# Why is Labor so Militant in South Korea? : An Extension

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# Why is Labor so Militant in South Korea? :An Extension*


## Abstract

Since workers pursue their private interests and maximization of their earnings in particular, the existing corporate compensation policy and the workers' response to it would reveal important clues to the workers' militant behavior. This paper analyzes the relationship between compensatory reward for long tenure and worker militancy in order to understand and improve upon the current state of Korean industrial relations. For the purpose, we analyze how the internal labor market mechanism and strikes, an expression of labor militancy, are related in Korean firms. Our findings, based on match data of the Korean Occupational Wage Survey and Labor Strife Data, confirm that the presence of an internal labor market mechanism with a steep wage-tenure profile does reduce strike incidence in the future. We also found that strikes result in a more egalitarian compensation structure in the next period, eroding the internal labor market mechanism and inviting the possibility of more strikes in the future.


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## I. Introduction

Since the currency crisis of late 1997, tens of thousands of Korean corporations have gone bankrupt. While the rate of corporate bankruptcy had subsided since 1999, the ongoing bankruptcy process of the Daewoo group, one of the top 5 conglomerates, indicates that the economic crisis in Korea has not ended. To overcome the economic crisis, Korean corporations need to reduce debt ratios and to improve corporate profitability. Chief among the effective means to achieve such corporate restructuring is corporate merger-acquisition and infusion of new capital, especially by foreign investors. A frequently cited impediment to the foreign investment, however, is the union workers' fierce blockage of layoffs so that employment downsizing is difficult. Hence, understanding this militant labor behavior is essential to find means for abating its detrimental effects and, hence, for the economic recovery of Korea.

Union workers like other persons, pursue their private interests and maximization of their earnings in particular. Hence, the existing corporate compensation policy and the workers' response to it would reveal important clues to the workers' militant behavior. In addition to legalization of flexible hiring and firing, labor reform in Korea may need to include corporate compensation reform, which encourages cooperation and increases effort levels of workers. This paper purports to analyze the relationship between compensatory reward for long tenure and worker militancy in order to understand and improve upon the current state of Korean industrial relations. For the purpose, we analyze how the internal labor market mechanism and strikes, an expression of labor militancy, are related in Korean firms.

## II. Internal Labor Market and Labor Militancy

When determination of job applicants' productivity is difficult, firms may resort to the internal labor market mechanism such that only entry level positions are filled by new hires and higher level positions within the firm by seasoned employees. An important reason for cooperative behavior of Japanese workers is the presence of the internal labor market. That is, Japanese firms reward long job tenure with substantial wage increases for additional years of stay with the firm, inducing workers' cooperation and long term employment (Hashimoto and Raisian 1985, and Mincer and Higuchi 1988. The Japanese experience is consistent with the tenure-wage profile theory. The theory argues that tenure and wages are positively related, because such a compensation policy helps the firms recover investment costs in worker training by either inducing worker loyalty (Becker 1975, Becker and Stigler 1974, and Lazear 1981, or enabling the firm to select workers with a low quit probability (Salop and Salop 1976, or allowing a high worker quality - high wage match to endure (Jovanovic 1979).

If labor militancy or strikes are by and large an expression of firm-worker mismatch or employees' lack of loyalty and cooperation with their employees, fortifying the internal labor market with a pronounced wage-tenure schedule may alleviate labor militancy. Thus, understanding the compensation structure of Korean corporations and their relation to labor militancy as measured by strikes is essential to finding ways to achieve industrial peace in Korea.

To investigate the extent to which inadequacy of incentives for longer tenure has caused militant worker behavior among Korean firms, this paper will answer two empirical questions: i) how a firm's existing compensation policy has affected strike incidence and ii) how strikes have changed the compensation policy of struck firms. The former tells us whether an inadequate reward for tenure fosters strikes. A vast amount of research exists regarding the relationship between tenure and wages

and the relation between tenure and quit rates (Mincer and Jovanovic 1981, Meitzen 1986, Abraham and Farber 1987, Altonji and Shakotko 1987, Mincer and Higuchi 1988, and Levine 1993, among others.). Research of the relationship between strikes and the wage-tenure profile is rare, if it exists at all.

In answering the latter, the post-strike compensation structure may reveal workers' demands as well as the firm's. An interesting question is whether strikes are resolved in the direction of strengthening the internal labor market or not. Suppose that a struck firm renegotiates with the union, not just for an increase in total compensation, but also for an egalitarian compensation structure which favors recent hires and young workers at the expense of long-tenured and experienced ones. If short-tenured and less-experienced workers with high mobility have less to lose from hostile actions against their firms, prevalence of the renegotiated egalitarian compensation structure favoring such workers would further increase the likelihood of future strikes or their threat effect. Hence the post-strike compensation policy change is an important issue in view of future industrial peace.

III. Data and Empirical Specifications.

To investigate the effect of compensation policy on strike incidence, we estimate a model of the current period wage of an individual worker as a function of the past strike incidence of the worker's firm. For the effect of strikes on compensation policy, we also use a wage model, which, however, is set to be a function of the future strike status of the worker's firm instead of the past one. The specifications of the two wage determination models are:

$$(1)\ \ln W_{fit} = \alpha_t + X_{fit}\,\beta_t + D_{ft}\,\gamma_t + D_{it}\,\delta_t + (S_{f,t-1}, S_{f,t-1} * X_{1,fit})\,\eta_t + \varepsilon_{it},$$

and

$$(2)\ \ln W_{fit} = \alpha_t + X_{fit}\,\beta_t + D_{ft}\,\gamma_t + D_{it}\,\delta_t + (S_{f,t-1}, S_{f,t-1} * X_{1,fit})\,\eta_t + \varepsilon_{it},$$

where $\alpha_t$ is an intercept and $\beta_t$, $\gamma_t$, $\delta_t$, $\eta_t$ are coefficient vectors all in period t, and

- $\ln W_{fit}$ = log wage of individual i working for firm i in period t,
- $X_{fit}$ = a period t explanatory variable vector unique to individual i working for firm i, which consists of experience, experience squared, tenure, tenure squared,
- $D_{ft}$ = a row vector of establishment specific dummy variables in period t: employment size, industry, and region,
- $D_{it}$ = a row vector of worker specific dummy variables in period t: education dummy, sex, marital status.
- $S_{fi,t-1}$ = the strike status in period t-1 of firm f employing individual i in period t,
- $S_{fi,t+1}$ = the strike status in period t+1 of firm f employing individual i in period t,
- $X_{1,fit}$ = variables in $X_{fit}$ whose coefficients may vary with strike status: tenure, tenure squared, experience, and experience squared,
- $\varepsilon_{it}$ = disturbance term.

