	(0.082)	(0.086)**	(0.082)**	(0.081)	(0.085)	(0.078)	(0.080)	(0.081)**	(0.020)**
Previous part time dummy			1.242	1.379	1.467	1.507	1.683	1.616	1.681	1.905	1.918	1.866	1.899	2.017	2.004	1.863	1.810	1.689
			(0.034)**	(0.037)**	(0.040)**	(0.040)**	(0.038)**	(0.034)**	(0.032)**	(0.036)**	(0.037)**	(0.033)**	(0.034)**	(0.032)**	(0.032)**	(0.032)**	(0.032)**	(0.009)**
Observations			45560	38568	31464	29616	33410	38166	42052	36070	32908	38342	38420	39931	39798	38667	40686	559783

Notes: standard errors in parentheses, *significant at 5% level, **significant at 1% level

Table 5: Trends, Specific Capital, Gender and Age					
Dependent variable		Wage Change			
Estimation method		Ordered Logit			
		(1)	(2)	(3)	(4)
Data		Pooled	Under 35	35 & over	Pooled
Age - year interactions	Age	0.106 (0.008) **	-0.276 (0.029) **	-0.899 (0.043) **	0.144 (0.007) **
	Age*dummy 1992	0.047 (0.007) **	-0.055 (0.020) **	0.169 (0.020) **	
	Age*dummy 1993	0.048 (0.008) **	-0.043 (0.022)	0.218 (0.021) **	
	Age*dummy 1994	0.038 (0.008) **	-0.079 (0.023) **	0.154 (0.021) **	
	Age*dummy 1995	0.031 (0.008) **	-0.072 (0.022) **	0.173 (0.020) **	
	Age*dummy 1996	-0.004 (0.007)	-0.098 (0.021) **	0.125 (0.020) **	
	Age*dummy 1997	-0.014 (0.007)	-0.088 (0.020) **	0.068 (0.020) **	
	Age*dummy 1998	0.028 (0.008) **	-0.123 (0.022) **	0.195 (0.020) **	
	Age*dummy 1999	-0.016 (0.008) *	-0.109 (0.023) **	0.123 (0.021) **	
	Age*dummy 2000	-0.027 (0.008) **	-0.088 (0.021) **	0.094 (0.020) **	
	Age*dummy 2001	0.002 (0.008)	-0.059 (0.021) **	0.124 (0.020) **	
	Age*dummy 2002	-0.026 (0.008) **	-0.121 (0.022) **	0.123 (0.020) **	
	Age*dummy 2003	-0.021 (0.008) **	-0.090 (0.021) **	0.086 (0.019) **	
	Age*dummy 2004	-0.061 (0.008) **	-0.136 (0.021) **	0.063 (0.020) **	
	Age*dummy 2005	-0.049 (0.008) **	-0.119 (0.021) **	0.084 (0.020) **	
	Age*year trend				-0.0052 0.00033 **
Age^2		-0.033 (0.001) **	0.041 (0.005) **	0.031 (0.003) **	-0.034 (0.001) **
Female dummy		0.037 (0.007) **	-0.174 (0.009) **	0.282 (0.011) **	0.037 (0.007) **
Graduate level dummy (Base = JRhigh)	High school	-0.187 (0.009) **	-0.101 (0.017) **	-0.207 (0.011) **	-0.195 (0.009) **
	Junior college	-0.348 (0.012) **	-0.257 (0.019) **	-0.302 (0.017) **	-0.364 (0.012) **
	University	-0.190 (0.012) **	-0.136 (0.020) **	-0.182 (0.016) **	-0.202 (0.012) **
Involuntary quit dummy		-0.708 (0.008) **	-0.345 (0.012) **	-0.935 (0.010) **	-0.699 (0.008) **
Career change	Dummy	-0.131 (0.024) **	0.035 (0.030)	-0.353 (0.039) **	-0.211 (0.014) **
	× 1992	-0.109 (0.035) **	-0.094 (0.045) *	-0.125 (0.055) *	
	× 1993	-0.092 (0.037) *	-0.071 (0.049)	-0.117 (0.058) *	
	× 1994	-0.099 (0.038) **	-0.120 (0.051) *	-0.063 (0.058)	
	× 1995	-0.062 (0.037)	-0.015 (0.049)	-0.083 (0.056)	
	× 1996	-0.113 (0.035) **	-0.031 (0.046)	-0.201 (0.055) **	
	× 1997	-0.128 (0.034) **	-0.130 (0.044) **	-0.111 (0.054) *	
	× 1998	-0.104 (0.036) **	-0.066 (0.047)	-0.140 (0.055) *	
	× 1999	-0.101 (0.037) **	-0.022 (0.049)	-0.154 (0.056) **	
	× 2000	-0.039 (0.035)	-0.037 (0.046)	-0.010 (0.055)	
	× 2001	-0.059 (0.035)	-0.014 (0.047)	-0.075 (0.055)	
	× 2002	-0.107 (0.036) **	-0.080 (0.048)	-0.098 (0.055)	
	× 2003	-0.087 (0.035) *	-0.101 (0.047) *	-0.014 (0.054)	
	× 2004	-0.027 (0.035)	-0.067 (0.046)	0.045 (0.055)	
	× 2005	-0.002 (0.035)	-0.074 (0.046)	0.108 (0.055)	
	× trend				0.000 (0.002)
Only Industry change	Dummy	-0.126 (0.024) **	-0.007 (0.031)	-0.204 (0.036) **	-0.225 (0.014) **
	× 1992	-0.076 (0.035) *	-0.103 (0.047) *	-0.068 (0.053)	
	× 1993	-0.076 (0.037) *	-0.132 (0.051) *	-0.068 (0.055)	
	× 1994	-0.044 (0.038)	-0.184 (0.053) **	0.044 (0.055)	
	× 1995	-0.009 (0.037)	-0.052 (0.051)	0.010 (0.054)	
	× 1996	-0.062 (0.035)	-0.048 (0.048)	-0.110 (0.052) *	
	× 1997	-0.064 (0.034)	-0.066 (0.046)	-0.109 (0.051) *	
	× 1998	0.038 (0.035)	-0.001 (0.048)	0.040 (0.052)	
	× 1999	0.048 (0.036)	0.019 (0.049)	0.038 (0.053)	
	× 2000	0.106 (0.034) **	0.022 (0.047)	0.147 (0.051) **	
	× 2001	0.125 (0.034) **	0.117 (0.047) *	0.097 (0.051)	
	× 2002	0.096 (0.035) **	0.011 (0.048)	0.134 (0.052) *	
	× 2003	0.136 (0.034) **	0.057 (0.047)	0.168 (0.050) **	
	× 2004	0.139 (0.034) **	0.051 (0.047)	0.165 (0.052) **	
	× 2005	0.183 (0.034) **	0.068 (0.046)	0.232 (0.051) **	
	× trend				0.017 (0.002) **

