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Has Japan's Long-term Employment Practice Survived?

New Evidence Emerging Since the 1990s

by

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Abstract

What happened to the traditional, long-term employment practices in Japan after the 1990s has remained unexplored. We take advantage of a micro data set from the *Basic Survey on Wage Structure* to provide new evidence regarding the years of tenure for Japanese male workers after a decade-long recession. While the practice of long-term employment is still alive among the workers who are already in the system, the proportion of workers who are not covered by the system has increased. These ongoing phenomena contribute to the bipolarization in the Japanese labor market.

Keywords: long-term employment practice, Japan, Oaxaca-Blinder decomposition, DiNardo-Fortin-Lemieux decomposition.

JEL Classification Codes: J41, J82**.**

1. Introduction

Along with a steep earnings profile, the practice of long-term employment for male permanent workers has been regarded by many as the Japanese labor market's most distinguishable characteristic (Hashimoto and Rasian (1985, 1991), Clark and Ogawa (1992a), Brunello and Ariga (1997)). Despite public interest and numerous intensive studies until the beginning of the 1990s, however, there has been little research on whether the longer years of tenure survived in Japan after the "lost decade," which registered a historically higher unemployment rate and substantial changes in Japan's economic structure.

Several studies covering the first half of the 1990s point to the prolonged job tenure of full-time workers (Chuma (1998), Genda and Rebick (2000), Rebick (2001)) and Ono (2005) confirmed the continuing trend of prolonged job tenure until 2000. Contrary to those studies which have focused on the mean of job tenure or the fraction of life-time workers, this study uncovers what happened to the whole distribution of years of tenure to provide new evidence regarding the years of tenure for Japanese male workers after 1990. We focus on descriptive analyses to provide new stylized facts on changes in Japan's "traditional," long-term employment practices after a decade-long recession. We believe that new evidence in this study complements

previous studies on Japan's long-term employment practices and stimulate further research starting from the new stylized facts emerged in this study, including an in-depth examination of the rationale for long-term employment practices.

In order to provide new evidence of changes in the years of tenure for permanent male workers since the 1990s, this study takes advantage of a rich micro-level data set from the *Basic Survey on Wage Structure*, which the Japanese government compiled annually from 1990 to 2003. This is a representative survey that provides information on tenures and wages, as well as detailed attributes of workers and firms in Japan, and it was utilized by all of the other studies on the Japanese employment practice mentioned in this paper. The sample size is very large, with up to 1.5 million workers from 60,000 to 70,000 establishments for each year from all regions of Japan.

First, we present a preliminary picture of Japan's long-term employment practices by providing simple averages of years of tenure for permanent male employees annually from 1990 to 2003. Contrary to the prevailing perception, the average years of tenure for permanent male workers *extended* after 1990. At a glance, the traditional employment practice has survived and even developed after the 1990s. At the same time, we observe an increasing proportion of part-time workers. In other words, we observe a dual trend in the length of tenure for permanent workers: a longer

average tenure for full-time workers inside the long-term employment scheme and a larger portion of part-time workers with shorter years of tenure outside the scheme.

Second, we perform an Oaxaca-Blinder decomposition analysis to determine what factors are responsible for changes in full-time workers' average years of tenure. The extension of years of tenure for full-time male workers might be explained by changes in attributes of workers or firms. Another possible reason is changes in the relation between the attributes of workers and job tenure. More specifically, average years of tenure may have changed conditioning on education, age or other characteristics. According to our findings, less than a quarter of the extension of tenure years is explained by changes in workers' or firms' attributes and change in relation between attributes and job tenure is responsible for the remaining three quarters.

Third, we perform another decomposition analysis on the distribution of full-time workers' years of tenure to explore the main factors responsible for the structural changes that were left by the mean decomposition. The DiNardo, Fortin and Lemiuex decomposition (DiNardo, Fortin and Lemiuex (1996)) enables us to observe another duality in the years of tenure between short-tenured and long-tenured full-time workers. The gap between the counterfactual distributions and actual distribution in 2003 indicates that the length of tenure was even shorter for workers with attributes

that predict shorter length of tenure. In contrast, we observe even longer years of tenure for workers who have attributes that predict longer length of tenure. Those observations confirm a duality *among* full-time workers with different lengths of tenure.

In sum, our analyses provide new evidence on the dual propensities in the years of tenure since the 1990s, which occurred simultaneously. One propensity is the divergence between full- and part-time workers among permanent workers, and the other is the divergence between short- and long-tenured workers among full-time workers. We conclude that workers who are protected in the traditional Japanese long-term employment practices enjoy their longer years of tenure while the proportion of workers outside the scheme consisting of part time workers and full time workers with shorter years of tenure has increased. These contrasting two trends warn us that the life-time income inequality may become even larger because workers under the traditional practice presumably with higher earnings enjoy more stable employment status while those outside of the practice with lower income level suffer from more vulnerability. This bipolarization phenomenon should have motivated the on-going debates about the sustainability of the long-run employment practice.

