

DECLINING LONG-TERM EMPLOYMENT IN JAPAN

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Abstract

This paper documents the secular decline of years of job tenure in Japan based on micro data from two representative government surveys, namely the household-based Employment Status Survey (ESS) and the establishment-based Basic Survey of Wage Structure (BSWS). Workers born in 1970 have experienced about 20 percent fewer years of job tenure than those born in 1945, based on an analysis of ESS data. The decline of the long-term employment relationship is uniformly observed across firm sizes and industries. Among job changers, the fraction of voluntary job changes, as well as that of job changes associated with wage increase, has been stable.

Key Words: Economic stagnation, Human capital, Implicit contract, Long-term employment

JEL Classification: J21 (Labor Force and Employment, Size, and Structure), J62 (Job, Occupational, and Intergenerational Mobility)

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1. Introduction

Media frequently report on the downsizing of well-known companies, outsourcing of jobs to developing countries, and increases in the number of workers under flexible contractual arrangements. These reports create an impression that long-term career jobs are shrinking. In contrast to the pile of anecdotal evidence for the disappearance of long-term jobs, researchers have not reached a consensus about the long-term trends of the length of job tenure in several developed countries. They reach somewhat different conclusions because they rely on different concepts and measurements of job attachment, as well as different data sets (See Neumark (2000) for the US study).

The time trend of long-term employment in Japan also has attracted much attention, as long-term employment had once been regarded as the main feature of the Japanese labor market (Hashimoto and Raisian (1985), Mincer and Higuchi (1988)).² Recent studies ask whether this practice has survived through the two-decade-long stagnation. One strand of research reports the decline of the long-term relationship based on a declining retention rate (Kambayashi and Kato (2008)) or a flattening tenure-wage profile (Hamaaki et.al. (2010)), while another strand of studies reports the survival of long-term employment regardless of the long-term stagnation of the Japanese economy (Chuma (1998), Faber (2007), Shimizutani and Yokoyama (2009)). In fact Ono (2010) admits that the conclusion depends on a change of measurement and data sets.

Given this state of literature, this paper documents the secular change of long-term employment based on micro data of a household survey, the Employment Status Survey (ESS), and a firm survey, the Basic Survey of Wage Structure (BSWS). This paper employs the method used by Farber (2007), which analyzes US data to compare the secular change of job stability of Japan with that of the US. Our analysis, based on a household survey, the ESS, and a firm survey, the BSWS, draws different pictures of the secular trends of job stability in Japan.

The analysis based on the ESS implies a secular decline of average years of job tenure among workers born after 1944. Male workers who were born in 1970 have 20 percent fewer years of job tenure than workers who were born in 1944, and this decline is quantitatively similar to the corresponding US figure reported by Farber (2007) based on the Current Population Survey. In contrast, the analysis based on the BSWS implies that the average years of job tenure among male workers does not change significantly, except for the workers who are born after the mid 1970s, who presumably entered the labor market after the Japanese long-term stagnation. An analysis of females based on the ESS indicates the average years of job tenure compared with the 1945-born cohort

² See Moriguchi and Ono (2006) for a historical argument.

had declined after the birth cohort of the 1960s. For more recent birth cohorts, the average job tenure increased until the birth cohort of 1972, and then declined afterward. In sum, the analysis based on the ESS indicates a gradual decline of job stability among male workers born after 1944 and female workers born after 1960. In contrast, the analysis based on the BSWS implies a relative constancy of job stability among male workers and an increase followed by a decrease of such constancy among female workers.

We find that the discrepancy of the results based on the ESS and the BSWS is attributable to the different sampling schemes of the two surveys. The ESS is a household survey that is comparable to the Current Population Survey in the US, whereas the BSWS is an establishment survey that records individual workers' years of job tenure based on establishments' payroll records. A comparison of the ESS and the BSWS reveals that the sampling of BSWS establishments is biased toward larger-scale firms and the industry composition is different. An adjustment of the difference of the sampling probability of an establishment by firm sizes and industries is found to contribute to reducing the discrepancy, but it fills only part of the gap. The BSWS's sampling procedure tends to include establishments with longer business histories, and the establishments' payroll records are more likely to include workers with traditional employment contracts. In sum, as Farber (2007) suggested, Japanese workers enjoy greater job stability than their US counterparts, but both workers have experienced a quantitatively similar decline of job stability as long as the analyses are based on comparable household surveys and a consistent method.

We further find that male workers in all age groups, industries, and firm sizes almost uniformly have experienced declining long-term employment. This finding casts doubt on claims that declining long-term employment is concentrated among youth, that it is caused by industries' compositional change, or that larger firms stick to their long-term employment practices. We do not find any evidence that recent job changers are happy job hoppers. The fraction of voluntary job changers or that of job changers experiencing a wage increase has been almost stable for the last 40 years. After all, a falling tide sinks all boats.

The rest of the paper is organized as follows. Section 2 introduces the two data sets, the ESS and the BSWS, in detail. Section 3 reports the change in the average years of job tenure by birth cohort based on the ESS and the BSWS. Section 4 discusses the discrepancy of the results based on the two surveys and attempts to fill the gap of analysis based on both surveys, using a reweighting procedure. Section 5 further investigates the change of long-term employment by industries and firm sizes. Section 6

examines if the decline of long-term employment is associated with an increase of positive job-hopping behavior among Japanese workers. Section 7 summarizes the findings of the analysis and derives its implications.

2. Two Data Sets on Job Tenure

Two datasets are exploited in this study to examine the change in job-tenure distributions in last two decades.

The first data set used in this study is micro data from the Employment Status Survey (ESS, *Shugyo Kozo Kihon Chosa*) for the years 1982, 1987, 1992, 1997, 2002, and 2007. The ESS is conducted every 5 years on household members ages 15 or older in approximately 440,000 households dwelling in sampled units that cover the complete population.³ The survey collects information on household members and each member's labor-force status on October 1 of each survey year. This study utilizes micro data and extracts information on age, educational attainment, employment status, and the years of tenure with current employer.⁴ If the workers are doing more than one job, they are requested to provide information with regards to their major job. The file contains about 1 million individuals with a half-million males and a half-million females for each year that the survey was conducted. Our analysis sample includes only employed workers, which excludes self-employed and family workers. The sample is further restricted to observations with a valid age, educational background, and employment status. Those without job tenure conditioned on being employed are dropped.

The second data set used in this study is micro data from the Basic Survey on Wage Structure (BSWS, *Chingin Kozo Kihon Chosa*), compiled annually by the Japanese government between 1989 and 2008. This survey is conducted in June of every year and contains observations randomly chosen from almost all regions and industries in Japan except for agriculture. The annual number of observations is approximately 1.5 million workers from 60-70 thousand establishments. The sample includes all establishments with 10 or more employees in both private and public sectors and all establishments that belong to private firms with 5 to 9 employees. The establishments in the sample are randomly chosen in proportion to the size of prefectures, industries, and number of employees from the Establishment and Enterprise Census (EEC), which lists all

³ Foreign diplomats, foreign military personnel and their dependents, persons dwelling in camps or ships of the Self Defense Force, and persons serving sentences in correctional institutions are excluded.

⁴ For 2002 and 2007, the year and month of starting date with current employer is recorded.

establishments in Japan.⁵ In addition to filling out an establishment survey, the selected establishments are asked to randomly extract their workers' information from their payroll records at the individual worker level.⁶ The establishment and individual files were merged using an establishment identification number. The unit of analysis is an individual worker with relevant information from the establishment to which he/she belongs. Among the variables related to workers' characteristics, job tenure with the current firm in June is available. Specifically, the survey instrument asks a respondent from an establishment to fill in the years of tenure at the firm to which the establishment belongs for each randomly selected worker, based on the establishment's payroll records. Other variables include age, sex, educational attainment, full-time/part-time status, employment status (with or without permanent status), as well as the firm's attributes, including the number of permanent workers (*Joyo Rodo Sha*),⁷ firm size, industry, and location.

Data on how long workers have been with their current employer are available both in the ESS as of 1 October of 1982, 1987, 1992, 1997, 2002 and 2007, and the BSWS between 1989 and 2008 for every June. The analysis sample is restricted to those who are ages 25-54, have already graduated from school, are currently employed, and are called regular workers, temporary workers, daily workers, or executive officials. We also limit the analysis to workers who were born between 1944 and 1981, to exclude from the sample those who had already reached the usual retirement age (i.e., 55 years old in the early 1980s) at the point of the BSWS's earliest survey (1989), and also to exclude those who had not yet reached age 25 at the point of the ESS's latest survey (2007). As a result, our analysis sample includes workers born in the five decades from

⁵ This list is revised every 2-5 years. Of the years relevant to our analysis, the lists were revised in 1986, 1991, 1994, 1996, 1999, and 2001. The BSWS 1989-1992 sample is randomly picked from the 1986 EEC list, the 1993-1995 sample is from the 1991 list, the 1996-1997 sample is from the 1994 list, the 1998-2001 sample is from the 1996 list, the 2002-2003 sample is from the 1999 list, the 2004-2005 sample is from the 2001 list, the 2006-2007 sample is from the 2004 list, and the 2008 sample is from the 2006 list. While the sampling is based on the same list, about half of the establishments are chosen in two consecutive years, but only about 1/10 of the establishments in the sample are picked at the time of the list revision. We should recognize the large discontinuity of the analysis sample at the times of the list revision: 1993, 1996, 1998, and 2002.

⁶ A person in charge of personnel matters in each establishment was asked to randomly choose a number of workers from its pool of employees based on the given instructions for random sampling, including the sampling probability, which depended on the establishment's size and industry.

⁷ Those workers who satisfy one of the following three criteria are classified as permanent workers: 1. on contracts that do not clearly specify a contractual time period, 2. on contracts that last more than a month, or 3. on contracts that last less than a month, but on which the workers worked 18 or more days in the last two months. This classification includes part-time workers if one of the criteria above is satisfied.

the 1940s to the 1980s.⁸

Table 1 contains summary statistics on age, tenure, and the fraction of permanent-regular worker by decade of birth and by sex. The sample is limited to workers between the ages of 25 and 54. Earlier birth cohorts have predominantly older workers and more recent cohorts have predominantly younger workers. Thus, the mean tenure is naturally shorter for younger cohorts, implying the importance of the right censoring of the years of tenure. No single birth cohort covers the entire age spectrum. By comparing tables for males and females, both the mean and standard deviation of ages for each cohort is quite similar for men and women. Although it is not possible to completely characterize an age distribution from this information, there are not any significant differences between men and women for all cohorts at least with regards to the mean and standard deviation among the samples of the employed. The fraction of permanent regular workers is lower for female workers than for male workers. Note that the fraction of permanent regular workers tends to decrease among recent cohorts of male workers, while this is not the case for female workers.

One factor that might affect the distribution of tenure among age cohorts is education years. Through the periods of the surveys, the average education years increased to a certain extent for both men and women. This would directly lead to a shift of the tenure distribution to the left-hand side, as the timing for workers to participate in the labor force would be delayed accordingly. This tendency is expected to have a significant impact on the shape of the entire tenure distribution, as most people used to find a permanent job upon graduation in Japan.

Table 2 summarizes the proportion of workers by years of education, by sex and age cohort. As we expected, the figures for 9-11 years of education decreased somewhat among more recent age cohorts of both male and female employees. The share of employees with 12 education years (i.e., high-school graduates) is the greatest, but those of employees with even more years of education (for example, university graduates) also increased among more recent cohorts for both sexes. The drastic changes started around the 1950 birth cohort. In particular, among women, the majority of high-school graduates started to be substituted by junior-college graduates (13-15 years of education) from around 1960 birth cohort. In the analysis of changes in employee tenure by age cohort in a later section, we will take into account the impacts of greater years of education.

Although both datasets are designed to be surveys based on random sampling, attention might be required to compare the results from each of them, as samples are

⁸ The 1970 decade includes workers born between 1980 and 1981.

collected using quite different processes. In addition, as explained earlier, the coverage of data is not exactly the same; small-size establishments (i.e. those with 1-4 workers) are not covered in the BSWS, while workers at such establishments are included in ESS samples. Focusing on industry and firm-size distribution, Table 3 compares the distribution of the samples by industry and by firm-size of employers between the ESS and the BSWS. We can see differences in these samples; for example, the share of finance sectors is greater in the BSWS than the ESS, while that of the construction sector is much smaller. Not only the industry distribution, but also the average tenure is not necessarily consistent between two datasets. The same holds for the firm-size distribution; for example, the share of the workers working at firms with more than 1000 employees tends to be greater in the BSWS than in the ESS.