Table 5 (continued)					
Dependent variable		Wage Change			
Estimation method		Ordered Logit			
Data		(1) Pooled	(2) Under 35	(3) 35 & over	(4) Pooled
Only Occupation change	Dummy	-0.336 (0.040) **	-0.131 (0.050) **	-0.575 (0.066) **	-0.390 (0.023) **
	× 1992	0.003 (0.058)	-0.073 (0.075)	0.099 (0.091)	
	× 1993	-0.029 (0.062)	-0.028 (0.082)	-0.016 (0.096)	
	× 1994	0.054 (0.063)	-0.063 (0.085)	0.227 (0.097) *	
	× 1995	0.013 (0.060)	-0.022 (0.081)	0.121 (0.091)	
	× 1996	0.005 (0.058)	-0.031 (0.077)	0.093 (0.089)	
	× 1997	-0.048 (0.057)	-0.127 (0.074)	0.081 (0.088)	
	× 1998	0.070 (0.058)	0.007 (0.077)	0.170 (0.090)	
	× 1999	-0.019 (0.059)	-0.091 (0.080)	0.113 (0.090)	
	× 2000	0.112 (0.057)	0.001 (0.076)	0.284 (0.089) **	
	× 2001	0.128 (0.056) *	0.104 (0.075)	0.210 (0.087) *	
	× 2002	0.069 (0.056)	-0.033 (0.076)	0.236 (0.087) **	
	× 2003	0.105 (0.055)	0.020 (0.075)	0.258 (0.085) **	
	× 2004	0.144 (0.056) *	-0.019 (0.075)	0.377 (0.086) **	
	× 2005	0.188 (0.056) **	0.082 (0.074)	0.350 (0.085) **	
	× trend				0.013 (0.002) **
Firm size change	Dummy: larger new firm	0.479 (0.022) **	0.555 (0.029) **	0.377 (0.034) **	0.379 (0.013) **
	× trend				-0.010 (0.001) **
	Dummy: smaller new firm	-0.602 (0.030) **	-0.576 (0.041) **	-0.614 (0.045) **	-0.552 (0.017) **
	× trend				0.016 (0.002) **
Changes in employment status	From full-time to part-time	-1.729 (0.049) **	-1.709 (0.064) **	-1.641 (0.077) **	-1.951 (0.025) **
	× trend				0.029 (0.003) **
	From part-time to full-time	1.208 (0.038) **	1.088 (0.051) **	1.294 (0.058) **	1.321 (0.023) **
	× trend				0.035 (0.002) **
	Continuously part-time	0.096 (0.037) *	-0.054 (0.066)	0.064 (0.046)	-0.025 (0.020)
	× trend				0.032 (0.002) **
Year dummy variables	1992	-0.302 (0.045) **	0.036 (0.071)	-1.012 (0.130) **	
	1993	-0.387 (0.048) **	-0.068 (0.077)	-1.407 (0.136) **	
	1994	-0.410 (0.049) **	0.060 (0.079)	-1.163 (0.137) **	
	1995	-0.406 (0.047) **	-0.052 (0.077)	-1.270 (0.132) **	
	1996	-0.264 (0.046) **	0.060 (0.075)	-1.036 (0.131) **	
	1997	-0.286 (0.044) **	-0.001 (0.071)	-0.778 (0.130) **	
	1998	-0.632 (0.046) **	-0.072 (0.076)	-1.700 (0.131) **	
	1999	-0.495 (0.048) **	-0.116 (0.080)	-1.387 (0.133) **	
	2000	-0.445 (0.046) **	-0.115 (0.075)	-1.261 (0.130) **	
	2001	-0.547 (0.046) **	-0.276 (0.077) **	-1.311 (0.128) **	
	2002	-0.490 (0.047) **	-0.041 (0.078)	-1.495 (0.129) **	
	2003	-0.519 (0.046) **	-0.125 (0.077)	-1.282 (0.125) **	
	2004	-0.307 (0.046) **	0.081 (0.076)	-1.165 (0.129) **	
	2005	-0.291 (0.045) **	0.109 (0.075)	-1.232 (0.126) **	
	trend				-0.018 (0.002) **
Observations		559783	281258	278525	559783