The data sources we use for the estimation of models (1) and (2) are the annual Occupational Wage Survey 1971 - 1996 and the 1990 - 1996 Annual Labor Strife Data both published by the Korean Ministry of Labor. The wage survey covers approximately 500,000 workers scattered over about 3500 establishments for 1990 - 1992, while the national totals of employees and establishments for the same period are 18,000,000 - 19,000,000 and 129,000 - 148,000, respectively. It provides for each sampled worker a range of worker- specific information including wages, tenure, education, age, sex, marital status, and occupation. It also includes information of the individual's establishment:

establishment size, industry, and region. The yearly labor strife data provides strike information and a few characteristics of the establishments which experienced a strike in the year.

We matched the wage survey with the strike data to analyze the relation between wage structure and strikes. Several problems were thwarting the task from being perfect. First, according to a directive of the Ministry of Labor for privacy protection, the firm names have been erased from the wage survey. (The strike data show the firm names.) We were able to use a hard copy of the establishment identification ledger in 1990, the last year such a ledger was published. Since the ID changes every 3 years, this enabled to us match the strike data and the wage survey by firm for 1990-1992 wage surveys. Another problem is that strikes are rare events in that only 200 - 300 firms per year are struck and a large portion of the strikes are reported at a regional/industrial affiliation level without identifying participating firms. This has reduced usable observations. We could identify only 67 cases with their establishments out of 322 reported strikes in 1990, 75 cases among 238 strikes in 1991, and 51 cases among 237 in 1992. The unidentified establishments, however, tend to be small establishments, a reason why they resorted to affiliated strikes, while their number is much larger than that of the larger establishments. As an example, out of a national total of 128,668 establishments in 1990, 120,086 are small ones employing less than 100 workers. Hence, the impact of their under-identification is expected not to be large in the wage regressions.

Our three year matched data set consists of 477,873 worker observations in 1990 identifying 10,141 of the observed workers ' establishments struck in the same year, 458,608 observations identifying 7,206 workers' establishments struck in 1991, and 409,550 observations identifying 3,864 workers' establishments struck in 1992. Variable definitions and summary statistics are given in Table 1 and 2.

## IV. Empirical Results.

We estimated models (1) and (2) using the matched wage-strike incidence data for 1990 - 1992. They are listed in Tables 3-1 to 3-3. All the coefficient estimates for the explanatory variables other than the strike variable and its cross product terms with tenure or experience are statistically significant and their magnitudes are comparable to those reported in past research. The coefficient estimates of education dummies (ED2 - ED5) show positive rates of return to education. The rate of return to experience (EXP) per year is about 2% (0.021 to 0.023 in all the listed specifications and years) when EXP = 0, and increases with EXP at a decreasing rate as shown by the negative coefficient (-0.0004) of $EXP^2$. Annual rate of return to tenure (TEN) starts at around 3 - 4% (0.033 to 0.037) and increases with TEN at a decreasing rate due to the negative coefficient (-0.0005 to -0.0006) of $EXP^2$. Men (MALE) earn about 30% more than women. Married workers (MARR) earn about 5% more than non-married workers.

### 1. The effect of compensation structure on future strike incidence

To examine whether compensation policy affects future strike incidence, we estimate model (1), which explains the current wage by the future strike incidence of the worker's firm. As the future strike incidence variable ($S_{+1}$), we use the firm's 1991 strike status for 1990 wage regression and 1992 strike status for 1991 wage regression. [1] The estimated coefficients of $STRIKE_{+1}$, $STRIKE_{+1}xEXP$, and $STRIKE_{+1}xEXP^2$ are statistically significant but change signs between 1990

[1] Regression of 1992 wage against strikes in 1993 was also performed. The coefficient estimates of Ten and $Ten^2$ had the same signs as with 1990 and 1991. But they were not statistically significant due most likely to the extremely small number of strike cases whose establishments were identified in 1993; only 35 cases in the year were identifiable, providing too few observations with the strike dummy taking value 1 in the wage regression.

and 1991. For both years, the estimated coefficients of $STRIKE_{+1}xTEN$ are positive and statistically significant. The coefficients of $STRIKE_{+1}xTEN^2$ are negative and significant for the two years.

The estimated coefficients for the two years show that the firms experiencing strikes in the next period have flatter tenure profiles in the current period. Denoting the estimated effect of tenure h(T) on the log of wages as a quadratic function of Tenure (T):

(3) $h(T) = \eta_1 T + \eta_2 T^2$,

where $\eta_1$ and $\eta_2$ are estimated coefficients of TEN and $TEN^2$. Then the wage-tenure profile h(T) in 1990 is

$$h^{n91}{}_{90}(T) = 0.037274\ T - 0.00054\ T^2$$

for firms non-struck in 1991 and

$$h^{s91}{}_{90}(T) = (0.037274 + 0.01382)T - (0.00054 + .00048)\ T^2 = 0.051094\ T - 0.00102\ T^2$$

for firms struck in 1991.
The wage-tenure profile in 1991 is

$$h^{n92}{}_{91}(T) = 0.036479\ T - 0.00056\ T^2$$

for firms non-struck in 1992 and

$$h^{s92}{}_{91}(T) = (0.036479 + 0.014017)T - (0.00056 + .00099)\ T^2 = 0.050496\ T - 0.00155\ T^2$$

for firms struck in 1992. Figure 1 depicts that the 1990 wage-tenure profile of firms not struck in 1991, $h^{n91}{}_{90}(T)$, rewards higher tenured workers better than the 1990 profile of firms struck in 1991, $h^{s91}{}_{90}(T)$, which peaks quickly and slopes downward earlier. The 1991 wage-tenure profiles show the same pattern: Reward for long tenure among establishments not struck in 1992 is better than that among establishments struck in 1992. The result is obvious because the net effect of the next period strike on the wage-tenure profile of current period is:

$$dh^{s9}{}_{90}(T)/dS = 0.01382\ T - .00048\ T^2 \text{ for 1990 wage}$$

$$dh^{s92}{}_{91}(T)/dS = 0.014017\ T - .00099\ T^2 \text{ for 1991 wage.}$$

Both of the derivatives indicate that future struck firms had a flatter wage-tenure profile. The association between flatter wage-tenure profiles and future strikes confirms that the internal labor mechanism works. That is, a compensation structure providing higher returns to tenure over a long period does produce cooperative worker behavior in the form of reduced future strike incidence.