To grasp a rough sense of the data, Figure 1 reports age-specific mean tenure based on ESS and BSWS data of the most recent survey years between 2005 and 2008. For the purpose of a cross-sectional comparison with the US, age-specific mean tenure calculated from the Current Population Survey January Supplements 2004, 2006, and 2008 is superposed. Japanese workers apparently enjoy about 50 percent longer job tenure than US workers for all age ranges.

3 Average Years of Job Tenure by Birth Cohorts

3.1 Basic Results

Our goal is to estimate the change of mean job tenure by birth cohorts, conditional on workers' age, exploiting the structure of repeated cross-section data. Older workers have more years of job tenure, on average, and thus, workers of earlier birth-years cohort have more years of job tenure, on average. To examine the change of tenure length by birth-year cohort conditional on age, Figure 2 plots age-specific average years of job tenure from the ESS (Panel A) and the BSWS (Panel B). Average years of tenure become fewer for more recent cohorts among male workers based on both data sets, while the change is more distinct in the ESS sample. The changes of age-specific tenure years across cohorts are more complex for female workers, and the patterns of change are not consistent between the ESS and the BSWS.

As a simple way to summarize the average change of age-specific tenure across cohorts, by referring to the linear estimation model proposed by Farber (2007), we estimate the following linear model of the natural logarithm of tenure to examine the change of average job tenure by birth cohort, conditional on workers' age:

$$\ln(T_{ijk}) = C_j \alpha + A_k \beta + \varepsilon_{ijk}, \quad (1)$$

where T_{ijk} is tenure years for employee i in birth cohort j aged k , C_j is a vector of dummy variables corresponding to each birth year, α is a vector of associated coefficients, A_k is a vector of dummy variables corresponding to each age, and β is a vector of associated coefficients. Year dummy variables are not included to attain the identification. The logarithmic specification embodies the same implicit assumption that proportional cohort effects on mean tenure are constant across ages and, equivalently, that the proportional age effects on mean tenure are constant across birth cohorts, as in Farber (2007). When these assumptions are violated, the cohort effects averaged over the age distribution and the age effects averaged over the cohort distribution are estimated. In our estimation, we set the birth cohort as long as one year, as we observe several year-specific factors that might affect the mean tenure among employees, and the sample size is large enough to estimate the individual birth-cohort effect with precision.

We estimate the model in equation (1) separately for men and women using OLS. The estimated cohort effects on mean tenure, normalized at zero for the 1944 birth cohort, are converted to percentage differences in mean tenure relative to the 1944 birth cohort as $100 \times [\exp(\hat{\alpha}_j - \widehat{\alpha}_{1944}) - 1]$. These percentage differences derived from the estimation with the ESS and the BSWS are plotted in Figure 3 Panels A and B, and they show a general trend of decline for males and females. The patterns of decline are slightly different between male and female workers. Among male workers, from the birth cohorts 1945 to 1981, age-specific mean tenure gradually decreased as a general trend (approximately 35% based on the ESS and 30% based on the BSWS). Among female workers, the age-specific mean tenure stays at almost the same level between the 1945 and 1960 birth cohorts based on the ESS and the 1970 birth cohorts based on the BSWS, and a declining trend is quite obvious afterward. The decreasing rate is almost the same as the male ones between similar birth cohorts; it decreased by about 30% between the 1945 and 1981 birth cohorts.

There are a couple of general interpretations of the above results.

First, similar to the US case discussed in Farber (2007), birth cohorts after 1945 of female workers could have increased their commitment to the labor force with lower rates of withdrawal from the labor force in child-bearing years, but such trends are not particularly obvious from the estimation result. Rather, the estimation result indicates a general decline in long-term employment for birth cohorts after 1960, though this trend might have been offset by the other impacts, such as a further increase in female

commitment to the labor force.

In addition to the increased presence of women in the labor force, there are other important changes that could be related to the decline in mean tenure, similar to the US case. For example, as discussed in previous section, we can point to the impact from the increase in average educational attainment after the WWII period (see Table 2).

Second, we can also observe a general decline in the mean tenure years among male workers for birth cohorts after 1945. These results are not necessarily consistent with the conclusions of previous studies. As discussed, Shimizutani and Yokoyama (2009) concluded that the long-term employment system remains stable with some exceptions observed among a certain worker group.

Third, the differences of the results based on the ESS and the BSWS are notable. For both male and female workers, the estimated percent change is greater in its absolute value for all birth cohorts in the ESS than in the BSWS. The difference between the two results ranges around 2-10% across birth cohorts. We argue that these differences are caused mainly by the difference in the coverage of the two data sources. As discussed in the previous section, we regard the ESS as covering the tenure of the wider labor force. For example, (i) only the ESS covers those who work at a small establishment with 1-4 regular employees, and (ii) the BSWS might not cover new establishments that are not included in EEC, which is updated every two to five years. In addition, (iii) while the ESS registers the tenure of dispatched or contract workers as that of nonpermanent workers at the current workplace, it can be either insufficiently captured or recognized as that of permanent workers or nonpermanent workers at temporary agencies in the BSWS. As a whole, we consider that the ESS provides a more precise picture of the current developments in the tenure of Japanese workers because of its wider and more accurate coverage than the BSWS.

It would be beneficial for us to further examine the behavior of tenure years, as the analysis above treats various workers without controlling the factors that might have affected workers' tenure. In particular, we focus on two factors: (i) education and (ii) contract type (permanent/non-permanent)

3.2 Controlling for Years of Education

To assess whether changes in the educational composition of the labor force can account for the decline in mean tenure, we estimated an augmented version of the regression model for the mean tenure in equation (1), as follows

$$\ln(T_{ijk}) = ED_i\gamma + C_j\alpha + A_k\beta + \varepsilon_{ijk}, \quad (2)$$

where ED_i is a vector dummy variable indicating educational attainment and γ is a vector of associated coefficients. This provides a summary across educational categories of the percentage change in the mean tenure relative to the 1944 birth cohort ($100 \times [\exp(\hat{\alpha}_j - \widehat{\alpha}_{1944}) - 1]$) controlling educational distribution over time. The estimation result based on (2) is reported in Figure 4, but the analysis result is limited to the ESS because the BSWS does not record part-time workers' educational background. After adjusting the impact from the changes in educational attainment, the general decreasing trend seems to show almost the same pattern, by comparing Figure 4 and Figure 3. The decreasing rate stays at almost the same level (i.e. about a 32% between the 1944 birth cohort and the 1981 birth cohort for male workers). Although the general trend is almost similar, the decreasing rate is even greater for female workers, with the control of changes in educational attainment. This implies that changes in the distribution of educational attainment have actually worked in the opposite direction of what was expected. In other words, while longer educational attainment would directly imply shorter mean tenure, in the case of women it contributed to make mean tenure longer among recent birth cohorts. This might mean that women's educational advancement led to the creation of positions to make them more stable, or possibly to make them more committed to the labor force.

In addition to changes in educational attainment, there may also be the fact that recent birth cohorts are more likely to spend several years looking for a job that fits well, instead of finding a permanent job upon graduation. This leads to a shift in the whole tenure distribution to the left-hand side, and to a decrease in mean tenure levels for every birth cohort.

3.3 Proportion of Permanent-Regular / Nonpermanent-Regular Workers

The second and more important factor that could account for the decline in mean tenure would be the increase in the share of non-regular employees. We define permanent-regular workers as those who are employed, working either as a regular employee or an executive official, under a permanent contract that includes an indefinite contract or a fixed-term contract that extends one year or more. Nonpermanent-regular workers include all other types of workers. They correspond to those who are employed, working either as a temporary/daily worker, or a permanent worker who is categorized as a part-time worker (including both *Paat* and *Arubaito*), temporary worker, or contract worker. We divide the sample into permanent-regular workers and nonpermanent-regular workers, and re-estimate (1) by sex.

Before this estimation, to examine if the proportion of permanent-regular workers has really declined and to what extent over birth cohorts, we estimated the probability of being a permanent-regular worker on the birth-cohort indicators by sex, with the control for ages. The model is

$$PD_{ijk} = C_j\alpha + A_k\beta + \varepsilon_{ijk} \quad (3)$$

where PD is an indicator for a permanent-regular worker. From model (3), we can estimate the birth-cohort effects on the probability of being a permanent-regular worker with the control for ages (we call these effects the relative fraction of permanent regular workers). Figure 5 Panel A shows the estimated relative fraction for men, using both the ESS and the BSWS, and Figure 5 Panel B corresponds to those for women. The shapes are somewhat different by sex, but both are declining among recent birth cohorts.

By comparing Figure 5 Panels A and B, we can see that the declining speed among male workers is much slower than that among female workers, and the speed starts to accelerate from the recent birth cohorts (i.e., 1970 birth cohorts and later). This might be related to the fact that female workers tended to participate in the workforce more as nonpermanent-regular workers among the more recent birth cohorts. The drastic decline for both male and female workers after the 1970 birth cohorts could be related to the bad macroeconomic conditions when they left the university and looked for jobs. Female workers could have been affected to a greater extent, facing more difficulties in finding a job as a permanent worker than male workers. In Figure 5 Panels A and B, BSWS and ESS results show similar trends among cohorts, while the relative fraction of recent male cohorts are estimated to be lower with ESS results than BSWS ones.

As we have observed that there are rapid increases in the relative fraction of nonpermanent-regular workers in recent birth cohorts, we consider that this trend might have affected the average tenure by birth cohort, as such workers are likely to have higher turnovers than permanent-regular workers. To see if this holds, we re-estimate relative tenure of each birth cohort by dividing the data into permanent-regular workers and nonpermanent-regular workers.

The re-estimation result of (1) is included in Figure 6 Panels A (male) and B (female) for permanent-regular workers and in Figure 7 Panels A (male) and B (female) for nonpermanent-regular workers. For male workers, the trend of relative tenure by birth cohort is similar for “all workers” (Figure 3 Panel A) and “permanent-regular workers,” as a large proportion of workers are permanent-regular workers. On the other side, the trend of relative tenure mostly coincides with that of nonpermanent-regular workers for

female workers (Figure 3 Panel B). The results indicate that the relative average tenure is declining among recent cohorts, even among permanent-regular workers. Therefore, although we assumed that the increase in the proportion of nonpermanent-regular workers among recent cohorts would explain the shorter average tenure, we found that this is not sufficient to explain the decreasing trend of the average tenure among male workers.

We should note that the estimation results look different between the ESS and the BSWS in all cases. For male permanent-regular workers, the relative tenure is estimated to be lower for the more recent cohort, but the pace of decline is more distinct for the ESS than the BSWS. The trends of non-permanent male workers are very different between the ESS and BSWS results, as the declining trend among recent cohorts is obvious in the ESS but not in the BSWS results. The trends of permanent female workers look similar, but BSWS estimates show a greater increase and decrease in average tenure by birth cohorts. The results of nonpermanent female workers are the opposite: BSWS results indicate that the tenure became relatively longer among more recent birth-year cohorts, while ESS results show that it became shorter among them.

As discussed in an earlier section, part of these differences between the ESS and the BSWS may have been caused by the difference in data coverage. Any consistent relationships between i) birth cohorts, ii) data coverage, and iii) tenure length might explain the discrepancy between ESS and BSWS estimation results to some extent. For example, if (i) the share of workers employed at new establishments, (ii) that of workers employed at very small establishments, or (iii) that of workers in non-manufacturing sectors has been increasing among more recent cohorts, then they are worker groups that are not/less likely to be covered in the BSWS compared with the ESS. Assuming that such workers tend to have short tenure, the sample coverage would be able to explain the observed discrepancies.

By comparing male and female results, we should note the difference observed in permanent workers. The general trend among cohorts seems to be quite opposite: The results for female permanent workers show an increasing trend except for the most recent cohorts, while those for male permanent workers have a decreasing trend. The increasing trend may imply the stronger commitment to the labor force among women as permanent-regular workers after a high-growth period of Japan's economy. At the same time, we can also think of demand-side factors that contribute to the recent decline of both sexes. For example, firms began to hire more permanent-regular workers with short-contract terms after the mid 1990s, and many young workers, both male and female but more obviously the latter, were absorbed into such posts. We assume that the

recent declining trend for nonpermanent-regular workers derived from ESS results may be related to the fact that individuals formed such contracts as contract workers or dispatched workers, whose tenure is even more unstable compared to the rest of nonpermanent-regular workers (e.g., contingent workers).