Notes: * indicates significance at 5% level, ** at 1% level. Standard errors in parentheses.

The dummy variables (larger new firm, smaller new firm, etc.) in the firm size change and changes in employment status panels are interacted with year dummy variables but these are not reported for brevity. As well, the estimations in this table control for present firm size, present industry and present occupation dummy variables.

Table 5A: Marginal Effect for Table 5 (Column 4)								
Wage change category:			under -30%	-30% to -10%	-10% to +10%	+10% to +30%	over +30%
Age			-0.0078 **	-0.0129 **	-0.0017 **	0.0178 **	0.0047 **
Age*year trend			0.0003 **	0.0005 **	0.0001 **	-0.0006 **	-0.0002 **
Age^2			0.0018 **	0.0030 **	0.0004 **	-0.0041 **	-0.0011 **
Female dummy			-0.0020 **	-0.0033 **	-0.0005 **	0.0045 **	0.0012 **
Graduate level dummy	Base = jr high	High school	0.0105 **	0.0174 **	0.0025 **	-0.0240 **	-0.0064 **
		Junior college	0.0220 **	0.0346 **	-0.0043 **	-0.0418 **	-0.0106 **
		University	0.0115 **	0.0187 **	0.0001	-0.0240 **	-0.0062 **
Present firm size dummy	Base = 5-29	30 - 99	0.0140 **	0.0225 **	-0.0007 **	-0.0285 **	-0.0073 **
		100 - 299	0.0238 **	0.0376 **	-0.0035 **	-0.0461 **	-0.0118 **
		300 - 999	0.0226 **	0.0358 **	-0.0034 **	-0.0438 **	-0.0112 **
		over 1000	0.0220 **	0.0354 **	-0.0002	-0.0454 **	-0.0118 **
Involuntary quit dummy			0.0467 **	0.0691 **	-0.0219 **	-0.0754 **	-0.0187 **
Present industry dummy	Base = mining	Construction	-0.0031 *	-0.0053 *	-0.0010	0.0074 *	0.0020 *
		Manufacturing	0.0077 **	0.0128 **	0.0016 **	-0.0175 **	-0.0046 **
		Electricity/ gas	0.0242 **	0.0370 **	-0.0088 **	-0.0420 **	-0.0104 **
		Communication/transportation	0.0029	0.0048	0.0004 **	-0.0064	-0.0017
		Wholesale/retail/restaurants	0.0222 **	0.0345 **	-0.0063 **	-0.0403 **	-0.0101 **
		Finance/ insurance	0.0135 **	0.0215 **	-0.0020 *	-0.0263 **	-0.0067 **
		Real estate	0.0162 **	0.0255 **	-0.0033 **	-0.0307 **	-0.0078 **
		Service	0.0143 **	0.0232 **	0.0005 *	-0.0302 **	-0.0079 **
Present occupation dummy	Base = technician	Manager	0.0039 **	0.0064 **	0.0004 **	-0.0085 **	-0.0022 **
		Administration	0.0193 **	0.0306 **	-0.0026 **	-0.0377 **	-0.0096 **
		Sales	0.0060 **	0.0097 **	0.0003 **	-0.0127 **	-0.0033 **
		Service	-0.0006	-0.0010	-0.0001	0.0014	0.0004
		Communication/transportation	-0.0122 **	-0.0210 **	-0.0083 **	0.0324 **	0.0090 **
		Production	-0.0040 **	-0.0067 **	-0.0011 **	0.0093 **	0.0025 **
		Others	-0.0046 **	-0.0077 **	-0.0016 **	0.0110 **	0.0029 **
Career change	Dummy		0.0120 **	0.0194 **	0.0005 **	-0.0253 **	-0.0066 **
	× trend		0.0000	0.0000	0.0000	0.0000	0.0000
Only Industry change	Dummy		0.0128 **	0.0208 **	0.0003	-0.0268 **	-0.0070 **
	× trend		-0.0009 **	-0.0015 **	-0.0002 **	0.0020 **	0.0005 **
Only Occupation change	Dummy		0.0245 **	0.0378 **	-0.0076 **	-0.0437 **	-0.0109 **
	× trend		-0.0007 **	-0.0011 **	-0.0001 **	0.0015 **	0.0004 **
Firm size change	Dummy: larger new firm		-0.0208 **	-0.0342 **	-0.0034 **	0.0462 **	0.0122 **
	× trend		0.0005 **	0.0009 **	0.0001 **	-0.0012 **	-0.0003 **
	Dummy: smaller new firm		0.0353 **	0.0537 **	-0.0124 **	-0.0613 **	-0.0153 **
	× trend		-0.0009 **	-0.0015 **	-0.0002 **	0.0020 **	0.0005 **
Changes in employment status	From full-time to part-time		0.2224 **	0.1871 **	-0.2327 **	-0.1441 **	-0.0326 **
	× trend		-0.0016 **	-0.0026 **	-0.0003 **	0.0036 **	0.0009 **
	From part-time to full-time		-0.0450 **	-0.0847 **	-0.1407 **	0.1948 **	0.0757 **
	× trend		-0.0019 **	-0.0032 **	-0.0004 **	0.0043 **	0.0011 **
	Continuously part-time		0.0014	0.0022	0.0003	-0.0030	-0.0008
	× trend		-0.0018 **	-0.0029 **	-0.0004 **	0.0040 **	0.0011 **
trend			0.0010 **	0.0016 **	0.0002 **	-0.0022 **	-0.0006 **