This paper proceeds as follows. The next section describes the data set used in

this study and examines changes in the years of tenure since the 1990s, using descriptive statistics. Section 3 performs a decomposition of the changes in the means of years of tenure, applying a Blinder-Oaxaca decomposition. Section 4 presents the results of the decomposition in changes of the whole distribution of job tenure by the Dinardo, Fortin and Lemiuex decomposition. The last section summarizes our findings and discusses their implications.

2. Data description

This study uses micro-level data from the *Basic Survey on Wage Structure* compiled annually by the Japanese government between 1990 and 2003. This survey has several advantages for exploring the issue examined in this paper.

First, it is a representative survey performed by the government with an unusually large number of observations randomly chosen from all regions in Japan. The annual number of observations is approximately 1.5 million workers from 60,000 to 70,000 establishments, which is sufficiently large to provide an overview of what is happening in the Japanese labor market. The sample includes all establishments with 10 or more permanent employees in both private and public sectors, and those with 5 to 9 permanent workers, which were randomly chosen in proportion to the size of

prefectures, industries and number of employees. Second, the survey contains a variety of variables that examine what determines the years of tenure. The unit of analysis is an individual worker with relevant information on the establishment. Information is collected in regards to each worker's age, sex, educational attainment, full-time/part-time status, employment status (with or without permanent status), type of work or job, paid wage (regular monthly income in June and bonuses in the previous year) and working days/hours as well as each firm's attributes, including the number of permanent workers, firm size, industry, and location. For our analysis, we restrict our sample to male permanent workers[1] who are likely to participate in the long-term employment scheme.

To provide a preliminary picture of Japan's long-term employment practices, Table 1 reports the trend of the average years of tenure for permanent male workers aged 15-65 in the private sector. In this study, "tenure" is defined as the years an employee has worked for his current firm. Contrary to the prevailing perception, we observe that the average years of tenure for *full-time* male workers *extended* between 1990 and 2003 by 1.4 years. While the average length of tenure was 12.6 years in 1990, it increased to 14.1 years in 2003. Thus one might be tempted to conclude that the

[1] Those workers (Joyo Rodo Sha) who are not on the contracts that clearly specify a time period are classified as permanent workers. This classification includes part-time workers if their contract period is not specified.

traditional employment practices have survived and even developed since the 1990s and that the long-term employment scheme was robust to dramatic changes in economic circumstances.

However, this is not a whole picture of the Japanese labor market since the 1990s. In contrast to the extended length of tenure for full-time workers, who are more likely to participate in the long-term employment scheme, the length of job tenure among part time workers, who are typically out of the scheme, remains around 3 years at the same level. In addition, we should pay attention to the increasing proportion of part-time workers, which was 0.7 percent in 1990. This figure tracked an upward trend after 1990, accelerated after 1997, and rose to 2.6 percent in 2003. The increased proportion of part-time workers with shorter length of tenure might have stimulated on-going debates on the sustainability of the long-run employment scheme.

In addition to the arguments at the mean, we notice that the variance in the years of tenure also expanded. Although the phenomenon is observed among both full- and part-time workers, we observe a substantial increase in the variance of part-time workers whose average length of tenure remained at the same level. This implies that since the 1990s, heterogeneity in part-time workers' length of tenure widened relative to that of full-time workers.

In sum, we observe a divergence between the two types of workers with different lengths of tenure. One type is full-time workers with longer years of tenure inside the scheme, who enjoyed additional years of tenure after the 1990s but those workers became less dominant, especially since the mid-1990s. The other type is part-time workers with fewer years of tenure outside the scheme, who gained a larger share among permanent workers.

Our next task is to examine whether the extension of long-term employment is universal for full-time workers or it depends on some specific attributes of workers or firms. In other words, we take an additional step to clarify what contributes to changes in the length of full-time workers' tenure. Sections 3 and 4 address this issue with two different decomposition procedures.

3. Changes in the mean years of tenure: The Oaxaca-Blinder decomposition

In this section, we employ an Oaxaca-Blinder's mean decomposition to account for years of tenure (Oaxaca (1973), Blinder (1973)). The extension of years of tenure for full-time male workers might be explained by changes in workers' attributes like aging or higher educational attainment, or changes in firms' attributes observed in industry or firm size. Another possibility is the change in the relationship between

workers' attributes and job tenure. The main purpose of the analysis is to decompose the difference in the average years of tenure into the two components. As a well-known procedure, the decomposition procedure is expressed as follows (Lemieux (2002)). We start with the following regression model:

$$Y_{it} = X_{it}\beta_t + e_{it} \tag{1}$$

where *i* indicates the observation and *t* is the time period. The variable Y_{it} is the years of tenure for individual *i* at time *t*. The vector X_{it} is a set of covariates that affect the length of tenure including attributes of workers and firms. The parameter vector β_t is a set of parameters, and the error term e_{it} is assumed to have a zero conditional mean.