2. The effect of current strike incidence on future compensation structure.

While current compensation structure affects future strike activity, current strikes affect the next period compensation structure through the negotiation process between workers and firms.
The estimation results of model (2) for the effect of strikes on compensation policy are summarized in Table 3-2. Throughout 1990, 1991, and 1992, the estimated coefficients of $STRIKE_{-1}xTEN$ are positive and that of the $STRIKE_{-1}xTEN^2$ are negative. All of these coefficients are statistically significant.

It follows from the coefficient estimates of $STRIKE_{-1}xTEN$ and $STRIKE_{-1}xTEN^2$ that strikes lead to flatter wage-tenure profiles in the next period. The wage-tenure profile z(T) in 1990 is

$$z^n_{90}(T) = 0.037317\ T-0.00052\ T^2$$

for firms non-struck early in the year and

$$z^s_{90}(T) = (0.037317+0.004114)\ T-(0.00052+0.000937)\ T^2 = 0.0041431\ T\ -0.001457\ T^2$$

for firms struck in early in the year.

Likewise, the 1991 and 1992 wage-tenure profiles of firms non-struck and struck early in each of the two years are

$$z^n_{91}(T) = 0.036461\ T-0.000562\ T^2$$
$$z^s_{91}(T) = (0.036461+0.008394)\ T-(0.000562+0.000151)\ T^2 = 0.0044855\ T - 0.000713\ T^2$$
$$z^n_{92}(T) = 0.032579T-0.000462T^2$$
$$z^s_{92}(T) = (0.032579+0.010151)\ T-(0.000462+0.000471)\ T^2 = 0.0427\ T - 0.000933\ T^2.$$

Figure 2 demonstrates that post-strike compensation structure clearly flattens the wage-tenure profile in 1990 and 1992. In 1991 the post-strike wage-tenure profile of the non-struck firms lies above that of the struck firms, but it does not mean an opposite effect. In fact, the marginal returns to tenure profiles in non-struck and struck firms in all three years exhibit that strikes flatten the wage-tenure profile. The marginal returns to tenure are calculated by

$$dz^n_{90}(T)/dT=0.037317 -2*0.00052*T,$$
$$dz^n_{91}(T)/dT=0.036461 -2*0.000562*T,$$
$$dz^n_{92}(T)/dT=0.032579 -2*0.000462*T,$$
$$dz^s_{90}(T)/dT=0.0041431 - 2*0.001457\ T,$$
$$dz^n_{91}(T)/dT=0.0044855\ - 2*0.000713\ T,$$
$$dz^s_{92}(T)/dT=0.0427\ T - 2*0.000933\ T.$$

As shown in Figure 3, the marginal returns to tenure profiles of the struck firms decline faster over tenure that that of the non-struck firms in all three years including 1991. Hence, the effect of strikes on the post-strike compensation structure is to flatten the wage-tenure profiles. This effect, combined with the previously shown strike-preventing effect of the rising wage-tenure profile, implies the following. The firms with a compensation structure which does not reward long-tenure workers are more likely to experience strikes and the strikes tend to transform the compensation structure to be more egalitarian, not rewarding long-tenured workers. The result is recurring strikes in the same firms, providing an explanation why certain firms repeatedly get into labor disputes and repeated strikes.

Another finding based on our estimated wage regressions is that over the period 1990 - 1992, the compensation structure in Korea has been shifting toward a more egalitarian one. Figure 4 shows that the wage-tenure profile of Korea tends to flatten out over 1990 - 1992. This erosion of the internal labor market mechanism does not bode well for future industrial relations peace in Korea, since the delayed compensation structure rewarding long tenure induces workers' cooperative behavior.

## V. Concluding Remarks

Economic incentives affect worker behavior. The delayed compensation structure rewards long tenure and cooperative worker behavior. Hence, it is expected that such a compensation system helps reduce strike incidence. Our findings confirm that the presence of an internal labor market mechanism with a steep wage-tenure profile does reduce strike incidence in the future. We also found that strikes result in a more egalitarian compensation structure in the next period, eroding the internal labor market mechanism and inviting the possibility of more strikes in the future. The frequent strikes in the late 1980s may have contributed to the further weakening of the delayed compensation system in Korea as observed in this paper. Much publicized labor reform in Korea has focused on the flexibility of the supply of labor. This study points to the importance of restructuring the firms' compensation structure so as to induce worker cooperation and hence reduce labor militancy.

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Table 1. Variable Definitions.

| Variable | Definition |
|---|---|
| lnW | log of Real Wage, Average monthly wage deflated by the consumer price index |
| EDUCATION DUMMIES: ED1 | =1 if elementary school graduate or lower |
| ED2 | =1 if middle school graduate |
| ED3 | =1 if high school graduate |
| ED4 | =1 if junior college graduate |
| ED5 | =1 if 4 year college graduate or higher |
| EXP | Years of Experience = Age - ED - TEN |
| $EXP^2$ | Square of EXP |
| TEN | Years of tenure with the present firm |
| $TEN^2$ | Square of TEN |
| MALE | Dummy, =1 if male |
| MARR | Dummy, =1 if married |
| UNION | Dummy, =1 if firm is unionized |
| OCCUPATION DUMMIES: OCC0 | =1 if technical |
| OCC1 | =1 if professional |
| OCC2 | =1 if administrator |
| OCC3 | =1 if clerical |
| OCC4 | =1 if sales |
| OCC5 | =1 if service |
| OCC6 | =1 if farming, forestry, and fishery |
| OCC7 | =1 if production worker I: miner, ..., textile worker |
| OCC8 | =1 if production worker II: leather worker, ..., jewelry worker |
| OCC9 | =1 if rubber/plastic worker,..., laborer |
| FIRM SIZE DUMMIES: SIZE1 | =1 if number of employees is between 10 and 29, inclusively |
| SIZE2 | =1 if number of employees is between 30 and 99, inclusively |
| SIZE3 | =1 if number of employees is between 100 and 299, inclusively |
| SIZE4 | =1 if number of employees is between 300 and 499, inclusively |
| SIZE5 | =1 if number of employees is 500 or larger |
| INDUSTRY DUMMIES: IND2 | =1 if mining |
| IND3 | =1 if manufacturing |
| IND4 | =1 if electricity, gas, and water |
| IND5 | =1 if construction |
| IND6 | =1 if wholesale and retail trade, restaurants and hotels |
| IND7 | =1 if transport, storage and communication |
| IND8 | =1 if financing, insurance, real estate and business services |
| IND9 | =1 if community, social and personal services |
| REGION DUMMIES: REG0 | =1 if Seoul |
| REG1 | =1 if Pusan |
| REG2 | =1 if Inchun and Gyunggi |
| REG3 | =1 if Gangwon |
| REG4 | =1 if ChungChungBuk |
| REG5 | =1 if ChungChungNam |
| REG6 | =1 if CholIaBuk |
| REG7 | =1 if CholIaNam |
| REG8 | =1 if GyungsangBuk |
| REG9 | =1 if GyungsangNam |
| STRIKE | Dummy, =1 if firm struck |