The difference between ESS and BSWS estimation results for female workers might be interpreted as the difference in employment behaviors between medium/large establishments and small ones. With regards to permanent regular female workers, the relative tenure has increased for the 1950-1970 birth cohorts, particularly at establishments of a certain size and beyond. The trend of nonpermanent-regular female workers is the opposite, which might indicate that the status of such workers has become more unstable than before, particularly for workers employed at very small establishments or in certain industry sectors.

In the next section, we examine to what extent the difference in the coverage of the two surveys can explain the discrepancy in the estimation results of relative tenure.

4. Filling the Gap between the ESS and the BSWS

4.1 Differences in Estimation Results and Data Coverage

As discussed in the previous section, by comparing ESS and BSWS results, differences in relative tenure are particularly obvious among recent cohorts. We considered two possible explanations for such findings: i) an increase of workers with particularly short tenure, after controlling age, among recent cohorts, which is particular in the ESS and not in the BSWS, and ii) an increasing discrepancy in the sample coverage between the ESS and the BSWS among recent cohorts regarding workers with short tenures.

i) Shift of the tenure distribution among recent cohorts

The discrepancy of ESS and BSWS results could be caused by the BSWS failing to capture workers with particularly short years of tenure because of their contractual form. If this is the case, the distribution of tenure estimated from the ESS should have a fatter left-tail than that from the BSWS. We examined whether such difference of the distributions is actually observed by comparing the distributions of the residuals derived from estimation (1) from the ESS and the BSWS, among two different birth cohorts. Figure 8 (male) and Figure 9 (female) describe the residual distribution by sex, derived from ESS and BSWS estimations, for birth cohorts of 1945-1950 and 1965-1970. For both the ESS and the BSWS, residual distributions for male workers are skewed to the left, implying that many workers share the same length of tenure that is slightly above the average tenure because the majority of male workers work for the same company

after graduating from school. This skewed distribution is less prevalent for the female residual distribution.

The shapes of the ESS and BSWS residual distributions of the birth cohorts of 1945-1950 look quite similar for both male and female cases, while the distributions of the 1965-1970 cohorts are thicker around the left-hand side (i.e., left-skewed) for males and females in the ESS than in the BSWS. The results provide us an intuitive explanation of why the relative tenures are estimated as lower among recent cohorts in the ESS estimation than in the BSWS one.

ii) Increase in the sample discrepancy among recent cohorts

We assume that such differences may have been caused by the missing samples that tend to have short tenures from the BSWS, which are covered by the ESS. As discussed in i) above, recent cohorts in ESS samples are more likely to have shorter tenure than BSWS ones, after controlling for age effects. Based on earlier findings from Table 3, we focus on differences in industry and firm-size distributions between the two datasets. We therefore create a weight for a sample to be included in the BSWS from the combined dataset of the ESS and the BSWS. Specifically, we construct the following weight to recover the industry and firm-size distribution in the BSWS using the ESS:

$$w_i = \frac{P(\text{BSWS} = 1|x_i)}{1 - P(\text{BSWS} = 1|x_i)} \cdot \frac{1 - P(\text{BSWS} = 1)}{P(\text{BSWS} = 1)}, \quad (4)$$

where BSWS is an indicator variable that takes one if the observation is from the BSWS and zero if the observation is from the ESS. The vector x_i includes 88 group dummy variables constructed from 11 industry categories and 8 firm-size categories listed in Table 3. The probability to be included in the BSWS, which is $P(\text{BSWS} = 1|x_i)$, is estimated by a linear probability model applied to the pooled data of the ESS and the BSWS for each year. Since BSWS counterparts are not available for the 1982 and 1987 ESS, the 1989 BSWS is used for those two years. The estimation of the linear probability model does not violate the notion of probability because the model is a saturated model.

We expect that the weight distribution shifts to the left for the ESS samples of the recent survey years, implying that more observations appear only in the ESS but not in the BSWS. Figure 10 shows the distributions of estimated weights by sex for years 1982 and 2007. We observe a significant fraction of observations with zero weight that correspond to the observations that appear in the ESS but not in the BSWS. From the

figure, it is not quite obvious whether our assumption that the weight distribution would be more skewed to the left for 2002 samples than 1987 ones (i.e., more samples that are not/less likely to be covered by BSWS exist in the 2002 survey than in the 1987 survey) holds.

In summary, we consider that the above examination results at least do not deny the possibility that the sampling discrepancy explains the differences in the estimation results of relative tenure between the ESS and the BSWS. We then examine relative tenures, adjusting the differences in sampling frequency for the ESS case.

4.2 Estimation Results Based on the ESS with Weights

Figures 11 and 12 show the results of the estimation (3) by using i) the ESS, ii) the BSWS, and iii) the ESS with weights by sex for permanent-regular and nonpermanent-regular workers, respectively. Regarding the results for male permanent-regular workers, the results from the third estimation almost trace the first estimation results, with a slight adjustment in the direction closer to the second one (Figure 10). Thus even after adjusting sample weights, the estimation results still exhibit almost the same level of discrepancy as before. This indicates that the difference between the ESS and the BSWS results have not been caused by the difference in the industry and firm-size structure between samples of the two surveys, as this factor can explain the difference to a very limited extent. This could have been caused by the BSWS's survey structure, which might tend to capture only a certain group of workers within establishments, causing the higher estimation results for the average tenure length than those of the ESS.

For the female permanent-regular workers, the estimated trend is volatile, and the relationships among the three different estimation results are not as clear as in the male case (Figure 11). In this case, we can at least assume the sample coverage difference explains the discrepancy between ESS and BSWS results for workers from the 1960-1970 birth cohorts.

Figure 12 shows the results for nonpermanent-regular workers. The adjustment of ESS samples by weights does not reduce the discrepancy between the ESS and the BSWS in a substantive way, and it simply traces the ESS results without weights. This result implies that in the case of nonpermanent-regular workers, the difference in industry or firm-size distribution among samples of the two surveys has not been a cause of the different estimation results: Those who are surveyed in the BSWS tend to have an increasing (female) or stable (male) trend of average tenure by birth cohorts, while those covered in the ESS tend to have a decreasing trend.

To summarize, we find that there are still substantial differences in the average tenure between the adjusted ESS and BSWS among male permanent-regular workers, as well as among nonpermanent-regular workers of all cohorts. Assuming that the ESS sample indeed represents the whole population of Japan, the above results indicate certain factors that contribute to the BSWS's failure to capture the recent cohorts of permanent regular workers with short tenures through its sampling process. One such factor may be the sampling process of workers at each establishment by using payroll records.⁹ The workers of the BSWS are designed to be randomly selected among all workers enrolled on the payroll books, while the worker-selection process at an establishment level may not be perfectly random for certain reasons, such as: i) the payroll books are supposed to be created each time employees are paid- while most workers are paid regularly (e.g., monthly) at the same time, there may be a group of workers under contracts that make them get paid on an irregular basis- such workers might not be covered in the sampling process, ii) there might be a multiple number of payroll books per establishment, and some of the books may be kept and updated by a section that is not the same as the one that is responsible for responding to the BSWS. The fact that the BSWS asks the annual bonus amount in the last year may also create a bias to sample workers with at least one year of tenure.

After all, the purpose of the BSWS is to estimate wage conditional on workers' characteristics such as age, education, and tenure, and the sampling is designed to serve this purpose efficiently. Thus, the fact that those conditioning variables of the BSWS do not represent the population is not surprising.

These are just conjectures that require further evidences. We can at least conclude that we should not solely depend on the BSWS to discuss recent trends in employees' average tenure in Japan, as the survey may not represent the whole workforce, particularly in that it misses certain types of workers with short tenures. Among others, we would like to highlight our findings from the ESS that the average tenure is decreasing among recent cohorts for both permanent-regular and nonpermanent-regular workers, for both male and female workers.

5. Falling tide sinks all boats

The results based on the ESS heretofore clearly indicate the decline of long-term

⁹ As explained in Footnote 2, respondents are instructed to use payroll records to provide their responses for the BSWS. Employees' payroll records are available from a payroll book. The Labor Standards Act of Japan states employers' obligation to create a payroll book for each establishment and to register all employees in the book with their characteristics, including the wages and work hours for each time they are paid (Section 108).

employment among younger-born cohorts in Japan. The model specification heretofore assumed that a worker who belongs to a specific cohort experiences a uniform decline of employment stability across ages over his/her career. It is possible, however, that the declining stability is concentrated only at the early career stage and, after an initial job-hopping period, workers may enjoy long-term employment as before. Alternatively, only middle-aged workers may have experienced a declining long-term employment relationship because of layoffs of mid-career workers. These possibilities are assessed by estimating the same regression model using subsamples divided by age. While our ability to implement this identification strategy is limited by the data, as it requires several cohorts observed at the same age, we roughly divide the sample into workers whose ages are between 25 and 39 and between 40 and 54. The estimation results are summarized in Figure 13. For male workers, the percentage decline of the average tenure of workers among 25-39 year olds and 40-54 year olds are very similar, suggesting that typical workers experience less job stability over their career regardless of age. The estimation results for female, in contrast, indicate that the extension of average job tenure between 1945 and 1960 birth cohorts was observed only at the ages between 25 and 39. Those aged between 40 and 54 have experienced a monotonic decline of average job tenure across birth cohorts.

One might argue that the declining trend is observed because the industry composition of workers has changed over the years. As evidenced in Table 3, the industry composition has changed over the last 20 years, and this implies that younger cohorts are more likely to be in certain industries than previous cohorts. Because the means of workers' tenure differ across industries, a change of industry composition across cohorts mechanically alters the mean tenure of workers across birth cohorts. To assess this possibility, Figure 14 graphs changes in age-specific mean tenure by six sectors and by sex. Even though there are differences in the level of changes by sector (for example, the information and transportation sector records the greatest level of negative changes for all birth cohorts, while the manufacturing and construction sector shows relatively smaller changes for all cohorts), we note that all sectors experience a declining trend of changes in age-specific mean tenure across birth cohorts, for both male and female workers.

One may also point out possible heterogeneous trends of long-term employment across firm sizes. Previous studies found that long-term employment is more prevalent in larger firms (Raisian and Hashimoto (1985) and Ariga, Brunello and Ohkusa (2000)). If the value of keeping long-term employment is high for larger firms, workers in larger firms may have been relatively immune from declining trend of long-term employment.

To examine this possibility, Figure 14 displays the changes by firm size and by sex. We see a declining trend for each firm size category across birth cohorts. For male workers, the trend is almost the same for different firm sizes, while both the level and speed of decline are more obvious with the increase in firm size for female workers.

To conclude, the mean tenure years of male workers drop continuously for all birth cohorts born after the WWII regardless of age, industry, or firm size. Declining long-term employment is a ubiquitous trend among male Japanese workers. In contrast, the trends of female workers are somewhat heterogeneous.

6. Positive Job Hopping?

The literature finds that job changes are associated with wage growth in several countries, such as the US and Germany (Topel (1991), Topel and Ward (1991), Shörnberg (2007)). Considering these findings, declining long-term employment does not necessarily imply worsening labor-market conditions if it is resulting from an increase of positive job hopping among Japanese workers. To examine if this is the case, we rely on the Survey on Employment Trends (*Koyo Doko Chosa*) implemented by the Ministry of Health, Labor and Welfare. The survey covers about 16,000 randomly sampled establishments and asks for the number of terminated employment contracts and the major reason for each of them. The survey asks employers to distribute questionnaires to new entrants and then collect them. This new entrant's survey asks the change of wage before and after the job change. We do not have access to the micro data of this survey for this project but aggregate statistics are publicly available.

Figure 16 indicates the time series of the fraction of the incidence of involuntary employment termination among all terminations of employment. The fraction of involuntary separation is calculated as the number of "separations due to the end of contract" and "separations due to managerial reasons" divided by the total number of separations. It is difficult to classify "mandatory retirement" as a voluntary or involuntary separation, so we dropped this category from both the numerator and denominator. The fraction of involuntary separation increased from 10% in 1990 to 20% in 2000, and then declined to 15% afterward. This time series indicates that the decline of long-term employment is not a consequence of happy job hopping becoming more prevalent in the Japanese labor market.