The mean decomposition is expressed as follows:

$$\overline{Y}_t - \overline{Y}_s = \overline{X}_t(\beta_t - \beta_s) + (\overline{X}_t - \overline{X}_s)\beta_s \tag{2}$$

where $\overline{Y}_t$ and $\overline{Y}_s$ are average years of tenure prevailing at times *t* and *s*, respectively, and $\overline{X}_t$ and $\overline{X}_s$ are a set of the means of each explanatory variable prevailing at times *t* and *s*, respectively. The parameters β_t and β_s are a set of estimated coefficients obtained by the OLS regression to use the observation at times *t* and *s*, respectively. Thus, $\overline{Y}_t = \beta_t \overline{X}_t$ and $\overline{Y}_s = \beta_s \overline{X}_s$ hold.

The dependent variable is the difference in the average years of tenure between the two different timings. The first term on the right-hand side captures the

effect of changes in the estimated parameter β on the left-hand side between times t and s. That is, it refers to the effect of changes in the effect of the explanatory variables on the dependent variable after removing the effect of the change in X. In our context, if workers in a specific age cohort are more inclined to have longer length of tenure in the second period than in the first period, the effect appears in this term. The second term is the effect of changes in the explanatory variables, excluding the effect of changes in the estimated coefficients between times t and s. In our context, the extended years of tenure for full-time male workers might be explained by changes in attributes of workers or firms like aging or higher educational attainment.

Before proceeding to the estimation, we provide a brief description of the set of explanatory variables used in the decomposition analysis. The summary statistics of those variables are reported in Table 2. Since we are examining long-run changes in length of tenure, we choose four times to perform the mean decomposition: 1990, 1995, 2000, and 2003. All explanatory variables are dummy variables that take one for the corresponding category.

First, we observe two notable trends in worker's attributes; age structure and educational attainment. Comparing those variables in 1990 and 2003, the share of workers younger than age 25 decreased, while the share of workers age 50 and over

increased. The proportion of those aged 50 and over gained 7 percentage points during the period. The higher educational attainment is more remarkable. The share of university graduates increased from 21 percent in 1990 to 31 percent in 2003.

Next we turn to the firms' attributes. The share of firms in the largest category with 5,000 or more employees and those with 10-29 employees declined, while the other categories increased or maintained their proportions between 1990 and 2003. In regards to industry structure, the share of manufacturing declined from 46 percent in 1990 to 40 percent in 2003. In contrast, the proportion of services industries gained a substantial share from 14 percent in 1990 to 23 percent in 2003. Lastly, the share of workers in large cities declined slightly during the period.

Table 3 reports the estimated coefficients for each explanatory variable, using the observations in 1990, 1995, 2000, and 2003, respectively, as well as the contribution of the first and second terms in equation (2) to the difference in the average length of tenure during 1990-1995, 1990-2000, and 1990-2003. Most of the coefficients hold the expected signs and are statistically significant.

First, the coefficients on the age cohorts are positive and larger for older cohorts. We should pay attention to the fact that the magnitude of the coefficients on the age cohorts peaked at the 50-54 bracket in 1990, while the largest coefficient is on

the 55-59 bracket in 2003. This observation implies that the extension of years of tenure reported in Table 1 is caused by the higher mandatory retirement age in 2003. The larger coefficients on the 55-59 bracket in the first half of the 1990s was attributed to the revised elderly employment promotion law (*Koreisha Koyo Sokushin Hou*) in 1994 which obliged larger firms to raise the standard retirement age from 55 to 60 by 1998. Many firms in Japan had complied with the law before it became effective because the Ministry of Labor strongly advised firms to follow the "model" retirement age set by the ministry (Clark and Ogawa (1992b)). In addition, we notice that the coefficients on the 60-65 brackets increased substantially during the period. This may be because re-employment after the mandatory retirement had become more popular (Clark and Ogawa (1997)).

Second, we observe some disparities in the length of tenure among workers with different educational levels. Most of the coefficients are negative and significant. This implies that, compared to senior-high-school graduates, the length of tenure for junior-high-school graduates began to increase after 2000, while that for two-year college graduates and university graduates declined between 1990 and 2003. The disparity among workers with different educational levels has widened, and workers with lower educational attainment are more likely to enjoy more years of tenure.