Table 2. Summary of the Data used for Wage Regression.

| | 1990 | | | 1991 | | | 1992 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable | Nobs | Mean | Std Dev | Nobs | Mean | Std Dev | Nobs | Mean | Std Dev |
| lnW | 477873 | 13.04357 | 0.479946 | 458608 | 13.11894 | 0.473226 | 409549 | 13.19427 | 0.451102 |
| EXP | 477873 | 14.41052 | 10.73909 | 458608 | 14.74649 | 10.95474 | 409550 | 15.09364 | 11.26114 |
| TEN | 477873 | 4.874049 | 4.803728 | 458608 | 5.161087 | 5.001572 | 409550 | 5.468145 | 5.273218 |
| MALE | 477873 | 0.64961 | 0.477093 | 458608 | 0.661042 | 0.473356 | 409550 | 0.660325 | 0.4736 |
| MARR | 477873 | 0.587468 | 0.492291 | 458608 | 0.600879 | 0.489718 | 409550 | 0.607987 | 0.4882 |
| UNION | 477873 | 0.661073 | 0.473346 | 458608 | 0.661149 | 0.47332 | 409550 | 0.640191 | 0.479945 |
| ED1 | 477873 | 0.074365 | 0.262364 | 458608 | 0.069185 | 0.25377 | 409550 | 0.069437 | 0.254196 |
| ED2 | 477873 | 0.220705 | 0.414722 | 458608 | 0.200018 | 0.400014 | 409550 | 0.171369 | 0.376831 |
| ED3 | 477873 | 0.478966 | 0.499558 | 458608 | 0.479843 | 0.499594 | 409550 | 0.483941 | 0.499743 |
| ED4 | 477873 | 0.066463 | 0.24909 | 458608 | 0.073357 | 0.260722 | 409550 | 0.080071 | 0.271403 |
| ED5 | 477873 | 0.159501 | 0.366143 | 458608 | 0.177596 | 0.382173 | 409550 | 0.195183 | 0.396342 |
| OCC0 | 477873 | 0.092091 | 0.289155 | 458608 | 0.095951 | 0.294525 | 409550 | 0.112819 | 0.316372 |
| OCC1 | 477873 | 0.027334 | 0.163054 | 458608 | 0.026332 | 0.16012 | 409550 | 0.032463 | 0.177225 |
| OCC2 | 477873 | 0.03254 | 0.17743 | 458608 | 0.03131 | 0.174154 | 409550 | 0.036799 | 0.188268 |
| OCC3 | 477873 | 0.231727 | 0.421936 | 458608 | 0.255811 | 0.436317 | 409550 | 0.260962 | 0.43916 |
| OCC4 | 477873 | 0.015295 | 0.122723 | 458608 | 0.017601 | 0.131497 | 409550 | 0.02273 | 0.149041 |
| OCC5 | 477873 | 0.053968 | 0.225955 | 458608 | 0.059705 | 0.236939 | 409550 | 0.062007 | 0.241169 |
| OCC6 | 477873 | 0.000743 | 0.027246 | 458608 | 0.000979 | 0.031275 | 409550 | 0.000816 | 0.028546 |
| OCC7 | 477873 | 0.180734 | 0.384798 | 458608 | 0.159903 | 0.366517 | 409550 | 0.1514 | 0.358439 |
| OCC8 | 477873 | 0.232754 | 0.422587 | 458608 | 0.218167 | 0.413002 | 409550 | 0.224195 | 0.417052 |
| OCC9 | 477873 | 0.132814 | 0.339373 | 458608 | 0.134241 | 0.340911 | 409550 | 0.09581 | 0.294331 |
| SIZE1 | 477873 | 0.040339 | 0.196754 | 458608 | 0.040222 | 0.196479 | 409550 | 0.042906 | 0.202645 |
| SIZE2 | 477873 | 0.112337 | 0.315781 | 458608 | 0.115155 | 0.319209 | 409550 | 0.135502 | 0.34226 |
| SIZE3 | 477873 | 0.222988 | 0.416251 | 458608 | 0.230218 | 0.420973 | 409550 | 0.236145 | 0.424713 |
| SIZE4 | 477873 | 0.198448 | 0.398832 | 458608 | 0.17957 | 0.383829 | 409550 | 0.169816 | 0.375471 |
| SIZE5 | 477873 | 0.425887 | 0.494477 | 458608 | 0.434835 | 0.495736 | 409550 | 0.415627 | 0.49283 |
| IND2 | 477873 | 0.011811 | 0.108033 | 458608 | 0.009243 | 0.095696 | 409550 | 0.007069 | 0.083778 |
| IND3 | 477873 | 0.655337 | 0.475259 | 458608 | 0.635519 | 0.481285 | 409550 | 0.64595 | 0.478225 |
| IND4 | 477873 | 0.005148 | 0.071563 | 458608 | 0.007806 | 0.088007 | 409550 | 0.007 | 0.083375 |
| IND5 | 477873 | 0.023364 | 0.151057 | 458608 | 0.02771 | 0.164141 | 409550 | 0.025176 | 0.156661 |
| IND6 | 477873 | 0.04569 | 0.208812 | 458608 | 0.053135 | 0.224302 | 409550 | 0.050031 | 0.218008 |
| IND7 | 477873 | 0.072258 | 0.258914 | 458608 | 0.073363 | 0.260732 | 409550 | 0.042307 | 0.20129 |
| IND8 | 477873 | 0.071896 | 0.258315 | 458608 | 0.083036 | 0.275937 | 409550 | 0.094125 | 0.292003 |
| IND9 | 477873 | 0.114497 | 0.318414 | 458608 | 0.110188 | 0.313124 | 409550 | 0.128341 | 0.334469 |
| REG0 | 477873 | 0.296003 | 0.456493 | 458608 | 0.357421 | 0.479241 | 409550 | 0.327235 | 0.469204 |
| REG1 | 477873 | 0.13093 | 0.337324 | 458608 | 0.128679 | 0.334844 | 409550 | 0.0909 | 0.287467 |
| REG2 | 477873 | 0.207685 | 0.40565 | 458608 | 0.220934 | 0.414876 | 409550 | 0.237627 | 0.42563 |
| REG3 | 477873 | 0.021975 | 0.1466 | 458608 | 0.017778 | 0.132143 | 409550 | 0.017236 | 0.13015 |
| REG4 | 477873 | 0.025172 | 0.156647 | 458608 | 0.029699 | 0.169755 | 409550 | 0.027293 | 0.162937 |
| REG5 | 477873 | 0.041781 | 0.200089 | 458608 | 0.029877 | 0.170249 | 409550 | 0.039756 | 0.195385 |
| REG6 | 477873 | 0.018476 | 0.134664 | 458608 | 0.006147 | 0.078161 | 409550 | 0.019832 | 0.139421 |
| REG7 | 477873 | 0.04294 | 0.202723 | 458608 | 0.037895 | 0.190943 | 409550 | 0.045394 | 0.208166 |
| REG8 | 477873 | 0.115208 | 0.319274 | 458608 | 0.088923 | 0.284634 | 409550 | 0.104385 | 0.30576 |
| REG9 | 477873 | 0.09983 | 0.299773 | 458608 | 0.082648 | 0.27535 | 409550 | 0.090343 | 0.286673 |
| STRIKE | 477873 | 0.0212211 | 0.1441209 | 458608 | 0.0157128 | 0.1243620 | 409550 | 0.0094347 | 0.0966734 |