The survey also asks new entrants to firms about their experience of wage change before and after the job change by five categories until 1997 (decrease by 30% or more, decrease between 10 and 30%, decrease or increase within 10%, increase between 10 and 30%, increase 30% or more) and seven categories in 1998 and afterward (decrease

by 30% or more, decrease between 10 and 30%, decrease less than 10%, unchanged, increase less than 10%, increase between 10 and 30%, increase 30% or more). Figure 17 draws the time series of the composition of wage change associated with job change. While there is a gap in time series because of the change of the questionnaire format, the composition of wage changes are largely unchanged during the sample period. If there is any change, the fraction of workers who experienced a 30% or more wage decrease had slightly increased, and the fraction of workers who experienced a wage increase between 10 and 30% had decreased. Again, this time-series does not seem to suggest that declining long-term employment is not a byproduct of the positive change of Japanese labor market that allows its workers enjoy more opportunities for happy job hopping.

7. Concluding Remarks

This study examined the trends of long-term employment in Japan based on two sets of independent government micro data, the Employment Status Survey (ESS, *Shugyo Kozo Kihon Chosa*) and the Basic Survey of Wage Structure (BSWS, *Chingin Kozo Kihon Chosa*).

The analysis based on the two samples renders different pictures of the trends of job stability among male workers. Both ESS and BSWS results indicate a secular decline of job stability for male workers, but the pace of decline is estimated to be much faster in the ESS than in the BSWS. One major factor for this trend is the increase in the proportion of nonpermanent-regular workers, who generally have higher turnover than permanent-regular workers. The relative fraction of nonpermanent-regular workers greatly increased among birth cohorts after 1970. The relative tenure for male permanent-regular workers has a gradual declining trend for birth cohorts after 1950. As a background for such decline, we can point out factors such as (i) an increase in the proportion of workers employed at small-sized and/or newly established firms, and (ii) an increase in the proportion of workers employed in industry sectors such as the service industry, whose turnover is relatively greater than that of the other sectors. Empirical assessments of these possibilities, however, point to the fact that declining long-term employment is ubiquitous across all firm sizes of all industries.

An analysis of two surveys indicates similar trends of average tenure among female workers. The analysis of ESS data indicates a continuous decrease of average tenure after the 1960-born cohort. Results based on both surveys indicate the relative fraction of nonpermanent regular workers has an increasing trend through birth cohorts. Among permanent-regular workers, the relative tenure declined after the 1970 cohort from both

survey results. Among nonpermanent-regular workers, the ESS analysis indicates a secular decline of job stability, while the BSWS shows a slight increase of job stability.

In sum, an analysis based on the ESS indicates a secular decline of job stability, but an analysis based on the BSWS indicates a decline of long-term employment to a relatively smaller extent. The difference of the results could be well explained by the sampling structure of the two surveys. The BSWS's sampling procedure arguably drops workers whose job stability has declined. The discrepancy between the two surveys is to some degree inevitable, because the ESS is designed to represent the employment status of the Japanese population, while the BSWS is designed to represent the wage of workers by workers' attributes. The distribution of conditioning variables in the BSWS is not designed to be nationally representative.

It is worth noting again that the declining trend of long-term employment is a secular trend among the cohorts born after the WWII and not an episodic event attributable to macroeconomic stagnation after the early 1990s in Japan. This secular decline of long-term employment practices partly takes the form of an increase in the fraction of nonpermanent-regular workers. Thus, the mechanism behind the increase of the fraction of nonpermanent-regular workers, which has attracted recent attention from policy makers, should be investigated in the context of this secular trend.

As a way to understand the reasons behind the secular decline of long-term employment practices, a comparison of the Japanese experience with the US experience is useful. Applying Farber's (2007) method to ESS, which is a household survey comparable to US Current Population Survey, renders a similar degree of secular decline of job stability found by Farber (2007) based on the CPS. Among US male workers, age-specific average tenure of the 1970 cohort is about 20 percent shorter than that of the 1945 cohort. The corresponding figure for Japanese male workers is about the same. Countries on both sides of the Pacific share the same degree of declining job stability despite numerous differences in labor-market institutions. This finding suggests that a fundamental change in the global economic environment, such as technological progress or deepening international dependence, drives the decline of long-term employment practices. Unpacking the factor behind a common decline of long-term employment practices in both Japan and the US is left for future investigation.

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Table 1: Distribution of Age, Tenure and Permanent-Regular Work Status by Birth Cohort in ESS and BSWS

Male

Birth Years	ESS			BSWS		
	Age	Tenure	Permanent Regular	Age	Tenure	Permanent Regular
1944-1949	39.96 (0.02)	14.43 (0.03)	0.96 (0.0008)	47.76 (0.01)	19.09 (0.03)	0.99 (0.0001)
1950-1959	33.16 (0.02)	9.39 (0.02)	0.96 (0.0007)	43.07 (0.01)	15.48 (0.02)	0.99 (0.0002)
1960-1969	27.68 (0.01)	5.35 (0.02)	0.95 (0.001)	34.46 (0.01)	9.52 (0.02)	0.98 (0.0002)
1970-1981	29.76 (0.02)	6.23 (0.02)	0.89 (0.001)	29.52 (0.01)	5.96 (0.01)	0.96 (0.0005)
Total	34.55 (0.01)	10.43 (0.02)	0.96 (0.0006)	38.22 (0.01)	12.15 (0.01)	0.98 (0.0001)

Female

Birth Years	ESS			BSWS		
	Age	Tenure	Permanent Regular	Age	Tenure	Permanent Regular
1944-1949	40.79 (0.02)	6.82 (0.03)	0.51 (0.003)	48.01 (0.01)	9.22 (0.02)	0.64 (0.002)
1950-1959	33.83 (0.02)	5.54 (0.02)	0.59 (0.002)	44.33 (0.02)	8.31 (0.02)	0.61 (0.002)
1960-1969	27.37 (0.02)	4.24 (0.02)	0.75 (0.003)	34.86 (0.02)	6.31 (0.01)	0.73 (0.001)
1970-1981	29.46 (0.02)	4.65 (0.02)	0.59 (0.002)	29.13 (0.01)	4.76 (0.01)	0.80 (0.001)
Total	35.19 (0.02)	5.77 (0.02)	0.59 (0.002)	38.60 (0.02)	7.04 (0.01)	0.69 (0.001)

Note: Means are reported. Standard errors of means are reported in parenthesis. Sampling weights are used to calculate all the statistics.

Table 2: Distribution of Years of Education by Birth Cohort, BSWS

Male

Birth Years	ESS				BSWS			
	years of education				years of education			
	9-11	12	13-15	16-	9-11	9-11	12	13-15
1944-1949	23.38	49.75	3.79	23.08	22.47	52.14	3.49	21.90
1950-1959	14.43	49.35	5.85	30.37	11.13	51.60	5.69	31.59
1960-1969	6.95	48.93	10.15	33.97	3.89	48.27	9.22	38.61
1970-1981	6.26	42.09	17.73	35.09	3.08	44.83	13.80	38.29
Total	16.22	49.42	5.89	28.48	8.82	49.26	8.11	33.81

Female

Birth Years	ESS				BSWS			
	years of education				years of education			
	9-11	12	13-15	16-	9-11	9-11	12	13-15
1944-1949	26.28	61.01	9.39	3.32	23.31	63.71	9.81	3.17
1950-1959	13.36	61.60	18.19	6.85	10.57	63.32	19.64	6.47
1960-1969	3.74	51.01	32.84	12.41	2.06	52.44	31.87	13.63
1970-1981	3.51	36.74	39.78	19.97	1.14	37.38	39.21	22.27
Total	16.33	59.34	17.72	6.60	7.13	53.18	27.29	12.40

Note: Sampling weights are used.

Table 3: Industry and Firm Size Distribution in ESS and BSWs

<i>Male</i>	<i>1987</i>		<i>1989</i>		<i>2007</i>			
(Industry)	ESS		BSWS		ESS		BSWS	
	Share	Tenure	Share	Tenure	Share	Tenure	Share	Tenure
Agriculture	0.39	7.99	0	-	0.96	10.90	0	-
Forestry	0.10	7.97	0	-	0.11	8.89	0	-
Fishery	0.64	12.82	0	-	0.29	16.46	0	-
Mining	0.29	9.67	0.11	10.93	0.12	14.75	0.76	12.64
Construction	15.47	10.68	1.41	11.34	14.39	13.78	3.84	12.99
Manufacturing	29.86	11.18	45.70	11.07	29.34	13.96	17.72	12.86
Public Utilities	0.84	13.56	2.62	11.48	0.95	20.29	2.99	15.85
Communication & Transportation	11.09	10.66	13.34	12.24	13.13	12.25	8.67	13.03
Wholesale & Retail	21.77	9.58	12.30	11.09	16.53	13.03	18.63	12.72
Finance, Insurance, Real Estate	4.45	10.84	5.99	10.91	3.60	15.08	17.95	12.85
Service	15.10	9.07	18.52	11.01	20.58	11.40	29.44	12.82
Total	100	10.37	100	11.22	100	13.10	100	12.93

<i>Female</i>	<i>1987</i>		<i>1989</i>		<i>2007</i>			
(Industry)	ESS		BSWS		ESS		BSWS	
	Share	Tenure	Share	Tenure	Share	Tenure	Share	Tenure
Agriculture	0.57	4.29	0	-	1.48	11.52	0	-
Forestry	0.04	7.13	0	-	0.02	8.03	0	-
Fishery	0.14	6.90	0	-	0.13	14.57	0	-
Mining	0.07	8.95	0.12	6.90	0.02	11.69	0.82	7.60
Construction	4.02	4.41	1.34	7.10	3.71	9.91	3.51	7.41
Manufacturing	31.11	5.91	45.52	6.40	18.40	9.20	17.53	7.57
Public Utilities	0.20	8.72	2.49	6.87	0.15	12.71	1.85	8.48
Communication & Transportation	2.52	8.39	9.83	7.20	4.88	6.90	7.93	7.60
Wholesale & Retail	29.20	4.91	12.71	6.51	23.47	7.13	19.53	7.33
Finance, Insurance, Real Estate	6.51	5.56	6.71	6.49	5.35	8.46	19.13	7.30
Service	25.62	6.57	20.29	6.52	42.39	7.77	29.70	7.30
Total	100	5.85	100	6.55	100	8.03	100	7.41