Notes: * indicates significance at 5% level, ** at 1% level.

Table 6: US/Japan Comparison										
Estimation method	OLS									
Dependent variable	Post-displacement log weekly earnings minus pre-displacement log weekly earnings					Wage Δ= -2(Δ<-30%), -1(-30%<Δ<-10%), 0(-10%<Δ<+10%), 1(10%<Δ<30%), 2(Δ>30%)				
Data	Farber's U.S. estimates from DWS (weighted by CPS sampling weights)					Japan: Employment Trend Survey Microdata				
Base category	White males, 20-24, 12 yrs education, less than 1 yr tenure					Males, 20-24, 12 yrs education				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Period	1991-93	1993-95	1995-97	1997-99	1999-01	1992-93	1994-95	1996-97	1998-99	2000-01
Constant	0.035	0.053	0.028	0.065	0.075	0.008	-0.092	-0.006	-0.181	-0.038
	(0.050)	(0.042)	(0.062)	(0.058)	(0.051)	(0.036)	(0.041)*	(0.037)	(0.035)**	(0.031)
Female	0.030	0.015	0.052	-0.019	0.011	0.227	0.268	0.193	0.249	0.160
	(0.025)	(0.024)	(0.033)	(0.031)	(0.029)	(0.022)**	(0.023)**	(0.025)**	(0.021)**	(0.020)**
Education < 12	0.084	0.028	-0.041	0.038	0.000	0.244	0.280	0.335	0.299	0.168
	(0.043)	(0.042)	(0.056)	(0.060)	(0.058)	(0.022)**	(0.024)**	(0.026)**	(0.025)**	(0.025)**
Education 13-15	0.029	-0.006	-0.011	-0.013	-0.003	-0.164	-0.135	-0.065	-0.039	-0.060
	(0.028)	(0.028)	(0.040)	(0.037)	(0.035)	(0.044)**	(0.047)**	(0.036)	(0.031)	(0.027)*
Education ≥ 16	0.067	-0.022	0.052	-0.018	0.019	-0.117	-0.073	-0.089	-0.023	-0.044
	(0.032)*	(0.030)	(0.042)	(0.040)	(0.038)	(0.033)**	(0.033)*	(0.029)**	(0.024)	(0.024)
Age 25-34	-0.019	0.008	0.016	0.002	-0.095	-0.069	-0.016	-0.046	-0.022	-0.039
	(0.043)	(0.043)	(0.060)	(0.058)	(0.051)	-0.043	(0.048)	(0.043)	(0.038)	(0.034)
Age 35-44	-0.128	-0.080	-0.051	0.018	0.081	-0.154	-0.076	-0.137	-0.139	-0.169
	(0.044)**	(0.045)	(0.061)	(0.059)	(0.053)	(0.042)**	(0.047)	(0.044)**	(0.040)**	(0.037)**
Age 45-54	-0.139	-0.095	-0.044	-0.046	-0.101	-0.357	-0.366	-0.469	-0.358	-0.491
	(0.049)**	(0.048)*	(0.065)	(0.063)	(0.056)	(0.041)**	(0.044)**	(0.041)**	(0.038)**	(0.034)**
Age 55-64	-0.222	-0.150	-0.123	0.021	0.035	-0.810	-0.774	-1.015	-0.885	-1.032
	(0.060)**	(0.063)*	(0.083)	(0.077)	(0.072)	(0.039)**	(0.044)**	(0.039)**	(0.037)**	(0.033)**
N	2032	1663	1558	1492	1804	6972	7049	7163	7858	9510
R-squared	0.057	0.052	0.027	0.015	0.032	0.160	0.155	0.217	0.201	0.221