Table 3-1. Regression of $\ln W_t$ against Strike in the next year ($S_{t+1}$).

| Explanatory Variable | 1990 | | 1991 | | 1992 | |
|---|---|---|---|---|---|---|
| | Coef. | t-ratio | Coef. | t-ratio | Coef. | t-ratio |
| INTERCEP | 12.32116 | 4157.033 | 12.41584 | 4082.848 | 12.49243 | 4245.334 |
| ED2 | 0.0624 | 34.367 | 0.056031 | 28.71 | 0.046481 | 24.087 |
| ED3 | 0.181831 | 92.96 | 0.153851 | 73.693 | 0.149436 | 72.244 |
| ED4 | 0.272097 | 103.679 | 0.236036 | 87.03 | 0.230647 | 87.296 |
| ED5 | 0.45501 | 180.062 | 0.390828 | 148.691 | 0.376592 | 146.872 |
| EXP | 0.023119 | 127.725 | 0.021139 | 115.39 | 0.021912 | 126.222 |
| $EXP^2$ | -0.00044 | -113.235 | -0.00039 | -101.934 | -0.0004 | -111.782 |
| TEN | 0.037274 | 158.402 | 0.036479 | 154.206 | 0.032633 | 158.199 |
| $TEN^2$ | -0.00054 | -49.077 | -0.00056 | -51.005 | -0.00047 | -52.609 |
| MALE | 0.305817 | 298.613 | 0.295707 | 277.914 | 0.290988 | 287.556 |
| MARR | 0.047663 | 36.87 | 0.052931 | 39.816 | 0.047402 | 36.95 |
| OCC1 | 0.112292 | 39.994 | 0.106885 | 36.54 | 0.089451 | 34.142 |
| OCC2 | 0.253356 | 94.397 | 0.307472 | 110.015 | 0.28291 | 111.088 |
| OCC3 | -0.08135 | -48.793 | -0.08211 | -49.691 | -0.07425 | -48.47 |
| OCC4 | -0.10712 | -29.801 | -0.12348 | -35.591 | -0.1001 | -33.078 |
| OCC5 | -0.32233 | -131.041 | -0.32767 | -132.755 | -0.30599 | -131.583 |
| OCC6 | -0.33972 | -23.774 | -0.45603 | -35.106 | -0.35843 | -25.893 |
| OCC7 | -0.11589 | -57.566 | -0.1331 | -64.639 | -0.0794 | -40.923 |
| OCC8 | -0.12805 | -66.883 | -0.13709 | -70.822 | -0.11832 | -65.501 |
| OCC9 | -0.12194 | -58.117 | -0.15691 | -73.776 | -0.08946 | -43.23 |
| SIZE1 | -0.10077 | -47.196 | -0.04471 | -20.352 | -0.04507 | -21.482 |
| SIZE2 | -0.04451 | -31.011 | -0.03118 | -21.265 | -0.02138 | -15.793 |
| SIZE4 | 0.050588 | 41.826 | 0.04122 | 32.413 | -0.00269 | -2.139 |
| SIZE5 | 0.097726 | 91.211 | 0.086993 | 80.089 | 0.046315 | 44.284 |
| IND2 | -0.00086 | -0.214 | 0.148707 | 32.929 | 0.064476 | 13.22 |
| IND4 | 0.091349 | 16.671 | 0.045774 | 9.887 | 0.072407 | 15.187 |
| IND5 | 0.112933 | 42.018 | 0.128528 | 49.932 | 0.143506 | 54.684 |
| IND6 | 0.094734 | 45.549 | 0.111204 | 55.6 | 0.071298 | 35.59 |
| IND7 | 0.020567 | 12.03 | 0.023819 | 13.408 | 0.083745 | 40.479 |
| IND8 | 0.074248 | 43.602 | 0.064219 | 38.571 | 0.100319 | 64.757 |
| IND9 | 0.062452 | 41.49 | 0.057529 | 36.964 | 0.081802 | 56.462 |
| REG1 | -0.06153 | -45.045 | -0.06011 | -43.265 | -0.03767 | -24.362 |
| REG2 | -0.00636 | -5.308 | 0.021549 | 18.15 | 0.00586 | 5.039 |
| REG3 | -0.03396 | -11.382 | -0.00883 | -2.722 | -0.02076 | -6.566 |
| REG4 | -0.05737 | -22.139 | -0.01081 | -4.359 | -0.05603 | -22.216 |
| REG5 | -0.07563 | -36.828 | -0.05005 | -20.479 | -0.04697 | -22.279 |
| REG6 | -0.10686 | -36.072 | -0.01304 | -2.525 | -0.06443 | -22.216 |
| REG7 | -0.01114 | -5.482 | 0.020383 | 9.221 | -0.00974 | -4.887 |
| REG8 | 0.00439 | 3.121 | 0.054505 | 34.83 | 0.022173 | 15.157 |
| REG9 | 0.021385 | 14.205 | 0.029844 | 18.031 | 0.013588 | 8.715 |
| $STRIKE_{+1}$ | -0.046 | -5.656 | 0.028524 | 2.633 | 0.015698 | 1.171 |
| $STRIKE_{+1}$ x EXP | 0.002636 | 2.31 | -0.00713 | -5.225 | -0.00285 | -1.617 |
| $STRIKE_{+1}$ x $EXP^2$ | -0.00011 | -3.866 | 0.000198 | 6.209 | 0.000033559 | 0.85 |
| $STRIKE_{+1}$ x TEN | 0.01382 | 7.638 | 0.014017 | 5.803 | 0.002405 | 0.778 |
| $STRIKE_{+1}$ x $TEN^2$ | -0.00048 | -5.72 | -0.00099 | -7.824 | 0.000015643 | 0.112 |
| Adj. R-square | 0.6905 | | 0.6741 | | 0.6925 | |
| Sample Size | 477873 | | 458608 | | 409550 | |