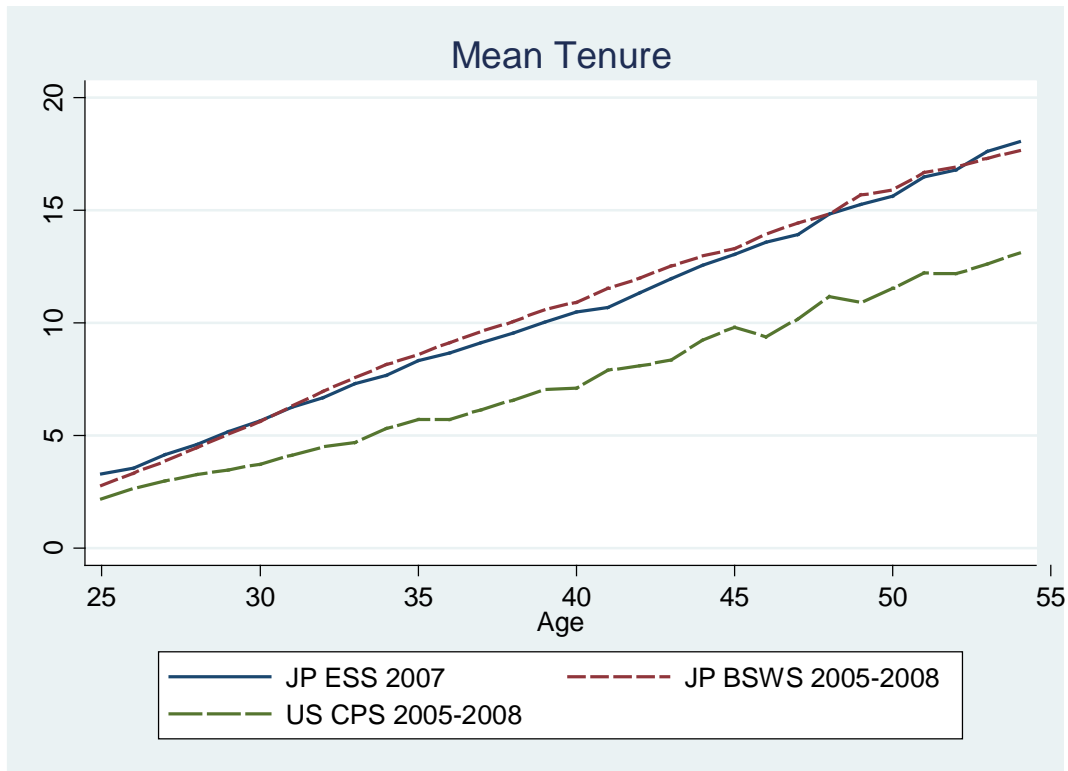
Table 3, Continued

<i>Male</i>	<i>1987</i>		<i>1989</i>		<i>2007</i>			
	ESS		BSWS		ESS		BSWS	
(Firm size)	Share	Tenure	Share	Tenure	Share	Tenure	Share	Tenure
1-4	7.57	9.81	0	-	8.00	13.06	0	-
5-9	10.01	9.33	4.11	7.68	8.87	11.98	3.41	9.20
10-29	16.26	8.88	13.09	7.38	15.08	11.05	11.68	9.18
30-99	17.06	9.09	17.66	8.90	16.92	11.12	17.27	10.60
100-299	13.90	10.04	14.50	10.44	14.51	12.41	17.48	12.21
300-499	5.40	10.65	6.15	11.48	6.41	13.40	7.15	13.19
500-999	6.19	11.25	7.44	12.20	7.16	14.44	8.73	14.00
1000-	23.61	12.85	37.05	14.15	23.04	16.13	34.29	15.78
Total	100	10.37	100	11.22	100	13.07	100	12.93

<i>Female</i>	<i>1987</i>		<i>1989</i>		<i>2007</i>			
	ESS		BSWS		ESS		BSWS	
(Firm size)	Share	Tenure	Share	Tenure	Share	Tenure	Share	Tenure
1-4	11.97	5.47	0	-	9.36	10.75	0.00	-
5-9	12.80	5.63	6.46	5.79	10.11	8.34	4.61	6.95
10-29	19.09	5.38	18.80	5.05	16.52	7.29	14.05	6.55
30-99	18.51	5.33	22.27	5.58	18.11	7.10	17.63	6.84
100-299	14.16	6.05	15.70	6.31	15.16	7.79	16.11	7.29
300-499	4.49	6.60	6.06	7.35	5.81	8.41	6.11	7.81
500-999	4.33	6.8	6.34	7.59	6.26	8.36	7.67	7.92
1000-	14.65	6.93	24.37	8.47	18.66	7.73	33.83	7.99
Total	100	5.84	100	6.55	100	7.98	100	7.41

Note: Share (%), Tenure (years, average)

Figure 1: Mean Tenure for Japan and the US



Note: Employment Status Survey 2007 and Basic Survey of Wage Structure 2005-2008 are used for Japan. Current Population Survey January Supplement 2004, 2006 and 2008 are used for the US.