Note: U.S. estimates come from Farber (2003). Farber also controlled for nonwhite, for tenure of 1-3, 4-10, 11-20, over 20, 2 yrs since job loss, 3 years since job loss but, since we lack these variables, we do not report them for the U.S.
Both samples are restricted to those between 20 and 64 and undergoing full-time to full-time job transitions.

Table 7: Labor Market Conditions and Characteristics of Job Changers

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Unemployment rate (%)*															
Male	2.0	2.1	2.4	2.8	3.1	3.4	3.4	4.2	4.8	4.9	5.2	5.5	5.5	4.9	4.6
Female	2.2	2.2	2.6	3.0	3.2	3.3	3.4	4.0	4.5	4.5	4.7	5.1	4.9	4.4	4.2
Total	2.1	2.2	2.5	2.9	3.2	3.4	3.4	4.1	4.7	4.7	5.0	5.4	5.3	4.7	4.4
Female ratio in laborforce	40.8	40.7	40.5	40.5	40.5	40.5	40.7	40.7	40.6	40.7	40.9	40.9	41.0	41.3	41.4
Labor Market Turnover															
Inflow rate of job changers (%)**	9.5	8.8	7.9	7.4	7.8	8.0	7.9	8.3	8.4	8.9	9.3	8.8	8.8	10.1	11.0
Inflow rate of new entrants (%)	7.2	7.0	6.3	5.5	5.7	5.8	6.5	5.5	5.7	5.8	5.8	5.7	5.9	5.6	6.4
Outflow rate (%)	15.2	14.6	14.0	13.8	14.3	13.8	15.2	15.1	15.0	16.0	16.9	16.6	16.1	16.0	17.5
Gross turnover rate (inflow+outfl	31.9	30.4	28.2	26.7	27.8	27.6	29.6	28.9	29.1	30.7	32.0	31.1	30.8	31.7	34.9
Characteristics of job changers															
Involuntarily quits (%)***	0.10	0.11	0.14	0.14	0.16	0.13	0.11	0.14	0.17	0.18	0.20	0.27	0.25	0.22	0.21
Mean wage change (%)****	3.01	1.76	0.82	0.25	0.22	0.19	0.37	-1.10	-1.79	-0.95	-1.21	-1.75	-1.62	-1.28	-0.52
Mean age*****	35.3	36.6	37.2	38.0	38.2	37.4	36.8	37.6	38.1	37.7	38.1	38.3	38.5	37.7	37.7
Industry, occupation and career changes for job changers (%)															
Same industry & occupation	40.8	41.8	41.4	42.7	44.2	40.5	39.1	40.7	40.7	40.6	41.5	43.6	43.1	41.5	44.6
Industry change only	25.4	23.6	24.0	24.5	22.3	24.0	25.4	25.6	26.2	26.0	26.4	25.2	25.3	25.0	25.1
Occupation change only	6.5	7.1	6.9	6.8	7.2	7.3	7.1	7.2	7.5	7.3	7.7	8.2	7.9	8.1	7.6
Career change (Ind. & occupation)	27.3	27.5	27.7	26.1	26.4	28.2	28.5	26.6	25.6	26.2	24.4	23.1	23.7	25.4	22.8

*Year Average from Labor Force Survey

**The inflow rate=(# job changers finding new employment after a jobless spell less than 1 year)/(# total workforce at year start)