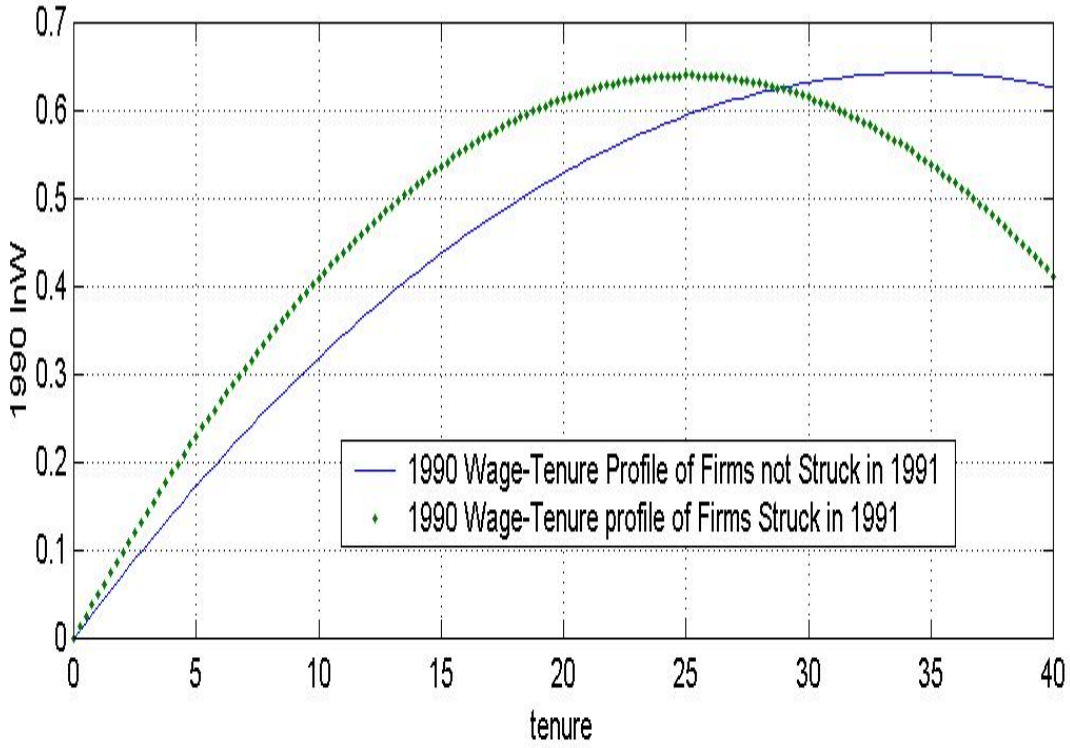
Table 3-2. Regression of $\ln W_t$ against Strike in the same year ($S_{t-1}$).

| Explanatory Variable | 1990 | | 1991 | | 1992 | |
|---|---|---|---|---|---|---|
| | Coef. | t-ratio | Coef. | t-ratio | Coef. | t-ratio |
| INTERCEPT | 12.32015 | 4155.583 | 12.41775 | 4080.982 | 12.49241 | 4244.262 |
| ED2 | 0.06419 | 35.294 | 0.055708 | 28.541 | 0.046447 | 24.072 |
| ED3 | 0.182923 | 93.502 | 0.153525 | 73.53 | 0.149425 | 72.247 |
| ED4 | 0.273288 | 104.147 | 0.235797 | 86.93 | 0.230639 | 87.301 |
| ED5 | 0.456241 | 180.571 | 0.390319 | 148.475 | 0.376607 | 146.89 |
| EXP | 0.022999 | 127.126 | 0.021048 | 114.719 | 0.021906 | 126.099 |
| $EXP^2$ | -0.00044 | -113.083 | -0.00039 | -101.125 | -0.0004 | -111.744 |
| TEN | 0.037317 | 158.499 | 0.036461 | 153.645 | 0.032579 | 157.781 |
| $TEN^2$ | -0.00052 | -46.986 | -0.00056 | -51.311 | -0.00046 | -52.279 |
| MALE | 0.30558 | 298.538 | 0.295723 | 277.904 | 0.290871 | 287.45 |
| MARR | 0.047855 | 37.041 | 0.052834 | 39.738 | 0.047568 | 37.075 |
| OCC1 | 0.111874 | 39.871 | 0.106116 | 36.28 | 0.08958 | 34.189 |
| OCC2 | 0.252515 | 94.133 | 0.307302 | 109.947 | 0.283075 | 111.162 |
| OCC3 | -0.08122 | -48.752 | -0.08254 | -49.946 | -0.07408 | -48.36 |
| OCC4 | -0.10645 | -29.629 | -0.12428 | -35.819 | -0.09995 | -33.036 |
| OCC5 | -0.32184 | -130.926 | -0.32825 | -132.988 | -0.30602 | -131.623 |
| OCC6 | -0.33909 | -23.745 | -0.45762 | -35.225 | -0.35817 | -25.876 |
| OCC7 | -0.11607 | -57.692 | -0.13363 | -64.895 | -0.0791 | -40.764 |
| OCC8 | -0.12747 | -66.622 | -0.13768 | -71.104 | -0.11827 | -65.478 |
| OCC9 | -0.12133 | -57.866 | -0.15718 | -73.904 | -0.08933 | -43.171 |
| SIZE1 | -0.10031 | -47.009 | -0.04522 | -20.578 | -0.04493 | -21.414 |
| SIZE2 | -0.04487 | -31.273 | -0.03148 | -21.473 | -0.0214 | -15.81 |
| SIZE4 | 0.050834 | 42.112 | 0.041226 | 32.387 | -0.00283 | -2.251 |
| SIZE5 | 0.097744 | 91.253 | 0.086732 | 79.797 | 0.046421 | 44.372 |
| IND2 | 0.017511 | 4.243 | 0.149078 | 33.01 | 0.06431 | 13.185 |
| IND4 | 0.090022 | 16.438 | 0.045957 | 9.925 | 0.072669 | 15.243 |
| IND5 | 0.113715 | 42.331 | 0.128768 | 50.014 | 0.143742 | 54.773 |
| IND6 | 0.094304 | 45.36 | 0.111217 | 55.603 | 0.071471 | 35.697 |
| IND7 | 0.020362 | 11.919 | 0.023971 | 13.498 | 0.08349 | 40.331 |
| IND8 | 0.073811 | 43.369 | 0.06472 | 38.863 | 0.100225 | 64.696 |
| IND9 | 0.062169 | 41.329 | 0.057443 | 36.892 | 0.081883 | 56.547 |
| REG1 | -0.06154 | -45.101 | -0.06028 | -43.393 | -0.03746 | -24.243 |
| REG2 | -0.0066 | -5.504 | 0.021626 | 18.215 | 0.005956 | 5.124 |
| REG3 | -0.02529 | -8.355 | -0.00839 | -2.586 | -0.02077 | -6.569 |
| REG4 | -0.05957 | -22.995 | -0.01078 | -4.348 | -0.0559 | -22.166 |
| REG5 | -0.07655 | -37.289 | -0.05017 | -20.521 | -0.04681 | -22.204 |
| REG6 | -0.10734 | -36.256 | -0.01299 | -2.516 | -0.0644 | -22.208 |
| REG7 | -0.01182 | -5.814 | 0.020556 | 9.299 | -0.00957 | -4.805 |
| REG8 | 0.003467 | 2.466 | 0.0548 | 35.008 | 0.022188 | 15.167 |
| REG9 | 0.020691 | 13.723 | 0.031262 | 18.908 | 0.012436 | 7.896 |
| $STRIKE_{-1}$ | -0.02299 | -3.406 | -0.0503 | -5.902 | -0.00254 | -0.225 |
| $STRIKE_{-1}$ x EXP | 0.005605 | 5.123 | 0.000313 | 0.258 | -0.00212 | -1.468 |
| $STRIKE_{-1}$ x $EXP^2$ | -0.00004648 | -1.647 | -0.00000288 | -0.102 | 0.00007197 | 2.196 |
| $STRIKE_{-1}$ x TEN | 0.004114 | 2.411 | 0.008394 | 4.519 | 0.010151 | 3.745 |
| $STRIKE_{-1}$ x $TEN^2$ | -0.00094 | -12.415 | -0.00015 | -1.755 | -0.00047 | -3.138 |
| Adj. R-square | 0.6909 | | 0.6741 | | 0.6925 | |
| Sample Size | 477873 | | 458608 | | 409550 | |