Figure 2A: Mean Tenure by birth cohort, Employment Status Survey

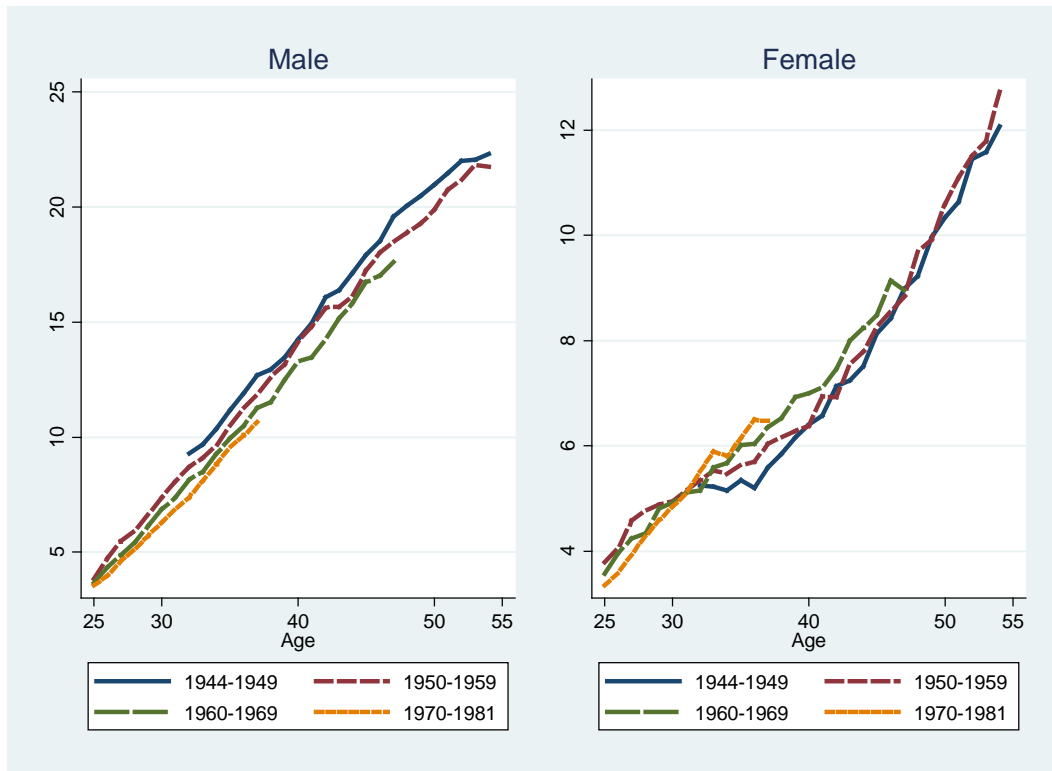


Figure 2B: Mean tenure by birth cohort, Basic Survey of Wage Structure

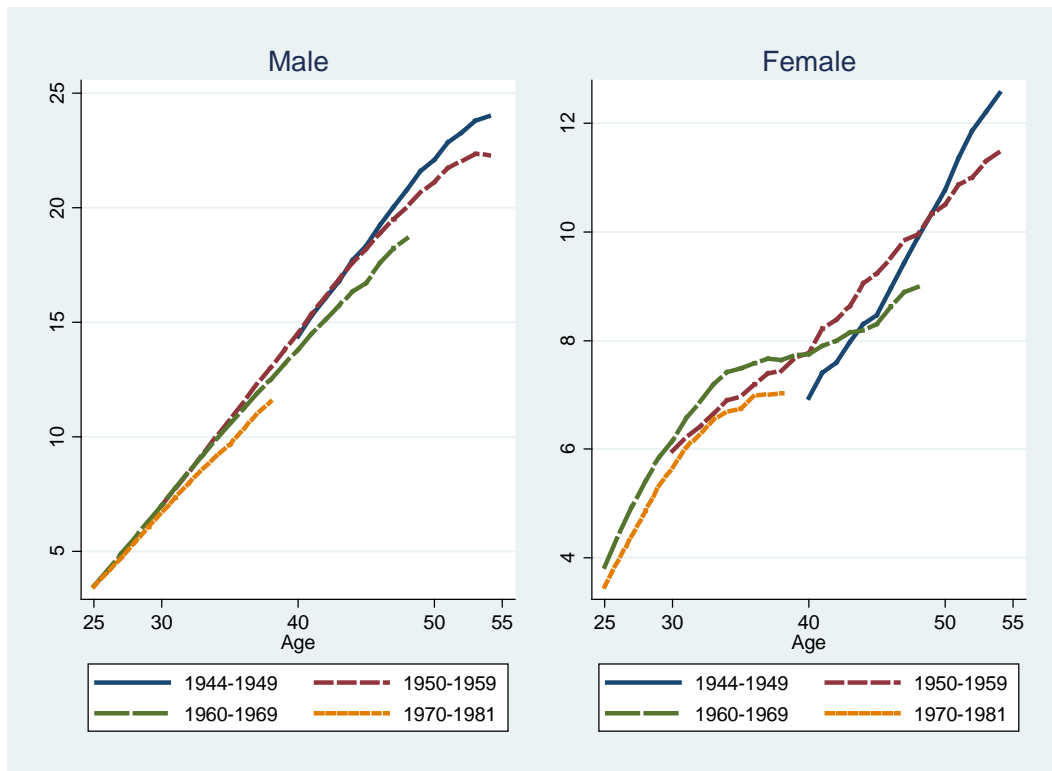


Figure 3: Relative Years of Job Tenure

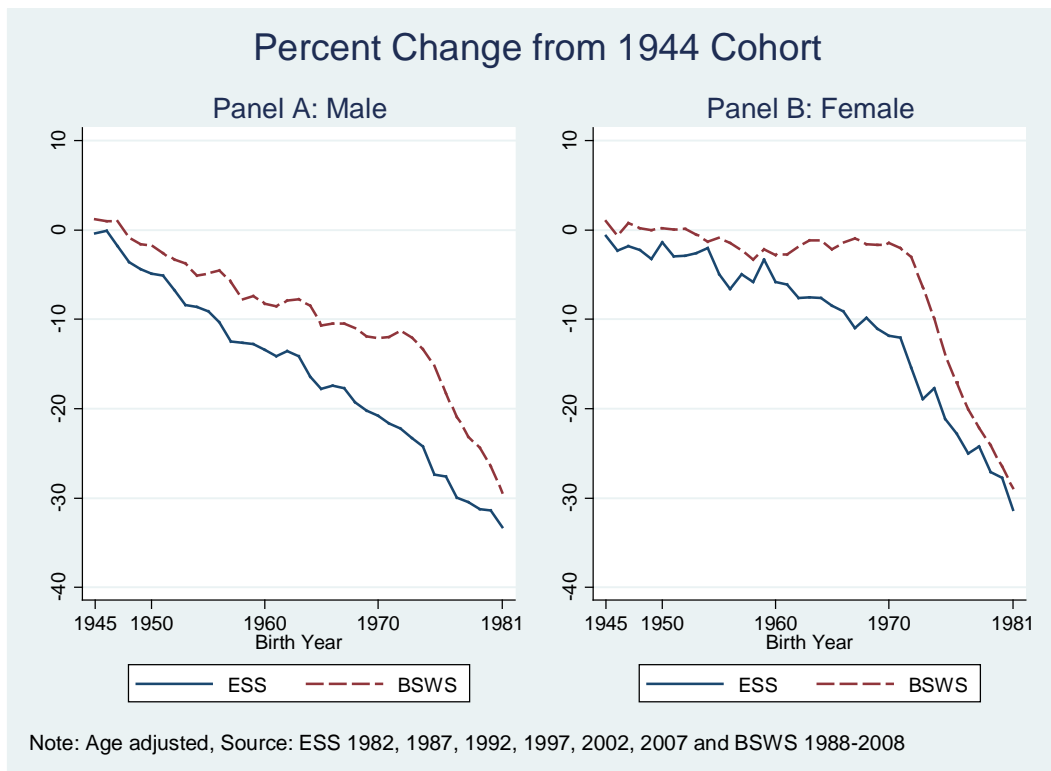


Figure 4: Relative Years of Job Tenure, Male and Female, Education Adjusted, ESS

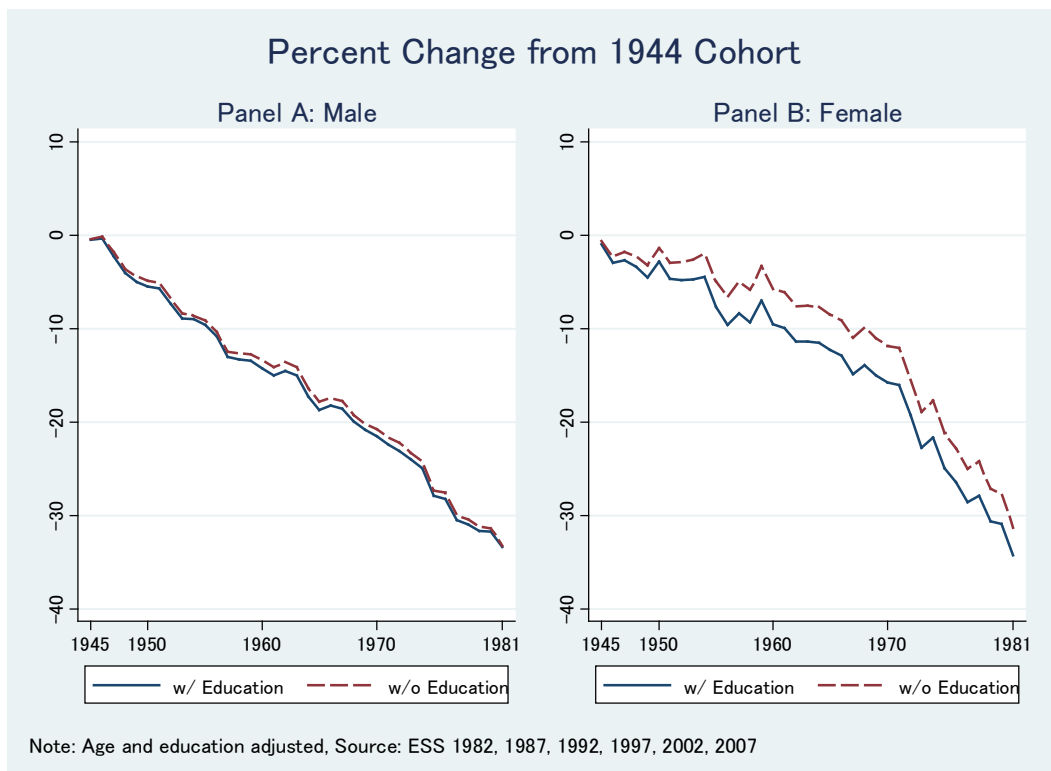


Figure 5: Percentage Change of Permanent Regular Workers

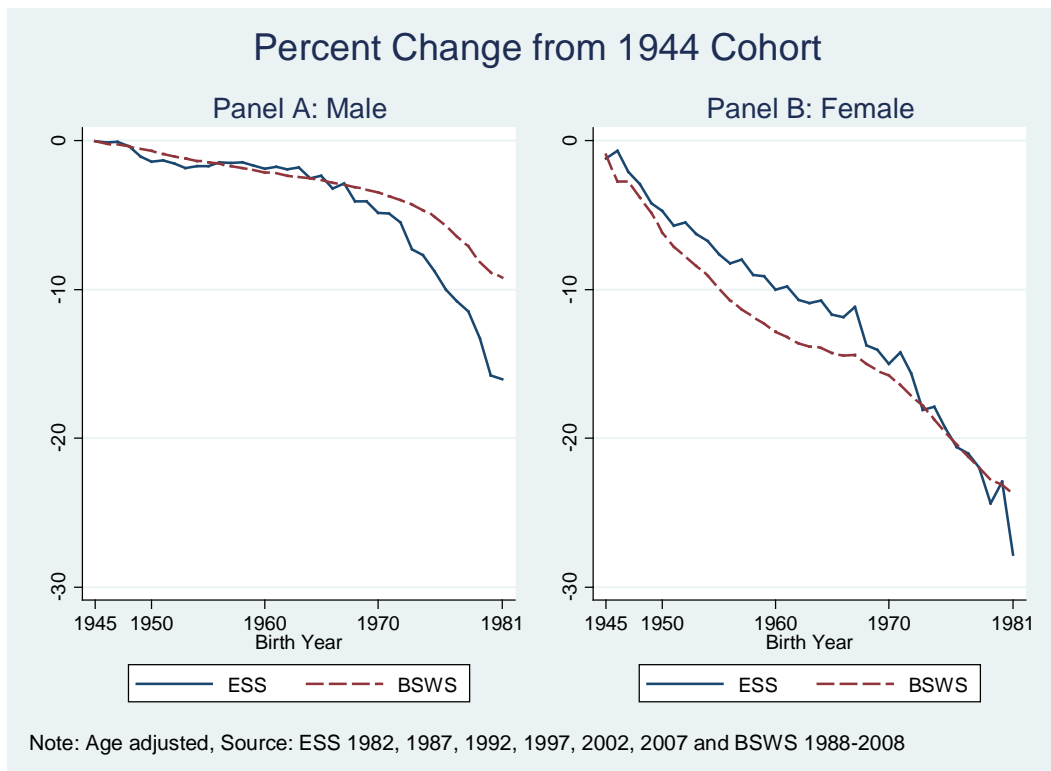


Figure 6: Job Tenure among Permanent Regular Workers