Third, long-term employment is more widely observed in larger firms. The estimated coefficients are larger for firms with more employees. Compared with workers in firms with 10-29 employees, those in firms with 5,000 or more employees enjoy an additional 8 years of tenure. The gaps among firms with different sizes became larger between 1990 and 2000 and then declined.

Fourth, we observe large differences among industries. The length of tenure is typically shorter in the non-manufacturing sector than in manufacturing. Compared with manufacturing, the length of tenure is shorter for all industries except utilities and finance. Including those two industries, the relative length of tenure compared to manufacturing is even smaller for most of the industries except construction and real estate. Note that the average years of tenure for services industry, which increased by 10 percent points after 1990 in its share of the total employment, became even shorter. Lastly, the regional discrepancy diminished. The coefficients on the large cities were positive and significant in 1990, but not significant after 2000.

These observations demonstrate that long-term employment is not universal for full-time workers in Japan. The length of tenure is rather diverse and depends on attributes of workers and firms. Based on the estimated coefficients, we performed an Oaxaca-Blinder decomposition, whose results are reported at the bottom of Table 3.

For the 1990-1995 period, the average length of tenure extends by 0.64 years and changes in workers' and firms' attributes contribute 0.26 years (40.0 percent). Of the 1.29 year increase for the 1990-2000 period, changes in the explanatory variables account for 0.27 year (21.1 percent) and of the 1.42 year increase during the 1990-2003 period, 0.32 year (22.7 percent) is caused by changes in attributes.

Although the contribution of changes in the explanatory variables to the difference in the length of tenure was relatively larger for the 1990-1995 period, the decomposition analyses indicate that changes in the length of tenure after the 1990s were rather caused by changes in the impact of the attributes on the years of tenure. In other words, changes in characteristics of workers or firms are not the main causes of the changes in the length of tenure.

The Oaxaca-Blinder decomposition only deals with changes in the mean and ignores changes in the distribution that are not explained by the observable attributes. The next section performs another decomposition procedure to examine changes in the distribution of years of tenure.

4. Changes in the distribution of years of tenure: The DiNardo-Fortin-Lemiuex decomposition

This section addresses changes in the distribution of years of tenure by employing a DiNardo Fortin and Lemieux decomposition (DiNardo, Fortin and Lemieux (1996), Dinardo (2002), Lemieux (2002)). Beyond the mean decomposition, this procedure examines an entire distribution by using a semi-parametric approach. The merit of this method is that it visually decomposes the change in tenure distribution into two parts: the change in the distribution of the attributes and the change in the effect of attributes on year of tenure. To examine the long-run changes in the length of tenure, we compare the actual distributions in 1995, 2000, and 2003, and the counter-factual distribution defined as what the density of tenure would have been in 1995, 2000, and 2003 if the attributes of workers and firms had remained at their 1990 level.

We will briefly describe the procedure, using as an example a comparison between the 1990 and 2003 distributions. The distribution of job tenure in 1990 is expressed as

$$f^{1990}(Y) = \int f^{1990}(Y \mid X) h(X \mid t = 1990) dX,$$

where $f^{1990}(Y \mid X)$ is the tenure determination mechanism in 1990 that maps workers' and firms' attributes X to the distribution of tenure, which is denoted as Y. Similarly, the distribution of tenure in 2003 is expressed as

$f^{2003}(Y) = \int f^{2003}(Y \mid X) h(X \mid t = 2003) dX$,.

What the tenure distribution would be in 2003 if the distribution of X is identical to its distribution in 1990s is expressed as

$f_{1990}^{2003}(Y) = \int f^{2003}(Y \mid X) h(X \mid t = 1990) dX$.

It is difficult to estimate this counter-factual distribution directly because there are many explanatory variables included in the vector X, and the integration takes place in a highly dimensional space. The DiNardo Fortin and Lemieux approach employs a "re-weighting" method to overcome this difficulty. The counter-factual distribution can be rewritten as:

$$f_{1990}^{2003}(Y) = \int f^{2003}(Y \mid X) h(X \mid t = 1990) dX = \int \omega f^{2003}(Y \mid X) h(X \mid t = 2003) dX,$$

where $\omega \equiv \frac{h(X \mid t = 1990)}{h(X \mid t = 2003)}$. Based on the Bayesian rule, we obtain $\omega = \frac{P(t = 1990 \mid X)}{P(t = 2003 \mid X)} \frac{P(t = 2003)}{P(t = 1990)}$. The conditional probabilities, $P(t = 1990 \mid X)$ and $P(t = 2003 \mid X)$ are propensity scores for the specific observations in 1990 and 2003, respectively, conditioned on X. These propensity scores are calculated by the logit model in this analysis. The terms $P(t = 1990)$ and $P(t = 2003)$ are calculated based on the proportion of the observations from 1990 and 2003 in the pooled data, respectively. Using calculated weight ω, the counterfactual distribution is calculated by the kernel density estimation.