Table 3-3. Regression of $\ln W_t$ against Strike a year earlier ($S_{t-2}$).

| Explanatory Variable | 1991 | | 1992 | |
|---|---|---|---|---|
| | Coef. | t-ratio | Coef. | t-ratio |
| INTERCEP | 12.4171 | 4082.713 | 12.49313 | 4244.484 |
| ED2 | 0.055248 | 28.311 | 0.046356 | 24.027 |
| ED3 | 0.153113 | 73.344 | 0.149351 | 72.216 |
| ED4 | 0.235377 | 86.791 | 0.230606 | 87.291 |
| ED5 | 0.390048 | 148.416 | 0.376497 | 146.856 |
| EXP | 0.021005 | 114.534 | 0.021836 | 125.518 |
| $EXP^2$ | -0.00039 | -101.229 | -0.0004 | -110.893 |
| TEN | 0.036521 | 154.041 | 0.03259 | 157.48 |
| $TEN^2$ | -0.00056 | -51.116 | -0.00046 | -52.348 |
| MALE | 0.295801 | 278.013 | 0.290965 | 287.545 |
| MARR | 0.052996 | 39.864 | 0.047408 | 36.958 |
| OCC1 | 0.106611 | 36.459 | 0.089439 | 34.14 |
| OCC2 | 0.307681 | 110.085 | 0.282959 | 111.121 |
| OCC3 | -0.0821 | -49.696 | -0.07428 | -48.496 |
| OCC4 | -0.12358 | -35.625 | -0.10015 | -33.098 |
| OCC5 | -0.32782 | -132.843 | -0.30635 | -131.75 |
| OCC6 | -0.45615 | -35.118 | -0.35896 | -25.932 |
| OCC7 | -0.13313 | -64.662 | -0.07937 | -40.909 |
| OCC8 | -0.13724 | -70.895 | -0.11839 | -65.546 |
| OCC9 | -0.15661 | -73.633 | -0.08928 | -43.142 |
| SIZE1 | -0.04456 | -20.283 | -0.04531 | -21.594 |
| SIZE2 | -0.03151 | -21.499 | -0.02154 | -15.909 |
| SIZE4 | 0.041859 | 32.915 | -0.00281 | -2.236 |
| SIZE5 | 0.086844 | 79.974 | 0.046221 | 44.183 |
| IND2 | 0.148891 | 32.966 | 0.064382 | 13.2 |
| IND4 | 0.046535 | 10.049 | 0.072684 | 15.245 |
| IND5 | 0.12899 | 50.102 | 0.143541 | 54.688 |
| IND6 | 0.11113 | 55.558 | 0.071445 | 35.686 |
| IND7 | 0.024466 | 13.784 | 0.083785 | 40.489 |
| IND8 | 0.064692 | 38.862 | 0.100699 | 64.946 |
| IND9 | 0.057749 | 37.105 | 0.081886 | 56.539 |
| REG1 | -0.06004 | -43.225 | -0.03762 | -24.348 |
| REG2 | 0.021695 | 18.266 | 0.006098 | 5.245 |
| REG3 | -0.00835 | -2.572 | -0.02069 | -6.545 |
| REG4 | -0.01138 | -4.591 | -0.05596 | -22.189 |
| REG5 | -0.0507 | -20.743 | -0.04684 | -22.216 |
| REG6 | -0.01275 | -2.469 | -0.06445 | -22.222 |
| REG7 | 0.020646 | 9.338 | -0.00961 | -4.825 |
| REG8 | 0.054507 | 34.823 | 0.022409 | 15.314 |
| REG9 | 0.028555 | 17.288 | 0.013749 | 8.796 |
| $STRIKE_{-1}$ | 0.000789 | 0.106 | -0.04387 | -4.899 |
| $STRIKE_{-1}$ x EXP | 0.000203 | 0.176 | 0.004336 | 3.62 |
| $STRIKE_{-1}$ x $EXP^2$ | 0.000092514 | 3.043 | -0.00012 | -4.448 |
| $STRIKE_{-1}$ x TEN | 0.003237 | 1.633 | 0.003416 | 1.777 |
| $STRIKE_{-1}$ x $TEN^2$ | -0.00036 | -3.431 | -0.00006983 | -0.787 |
| Adj. R-square | 0.6741 | | 0.6925 | |
| Sample Size | 458608 | | 409550 | |