***Involuntray quits as a % of all job changers. This differs from table 2 as the % here is computed from our microdata.

****Mean calculated by assigning values -30%,-15%,0%,15% & 30% to the five wage change categories. (Reported in table 3)

*****Mean age is calculated by assigning values 19, 22.5, 27.5, 32.5, 40, 50, 57.5, 62.5, 65 to nine age categories.

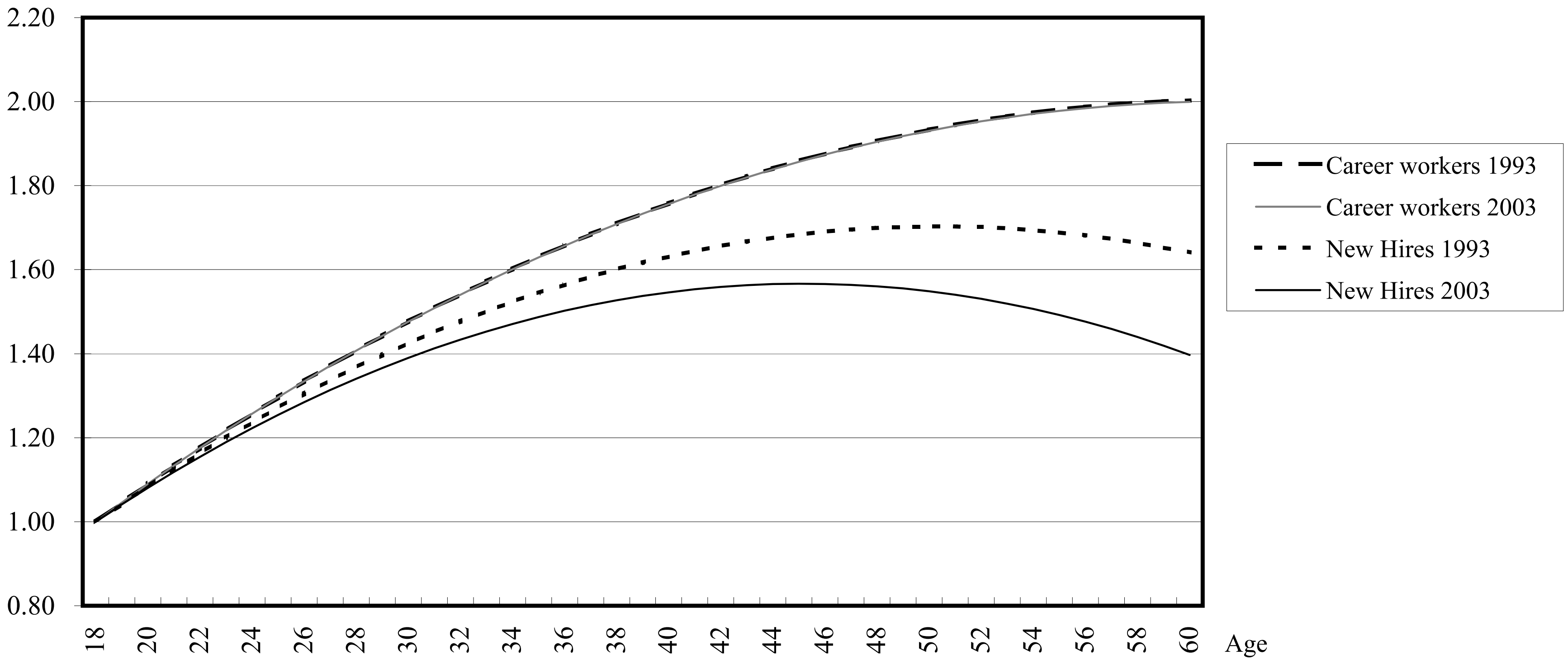
Table 8: Outcomes for Job Changers by Industry, Occupation and Career Change

Change	None (%)	Industry Δ (%)	Occupation Δ (%)	Career Δ (%)	Total (%)
Wage change (Δ) consequences					
Δ<-30%	5.8	7.9	11.8	10.7	8.0
30%<Δ<-10%	10.2	12.5	15.3	14.9	12.4
10%<Δ<+10%	64.0	58.9	51.3	45.8	57.1
10%<Δ<30%	16.7	16.5	16.7	21.3	17.8
Δ>30%	3.3	4.1	5.0	7.3	4.7
Mean*	0.2	-0.5	-1.8	-0.1	-0.2
N	234555	140231	41352	145898	562036
Unemployment duration					
1 - 15 days	41.7	42.3	34.1	24.9	36.9
15 days - 1 month	12.1	11.4	12.7	14.8	12.6
1 - 3 months	21.2	20.2	22.1	25.6	22.1
3 - 6 months	13.1	12.7	14.5	16.3	13.9
Over 6 months	12.0	13.5	16.7	18.5	14.4
Mean**	66.7	69.4	81.1	90.0	74.5
N	238934	143111	42601	150300	574946
Involuntarily quits	19.9	16.2	16.0	13.1	16.9
N	234555	140231	41352	145898	562036

*Mean is calculated by assigning values -30%, -15%, 0%, 15% & 30% to the five wage change categories.