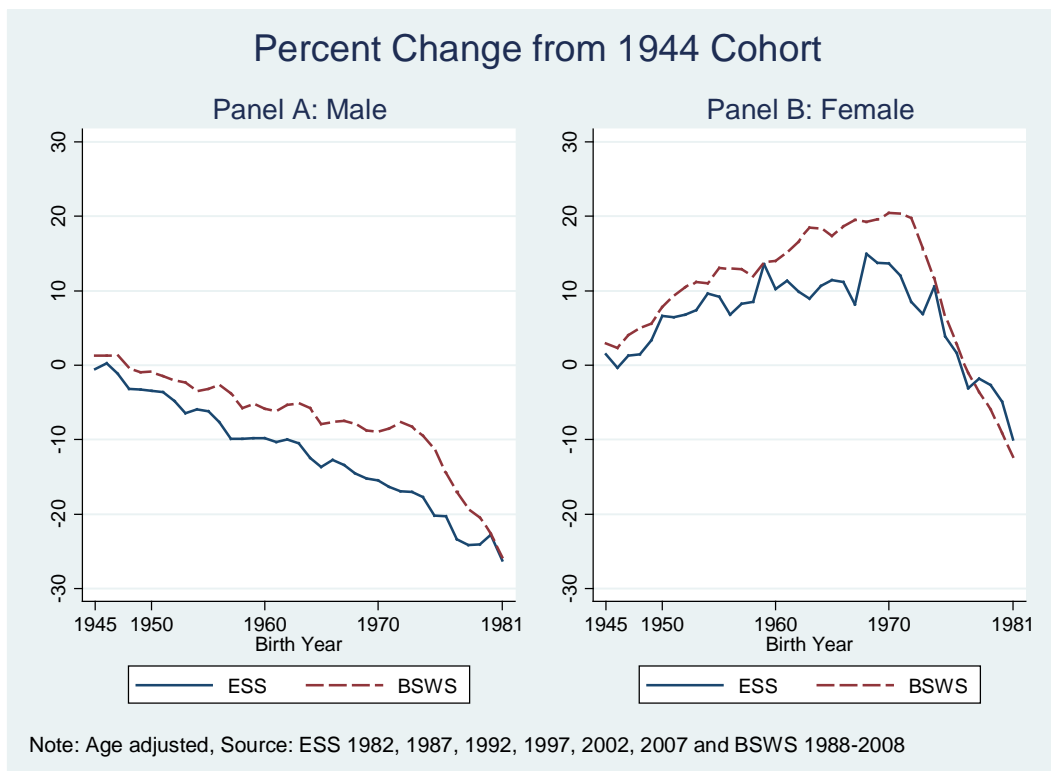


Figure 7: Job Tenure among Non- Permanent Regular Workers

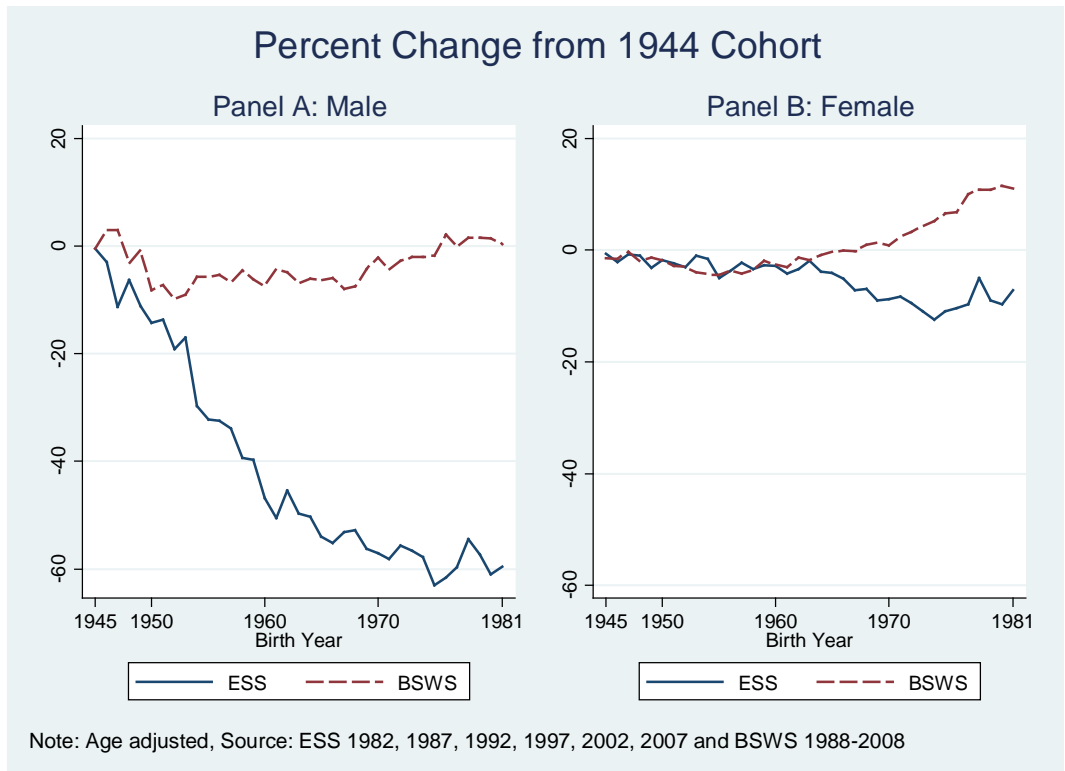


Figure 8: Residual Distribution, Male

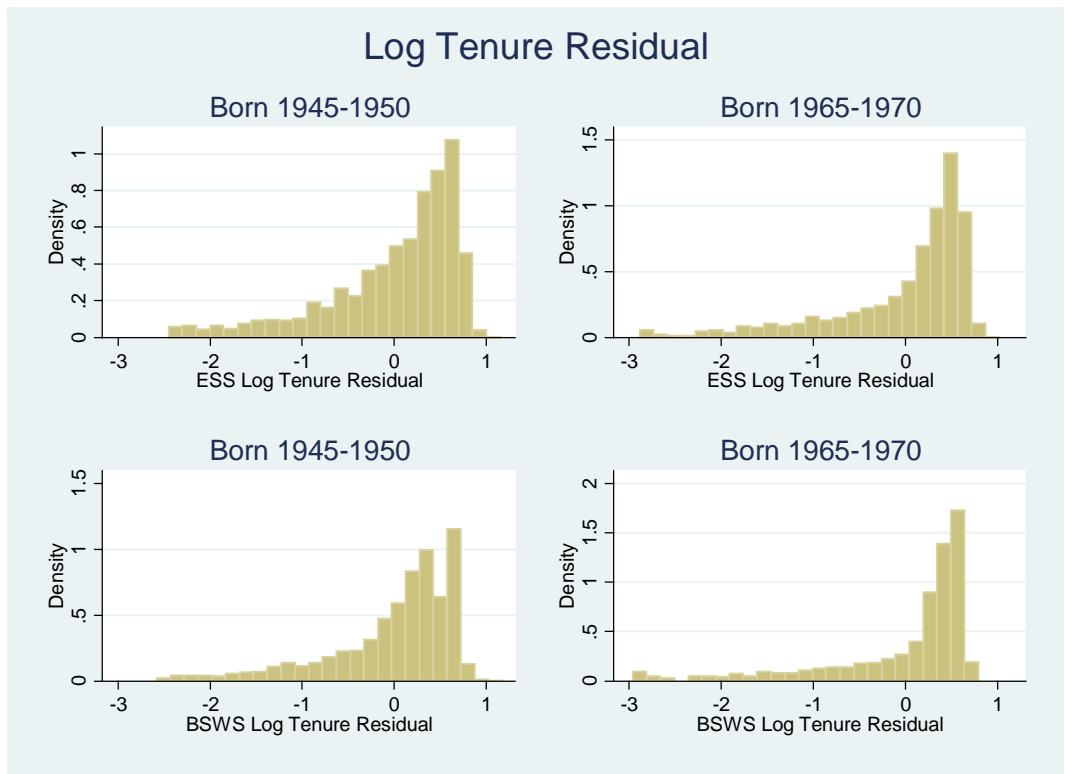


Figure 9: Residual Distribution, Female

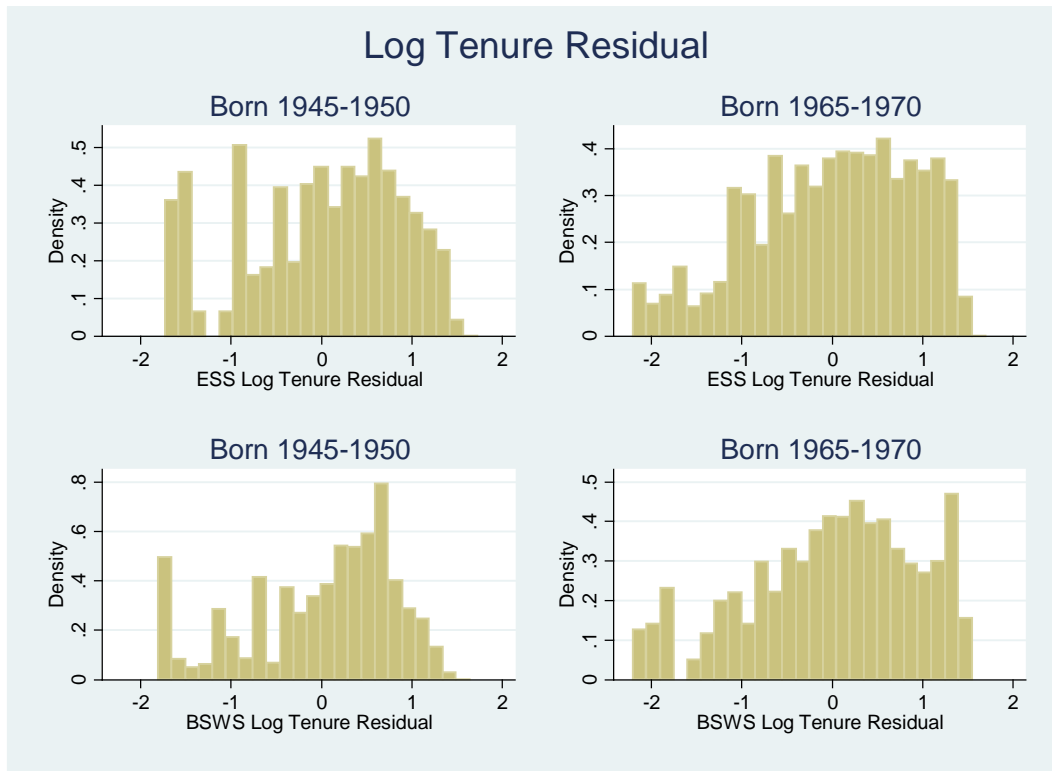


Figure 10: Weight Distribution

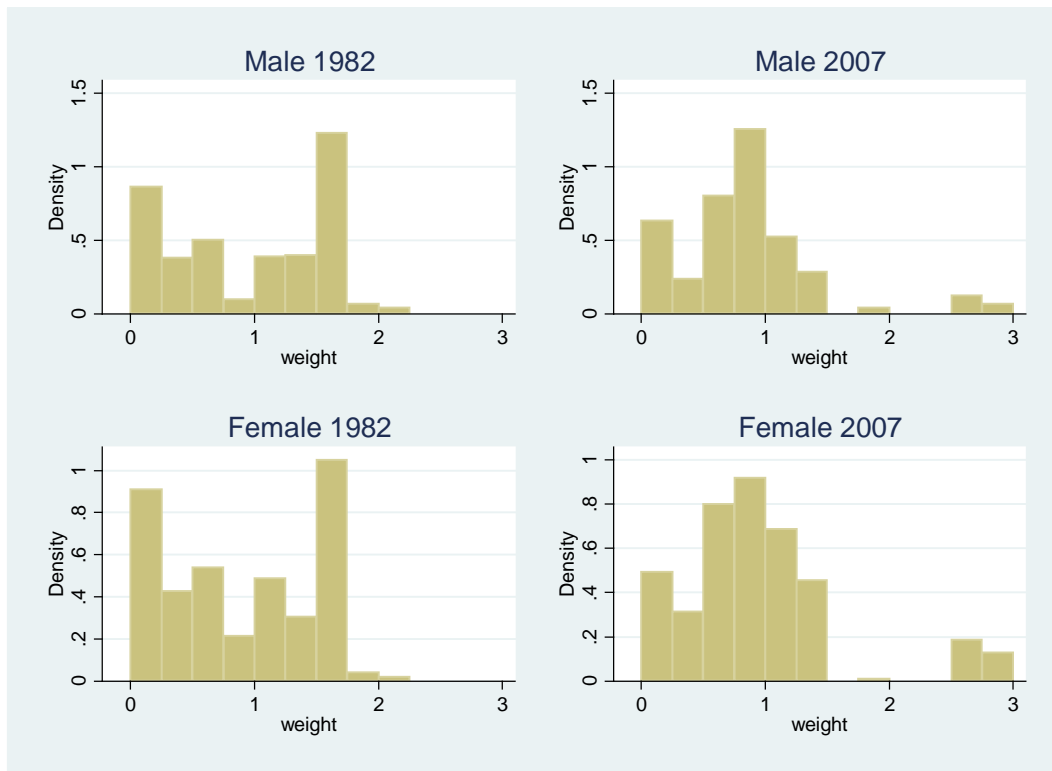


Figure 11: The Effect of Sampling Difference between ESS and BSWS, Permanent Regular Workers

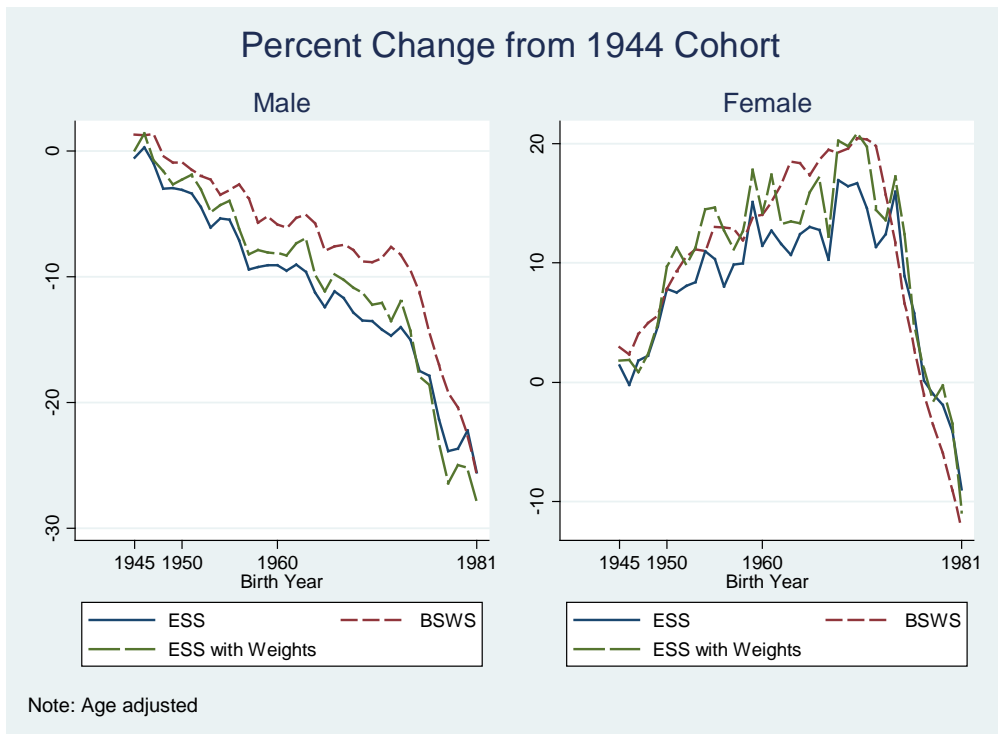


Figure 12: The Effect of Sampling Difference between ESS and BSWS, Non-Permanent Regular Workers