Figure 1 reports the actual distributions in 1995, 2000, and 2003, and the counter-factual distributions, assuming that workers' and firms' attributes had remained at their 1990 level. We have two distinct observations that are common to the 1990-1995 (Panel A), 1990-2000 (Panel B), and 1990-2003 (Panel C) comparison, and a larger effect is detected as the timing is more distant from 1990.

First, workers who have attributes that predict shorter length of tenure are inclined to have even fewer years of tenure over time. The gap between the counter factual distribution and the actual distribution in 1990 is caused by the change in the effects of attributes on job tenure while that between the counter factual distribution and the actual distribution in 2003 is explained by the change in the distribution of attributes. Comparison of 1990 and 2003 reveals that the counterfactual distribution is closer to the actual distribution in 2003. This implies that the change of job tenure distribution between 1990 and 2003 is mainly caused by the change in the effect of attributes on length of tenure. Since the coefficients on younger age cohorts reported in Table 3 are not substantially changed between 1990 and 2003, we speculate that this was caused by the shorter years of tenure after the 1990s in the services industry whose share is large in the economy.

Second, in contrast with the shorter-tenured workers, workers with attributes that predict longer years of tenure are more likely to enjoy a longer length of tenure over time. In particular, the change of tenure distribution between 1990 and 2003 is captured by the difference of the distribution between the actual 1990 distribution and the counterfactual distribution. This again implies that the change of the distribution is mainly caused by the change of the relationship between attributes X and length of tenure rather than the change of the distribution of attributes. This observation is consistent with the larger coefficients on older age cohorts, as shown in Table 3 and also in Chuma (1998), who found longer years of tenure for workers ages 50 and over at the beginning of the 1990s.

Third, a close examination of Panel B reveals that there is a chunk of people who have around 7 to 10 years of job tenure in 2000, which shifts to the right in 2003. These workers began the current job in the period before the decade-long stagnation. This might imply that workers in the cohort are the last generation to enter the long-term employment scheme.

In sum, the decomposition of the whole tenure distribution indicates that there is a duality in the years of tenure between short- and long-tenured full-time workers. The gap in the actual and counter-factual distributions in 2003 indicates that, after the

1990s, short-tenured workers have been inclined to have even shorter years of tenure, while long-tenured workers have enjoyed even longer length of tenure. In addition to the gap between full and part time workers discussed above, these observations confirm a duality *among* full-time workers with different lengths of tenure.

Overall, the DiNardo Fortin and Lemieux decomposition indicates that the change of tenure distribution between 1990 and 2003 is largely caused by the change of the effect of attributes on tenure rather than the change in the distribution of attributes of workers and firms. This finding corresponds to the finding from the Oaxaca-Blinder decomposition that the change in the average years of tenure is largely explained by the change in the regression coefficients rather than the change in the mean of attributes.

5. Conclusion and future agenda

This paper aimed to provide new evidence on the long-term employment practices in Japan since the 1990s. We take advantage of a micro data set from the *Basic Survey on Wage Structure* to provide an overview and decomposition analyses for Japanese permanent male workers after the lost decade.

We performed two decomposition analyses on changes in the mean and the

distribution and provide new evidence on the dual propensities in the years of tenure since the 1990s that occurred simultaneously. One is a divergence between full- and part-time workers among permanent workers and the other is a divergence between short- and long-tenured, full-time workers. We conclude that two types of bipolarization are occurring in the Japanese labor market. Those workers who are protected in the traditional employment practice enjoy even stronger attachment to the employers while the proportion of workers outside of the practice has increased.

This study has presented descriptive analyses on how years of tenure have changed since the 1990s. Our new evidence suggests that what is happening to the Japanese labor market is a rather complex story of the "collapse" of the traditional Japanese long-term employment practice. Based on this new evidence of more diversification in the length of tenure for Japanese permanent workers, further research should reconsider the rationale for long-term employment practices. Especially, an examination of the relation between years of tenure and human capital accumulation or between length of tenure and the steep wage-age profile surely would provide deep insights into the Japanese labor market structure. Other studies on the mutual effects on years of tenure and firm productivity would generate more insights into long-term performance of the Japanese economy.

In addition, our findings hold an important implication for income inequality, which is a focus of the nation-wide debate (the Economist (2006)). The bipolarization in the Japanese labor market warn us that the life-time earnings inequality could be even larger than the temporal earnings inequality that is often measured. Those who are in the long-term employment relationship presumably enjoy higher earnings and stable employment, while those outside suffer from lower earnings and unstable employment. Future research should examine the relationship between long term employment status and life-time earnings.