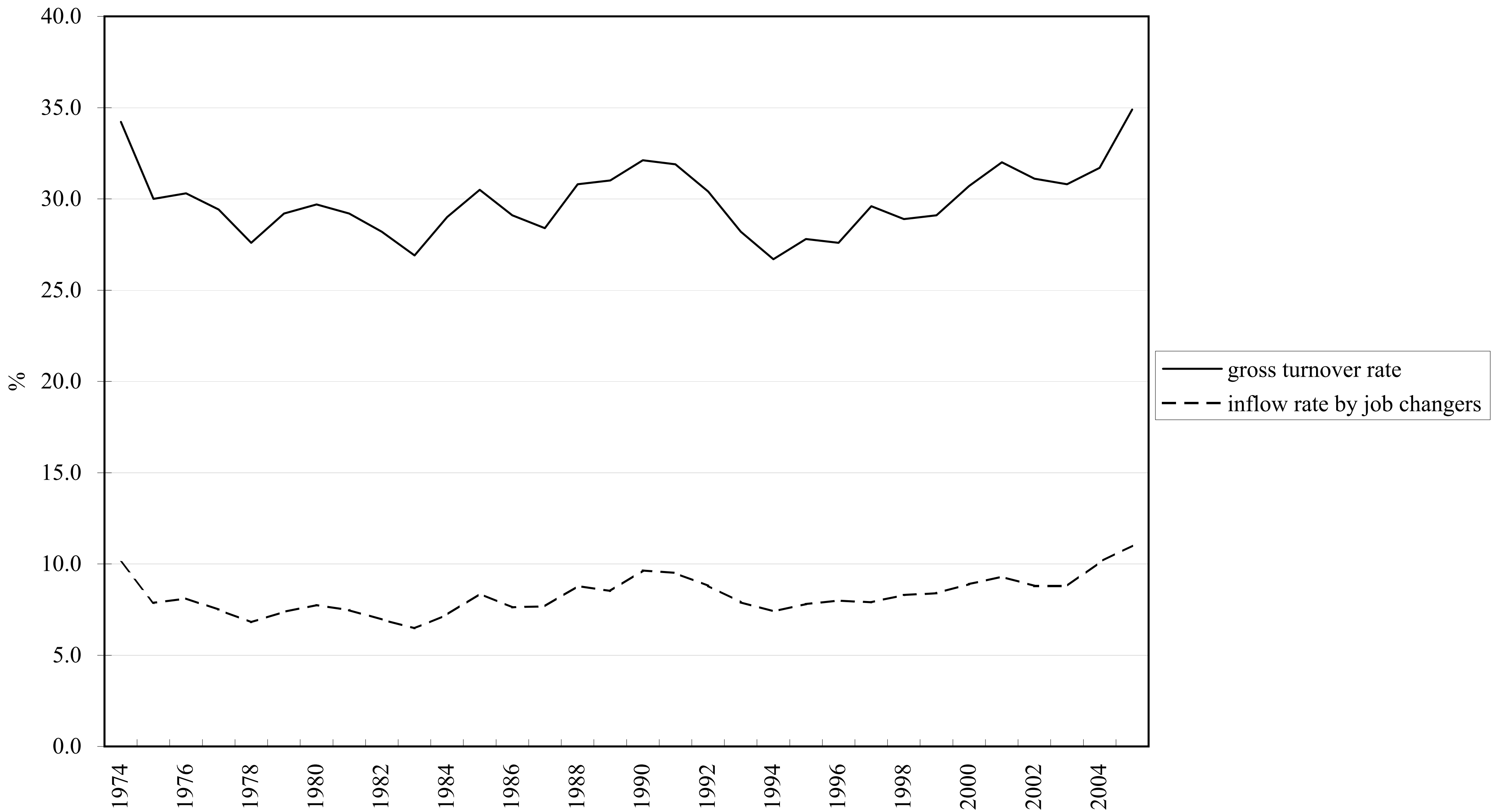
**Mean is calculated by assigning values 7.5, 22.5, 60, 120 & 270 days to the five unemployment duration categories.