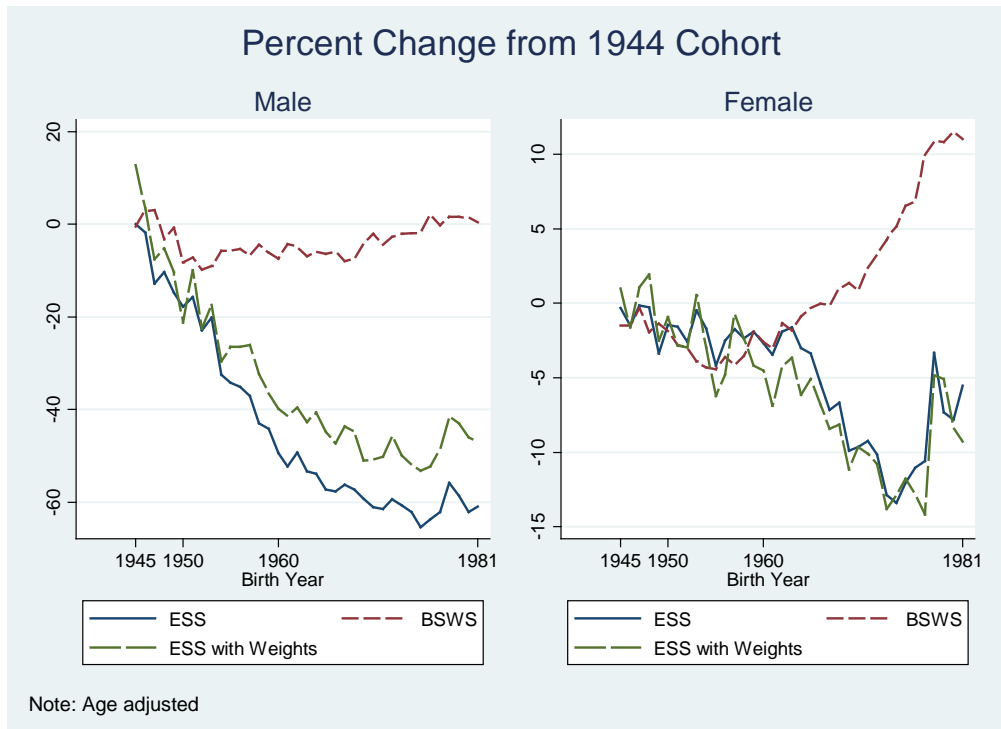


Figure 13: Changes of mean tenure by age groups

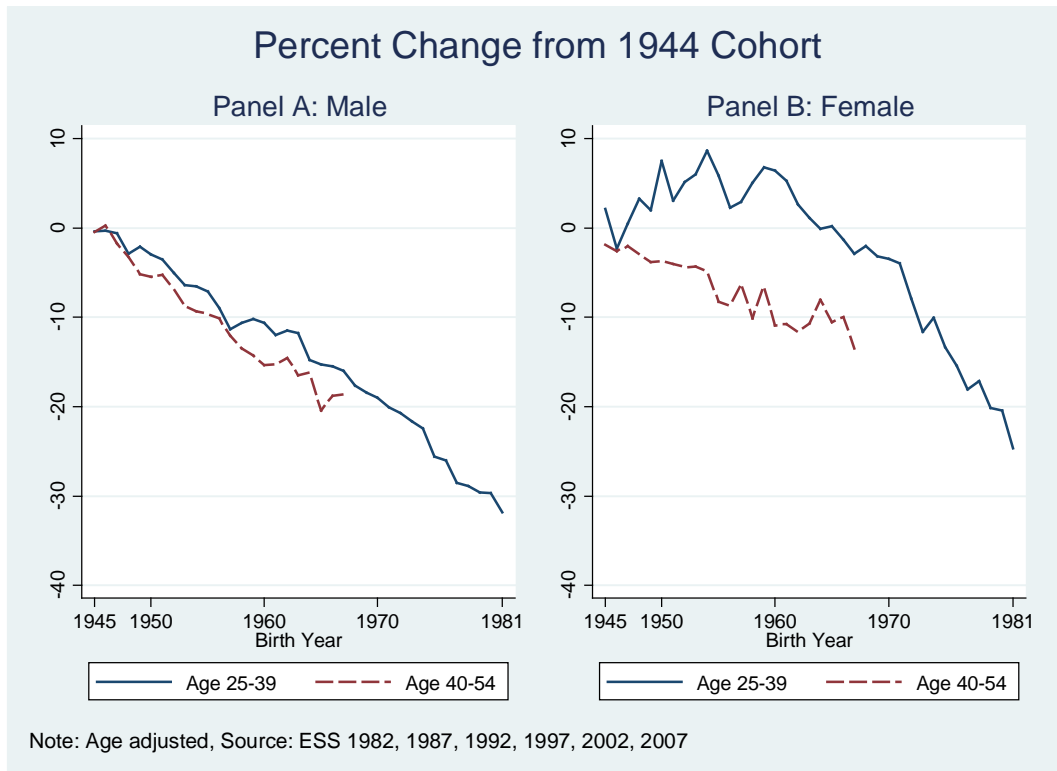


Figure 14: Changes of mean tenure by industries

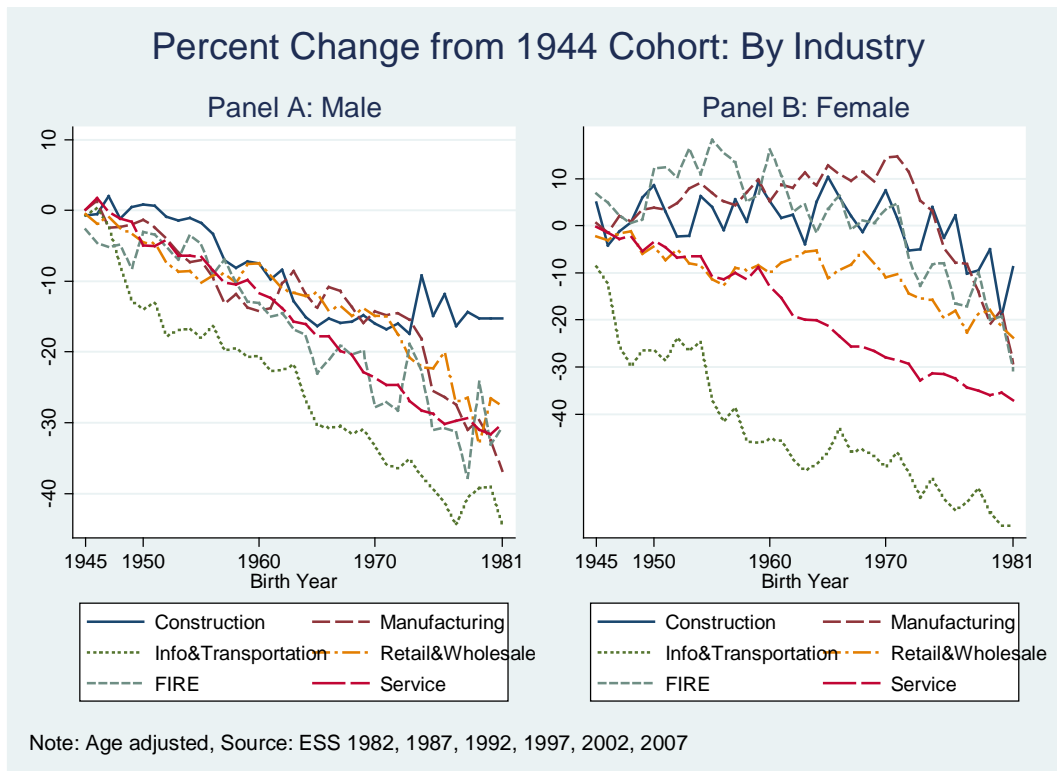


Figure 15: Changes of mean tenure by firm sizes

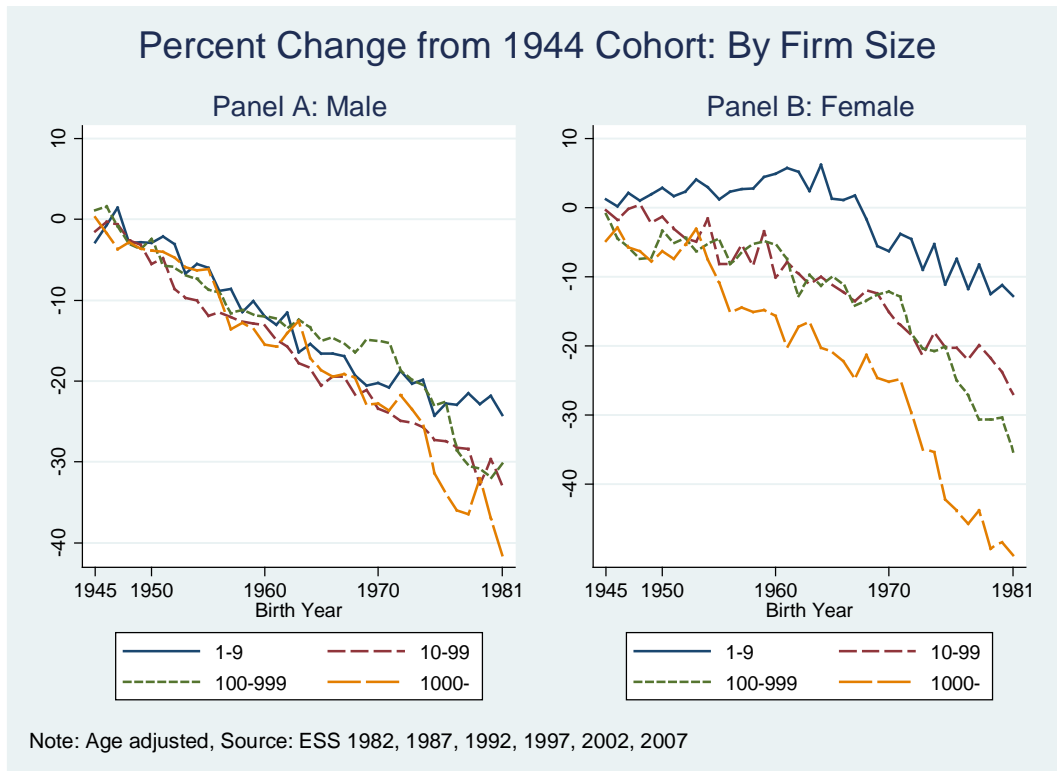
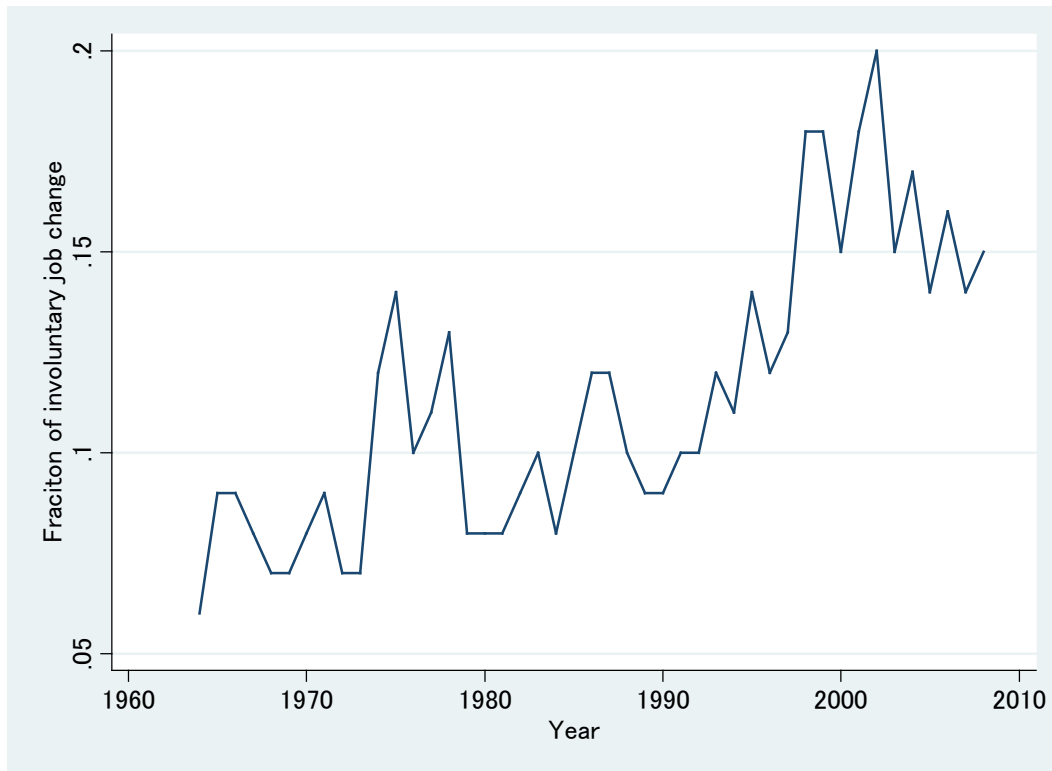


Figure 16: Fraction of involuntary job separation

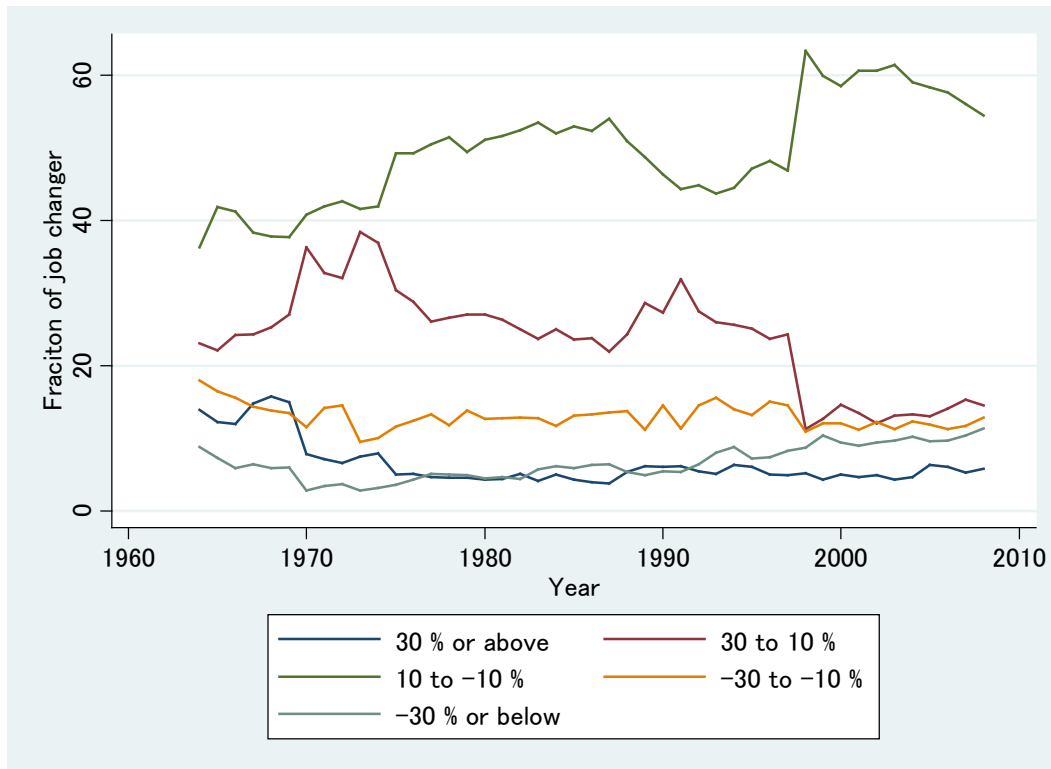


Source: Survey of Employment Trends

Sample: All individuals

Note: Percentage of involuntary separation is defined as (Separation due to the end of contract + separation due to managerial reasons - separation due to mandatory retirement) / (total separation - separation due to mandatory retirement).

Figure 17: Composition of wage change through job change



Source: Survey of Employment Trends

Sample: All individuals

Note: Until 1997, the wage change between -10% and 10% was a single choice, whereas this category consists of "wage decrease up to 10%," "unchanged" and "wage increase up to 10%" in 1998 and afterward. The change of this questionnaire explains the gap between 1997 and 1998.