Figure 1. Wage-Tenure Profile in Year t and Strike in year t+1: 1990 and 1991



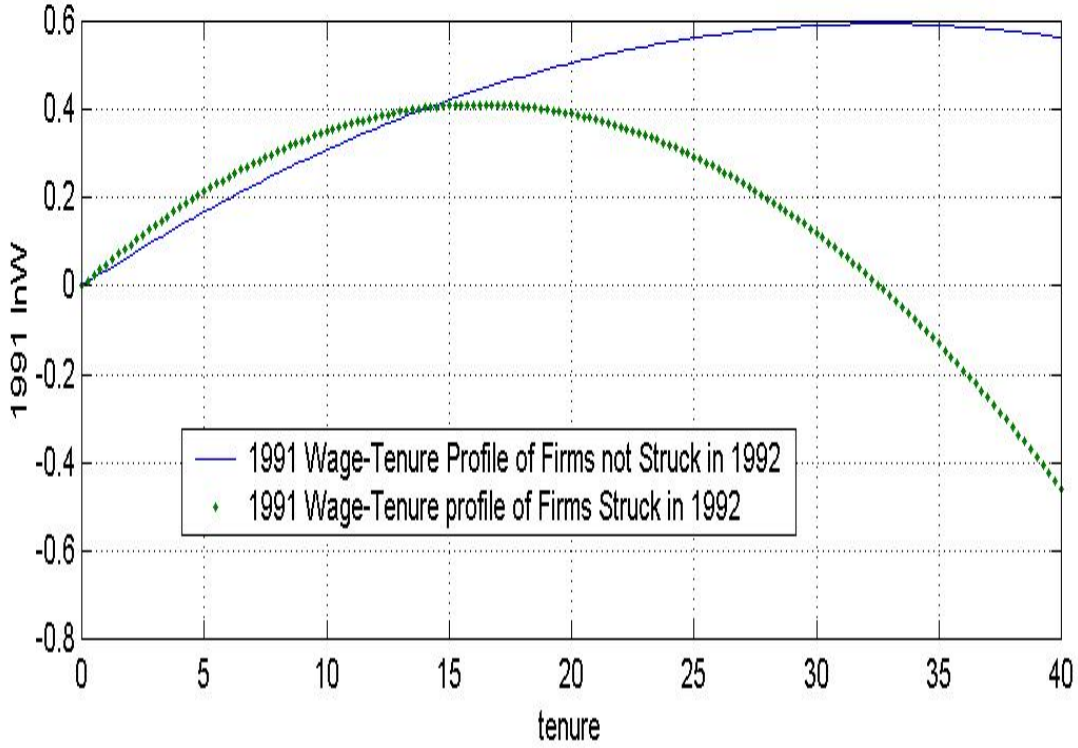



Figure 2. Wage-Tenure Profile of Non-struck and Struck Firms: 1990 - 92

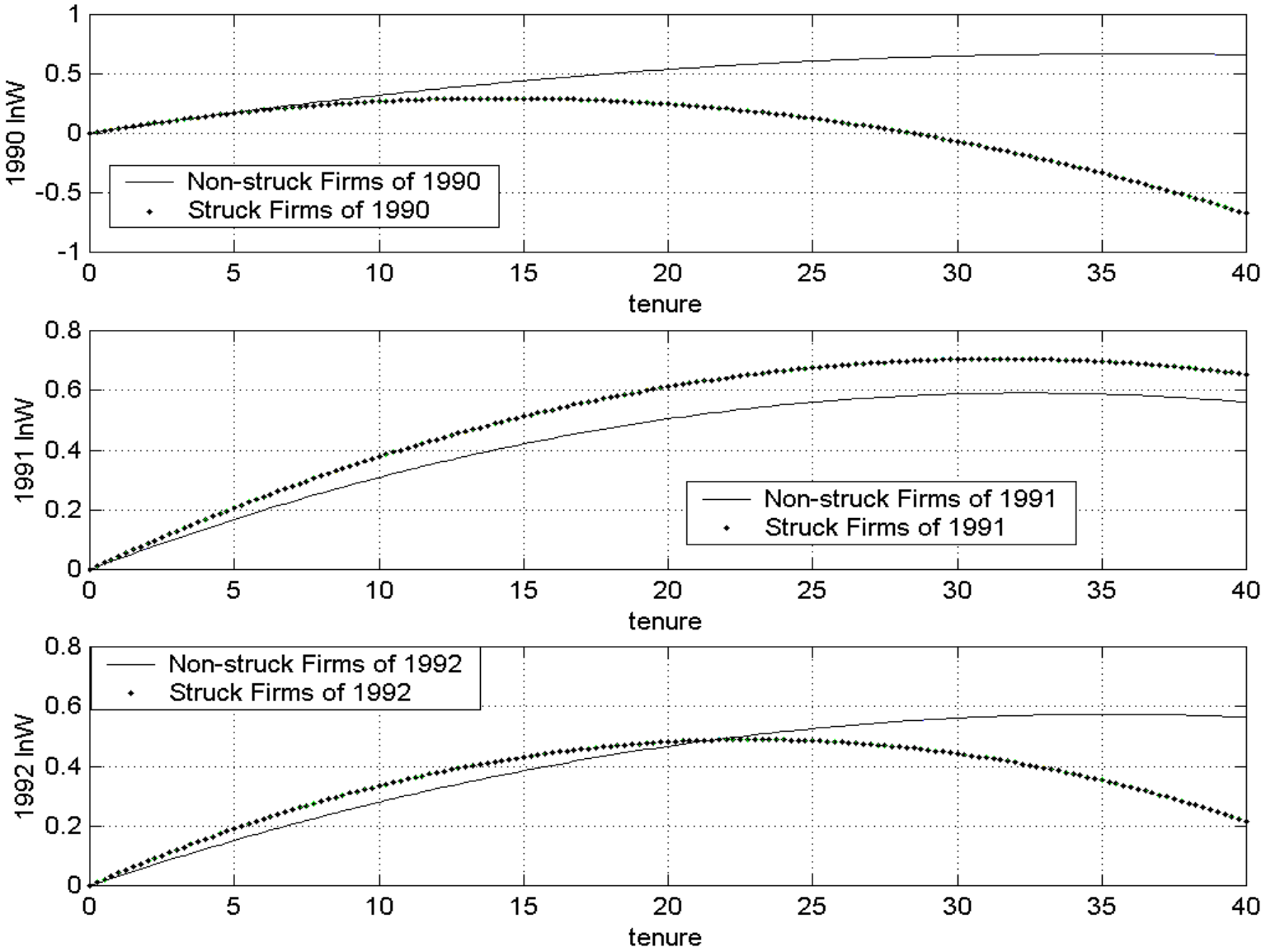


Figure 3. Marginal Returns to Tenure in Non-struck and Struck Firms: 1990 - 92