Figure 1: Age-Wage Profile for New Hires and Career Workers without a Job Change



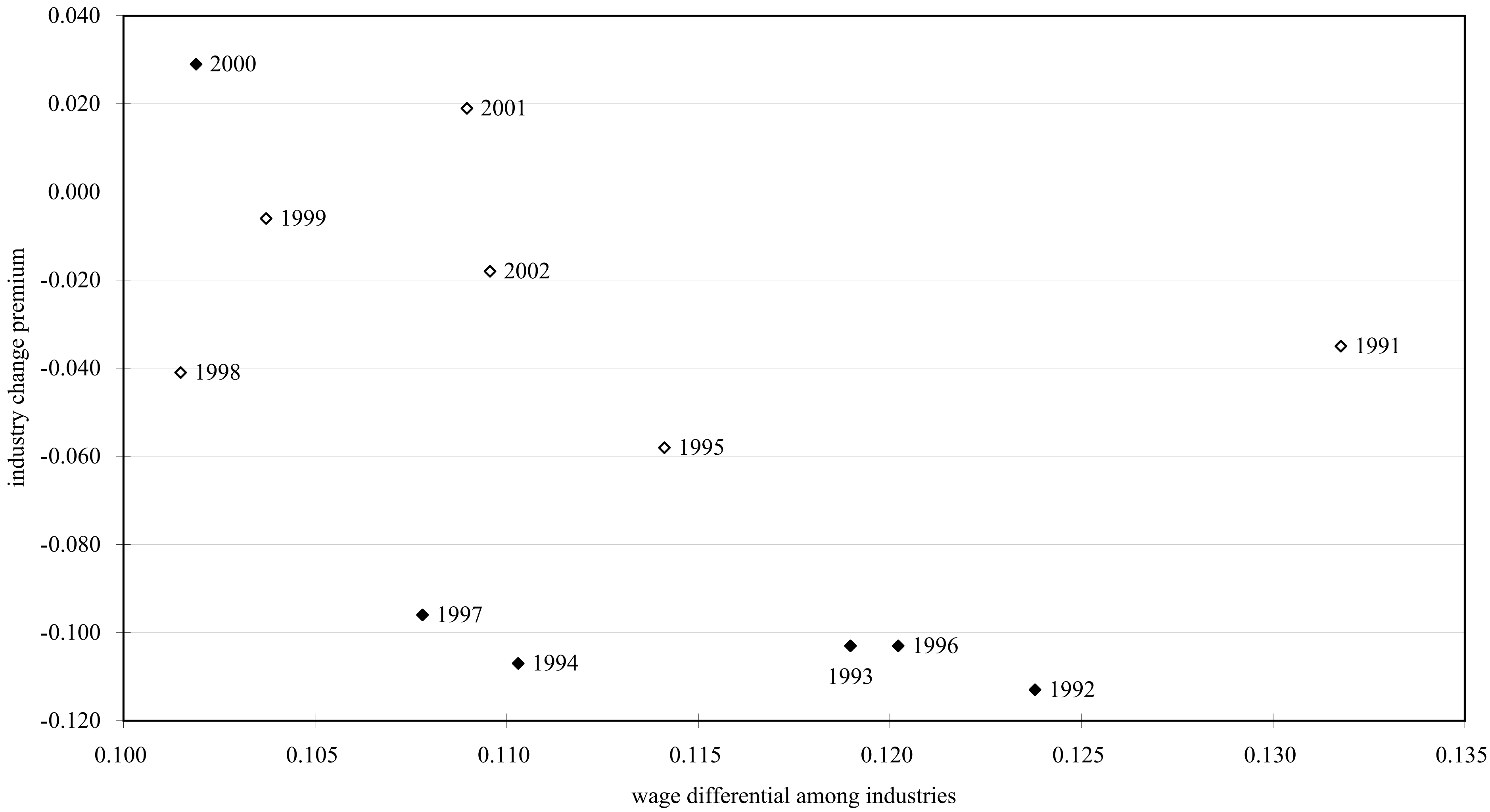
Notes: The estimation of ln(hourly_wage) = const. + female dummy + educational dummies + age + age2 + Firm size dummies + Indusry dummies + Prefecture dummies was performed in 1993 and 2003.
Source: Kawaguchi and Kambayashi (2007) analysis of the Basic Survey of Wage Structure restricted to private sector, regular workers. The effect of age on wages is calculated and then standardized so that an 18 year old worker has wages equal to one in each of the profiles. Career workers are those with firm tenure equal to their age minus the years required to attain their educational level.

Figure 2: Labor Turnover Rate in Japan (1974-2005)



Source: Employment Trend Survey each year

Figure 3: Industry Change Premium and Wage Differential (1991-2002)



[source]
Industry change premium from estimation (14). ◇ is not significantly different from zero.
Wage differential represents the coefficient of variation of industry average wage from Basic Survey on Wage Structure.