Moreover, current studies including this research covers only those who work. Considering the recent increase of non-employed youth in Japan (Genda (2006)), the decline of the proportion of workers who are covered by the long-term employment relationship could be starker. A further study based on large scale household data that includes non labor participants with information on years of tenure is left for future research.

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Table 1: Average and Variance of Years of Tenure between 1990 and 2003

	Average			Variance			Share of
Year	Permanent	Full time	Part time	Permanent	Full time	Part time	Part time workers
1990	12.56	12.63	2.98	103.10	102.99	25.83	0.7
1991	12.68	12.76	3.10	106.48	106.35	29.75	0.8
1992	12.88	12.97	2.88	109.43	109.26	25.74	0.9
1993	12.78	12.89	2.67	111.50	111.32	23.88	1.1
1994	12.95	13.07	2.55	112.60	112.38	21.11	1.2
1995	13.14	13.27	2.79	114.43	114.20	25.13	1.2
1996	13.22	13.35	2.90	116.33	116.10	27.41	1.2
1997	13.41	13.56	2.63	119.05	118.73	23.97	1.4
1998	13.31	13.49	2.62	120.42	120.08	24.77	1.6
1999	13.55	13.73	2.71	120.44	120.02	26.10	1.7
2000	13.71	13.92	2.78	121.34	120.84	26.54	1.9
2001	13.89	14.12	2.84	122.42	121.75	30.67	2.0
2002	13.63	13.90	2.82	120.82	120.12	28.89	2.5
2003	13.76	14.05	3.00	121.40	120.59	32.78	2.6

(Note) The authors' calculation using micro level data from *Basic Survey on Wage Structure*. The sample is permanent male workers in the private sector aged 15-65. The unit is years for all columns, except the last, whose unit is percent.

Table 2: Descriptive Statistics

	1990	1995	2000	2003
Year of Tenure	12.63	13.27	13.92	14.05
Age				
15～19	0.02	0.02	0.01	0.01
20～24	0.09	0.10	0.08	0.06
25～29	0.12	0.13	0.14	0.13
30～34	0.12	0.13	0.13	0.15
35～39	0.13	0.12	0.12	0.13
40～44	0.15	0.13	0.12	0.12
45～49	0.13	0.14	0.13	0.12
50～54	0.11	0.12	0.14	0.14
55～59	0.08	0.08	0.10	0.11
60～65	0.03	0.03	0.03	0.04
Education				
Junior High School	0.22	0.14	0.11	0.08
Senior High School	0.53	0.52	0.52	0.52
Two-year College	0.04	0.06	0.08	0.09
University	0.21	0.28	0.29	0.31
Firm Size				
5000～	0.18	0.20	0.16	0.15
1000～4999	0.14	0.18	0.16	0.17
500～999	0.08	0.09	0.09	0.09
300～499	0.06	0.08	0.07	0.08
100～299	0.15	0.16	0.16	0.16
30～99	0.20	0.15	0.20	0.20
10～29	0.15	0.11	0.12	0.12
5～9	0.04	0.04	0.04	0.04
Industry				
Mining	0.02	0.01	0.01	0.01
Construction	0.06	0.06	0.10	0.09
Manufacturing	0.46	0.36	0.40	0.40
Utilities	0.02	0.04	0.03	0.03

Transportation and Communication	0.15	0.13	0.11	0.11
Whole Sale	0.09	0.09	0.08	0.08
Finance and Insurance	0.05	0.10	0.05	0.05
Real Estate	0.02	0.01	0.01	0.01
Services	0.14	0.20	0.22	0.23
Large City	0.46	0.46	0.45	0.44
Number of observations.	762,393	802,645	757,259	714,169

(Note) The authors' calculation using micro level data from *Basic Survey on Wage Structure*. The sample is permanent full-time male workers in the private sector aged 15-65.

Table3: Oaxaca/Blinder Decomposition

	1990	1995	2000	2003
Age (Reference;15～19)				
20～24	1.980	1.792	2.194	2.099
	(0.061)	(0.069)	(0.092)	(0.106)
25～29	4.764	4.392	4.989	5.080
	(0.060)	(0.068)	(0.090)	(0.103)
30～34	8.504	8.152	8.169	8.405
	(0.060)	(0.068)	(0.090)	(0.103)
35～39	12.173	11.939	11.759	11.794
	(0.059)	(0.068)	(0.090)	(0.103)
40～44	15.558	15.866	15.568	15.428
	(0.058)	(0.068)	(0.090)	(0.103)
45～49	18.724	19.364	19.305	19.097
	(0.059)	(0.068)	(0.090)	(0.103)
50～54	20.394	22.385	22.406	22.255
	(0.060)	(0.069)	(0.089)	(0.103)
55～59	19.451	22.058	23.170	23.258
	(0.062)	(0.070)	(0.091)	(0.104)
60～65	13.392	14.506	15.498	16.158
	(0.073)	(0.079)	(0.099)	(0.111)
Education (Reference; Senior High School)				
Junior High School	-0.004	-0.094	0.782	1.169
	(0.022)	(0.026)	(0.031)	(0.036)
Two-year College	-0.666	-0.700	-0.614	-0.717
	(0.043)	(0.036)	(0.034)	(0.035)
University	-2.083	-2.282	-2.249	-2.250
	(0.023)	(0.021)	(0.022)	(0.023)
Firm Size (Reference; 5～9)				
5000～	8.487	8.157	8.867	8.463
	(0.046)	(0.047)	(0.053)	(0.055)
1000～4999	6.815	6.640	7.038	6.557
	(0.046)	(0.047)	(0.052)	(0.054)

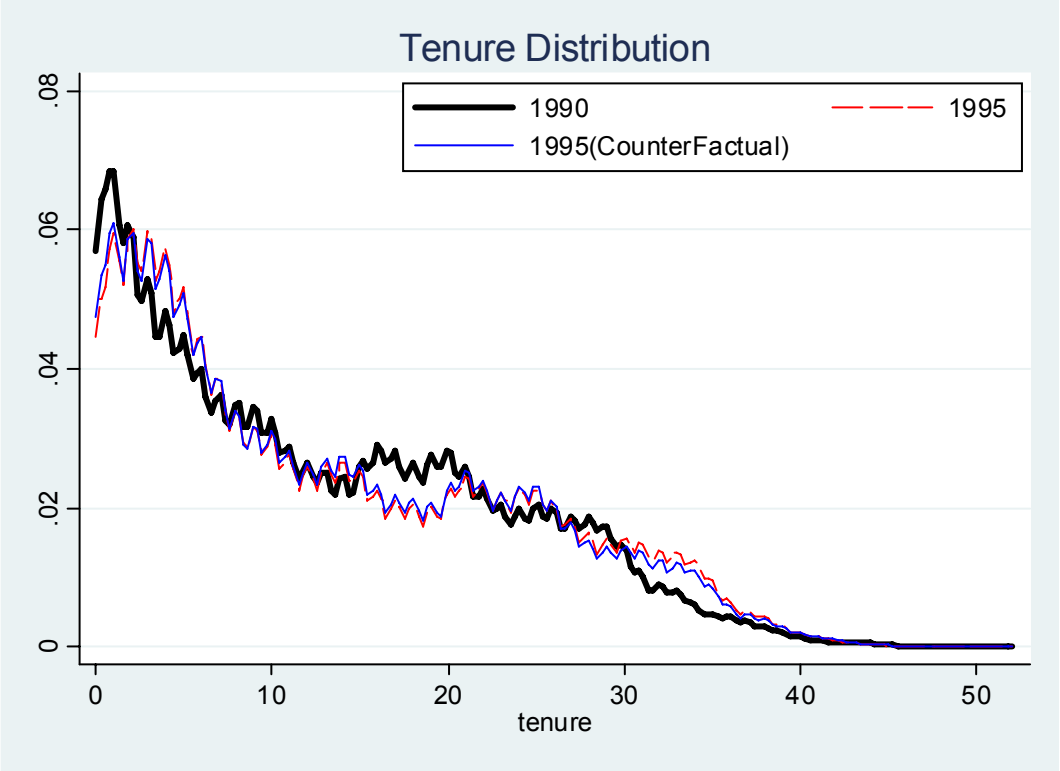
500～999	5.663	5.590	5.945	5.714
	(0.050)	(0.050)	(0.055)	(0.058)
300～499	4.704	4.967	5.435	4.935
	(0.051)	(0.051)	(0.057)	(0.059)
100～299	3.157	3.585	4.063	3.578
	(0.045)	(0.047)	(0.052)	(0.054)
30～99	1.177	1.389	1.607	1.458
	(0.044)	(0.047)	(0.051)	(0.053)
10～29	-0.493	-0.128	-0.041	-0.188
	(0.045)	(0.048)	(0.053)	(0.055)
Industry (Reference; Manufacturing)				
Mining	-1.707	-1.952	-2.432	-2.532
	(0.066)	(0.097)	(0.093)	(0.105)
Construction	-0.636	-0.726	-0.531	-0.327
	(0.037)	(0.037)	(0.032)	(0.035)
Utilities	1.421	0.996	0.433	0.494
	(0.059)	(0.046)	(0.051)	(0.055)
Transportation and Communication	-1.832	-2.628	-2.702	-3.047
	(0.026)	(0.026)	(0.030)	(0.032)
Whole Sale	0.001	-0.491	-0.487	-0.669
	(0.030)	(0.030)	(0.035)	(0.037)
Finance and Insurance	0.149	0.109	0.280	0.043
	(0.039)	(0.030)	(0.042)	(0.045)
Real Estate	-3.693	-2.945	-2.490	-2.883
	(0.068)	(0.084)	(0.087)	(0.086)
Services	-1.454	-1.631	-1.662	-1.843
	(0.026)	(0.023)	(0.024)	(0.025)
Large City (Reference;	0.065	0.042	0.022	0.023
All but the large cities)	(0.017)	(0.017)	(0.018)	(0.019)
Constant	-2.796	-2.656	-2.821	-2.350
	(0.068)	(0.077)	(0.098)	(0.111)
$\bar{x}^t \hat{\beta}^t - \bar{x}^{1990} \hat{\beta}^{1990}$		0.638	1.288	1.420
(t=1995,2000,2003)		(0.017)	(0.017)	(0.017)
$(\bar{x}^t - \bar{x}^{1990}) \hat{\beta}^{1990}$		0.255	0.272	0.323

(t=1995,2000,2003)		(0.012)	(0.012)	(0.013)
$\bar{x}^t(\hat{\beta}^t - \hat{\beta}^{1990})$		0.384	1.015	1.097
(t=1995,2000,2003)		(0.012)	(0.013)	(0.014)
Number of Observations	762,393	802,645	757,259	714,169
R-squared	0.49	0.54	0.52	0.49

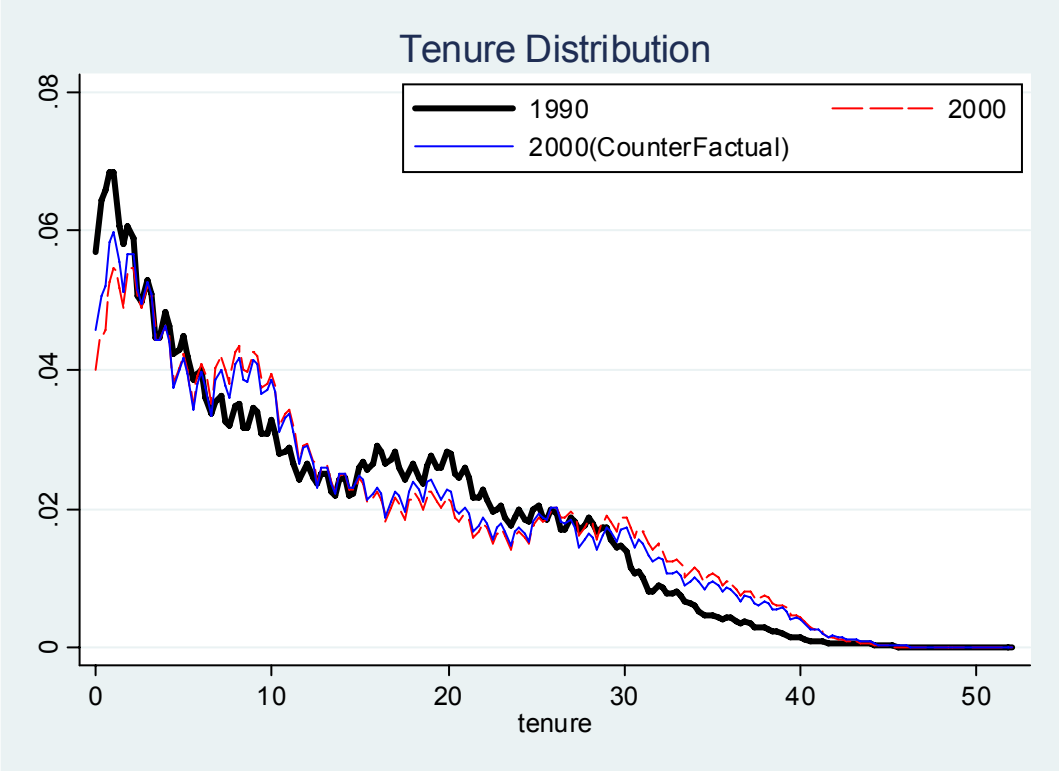
(Note) The dependent variable is year of tenure. The sample is permanent full-time male workers in the private sector aged 15-65 in *Basic Survey on Wage Structure*.

Figure1: DiNardo, Fortin and Lemieux Decomposition

Panel A: 1990-1995 Comparison



Panel B: 1990-2000 Comparison



Panel C: 1990-2003 Comparison