特集　スタグフレーションへのネオ・マルクス学派的接近

Change in the Wage-Unemployment Relation*
—— The Reserve Army Effect in the Postwar Japanese Economy ——

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1. Introduction

Since the early 1970s, advanced capitalist economies have been witnessing long-term economic decline. While real GDP of the seven main O. E. C. D. countries grew at a 4.8 annual percent rate between 1958 and 1969, the growth rate declined to 3.5 percent in the 1970–1979 period, and to 0.8 percent in the following four years. Besides slower real GDP growth, the economic decline has been marked by a productivity slowdown, plummeting profitability, and falling investment growth.

Wages have displayed especially characteristic behavior during this decline. Just before the outbreak of economic decline, the advanced capitalist countries experienced a great wage explosion. As the economic decline continued, wage growth began to stagger and finally decelerated in the early 1980s.[1]

This unfolding of the decline has stimulated a number of explanations of the crisis which focus on wage behavior. In Marxian political economy, neo-Marxian theories developed in the U.S. and Europe have provided especially innovative views of postwar wage developments.

This paper is the first to examine Japanese wage developments from a neo-Marxian perspective. The paper is organized as follows. In the second section, the core arguments of neo-Marxian approaches are briefly summarized and criticized, and a guideline for understanding recent wage developments is derived. Then I present the hypothesis that variations in the strength of the reserve army effect have traced the trajectory suggested by neo-Marxian theorists, and that variations differ between the union and nonunion sectors. In the fourth section, empirical results in support of my hypotheses are provided. Finally, the main results are reviewed.

2. Neo-Marxian Perspectives on Unemployment and Wages

2. 1 Changes in the Strength of the Reserve Army Effect

A peculiarity of the neo-Marxian approaches to recent wage developments are their focus on the historical and long-run shifts of the wage-unemployment relationship on the one hand, and their special attention to the institutional framework in which these shifts have occurred on the other. A typical example comes from the American radical economists who deal with the long-term developments of the wage-unemployment relations through in-

1)　The annual percentage growth rates of product wages for the seven O. E. C. D. countries are 3.8 percent in 1958–1969, 4.0 percent in 1970–1973, 1.8 percent in 1974–1979, and 1.0 percent in 1980–1983. These figures and the figures on real GDP growth cited in the text are calculated from Armstrong, P., and Glyn, A. 1986 : "Accumulation, Profits, State Spending : Data for Advanced Capitalist Countries, 1952–1983," mimeo., Oxford Institute of Economics and Statistics.

vestigation into the mode of operation of the Marxian reserve army effect. By the reserve army effect, they mean the specific mechanism of a capitalist economy in which the problems of labor discipline caused by high employment —— such as wage acceleration and/or productivity slowdown —— are eliminated by the increased power of capital over labor associated with the increase in unemployment and the threat of job loss. In this way, the reserve army effect is shown to be a necessary condition for the normal operation of capitalism, and is assumed to be represented, at least in part, by the relation in which increased unemployment decelerates the growth of wages. In addition, proposing the newly devised notion of "the social structures of accumulation (SSA)," American radical economists stress the importance of the institutional environment in which the reserve army effect and other economic activities operate.

As a matter of fact, their view concerning unemployment is not completely novel; Marx [1867] and Kalecki [1943] pointed out clearly such a function of the reserve army of labor. The novel contributions by the SSA theorists are as follows. Theoretically, Bowles [1985], Rebitzer [1985] and others have developed an efficiency wage model in which firms' wage offers are adjusted as a function of interaction between employers' pursuit of more work effort and employees' pursuit of less. Using this model, they demonstrate, first, the thesis that involuntary unemployment is indispensable for the maintenance and enhancement of a certain level of work effort for profit-maximizing employers, and then illustrate the conditions under which wages fail to decline even in the presence of increased unemployment.

Empirically, the SSA theorists have presented the evidence that the reserve army effect operated normally until the late 1960s, and declined thereafter. For instance, Bowles and Gintis [1982] and Gordon, Weisskopf and Bowles [1983] report that the pattern of

nominal and product (efficiency-unit) wage growth associated with the business cycle contraction altered from procyclical changes (1948–1968) to countercyclical (1969–1975) for the U. S. manufacturing sector. More important, this development is not restricted to the U.S., but extends to other advanced capitalist economies as well. According to empirical investigations by Schor [1982] [1985a], nominal and product wages exhibit similar changes in the pattern for a group of the nine O. E. C. D. countries including Japan. And these developments reflect the over-accumulation of capital relative to available labor supply and the expansion of income-replacing social expenditure in 1960s, which brought about a shift in bargaining power in favor of workers (Weisskopf, Bowles and Gordon [1983] 381–441 and Schor [1985b] 140–51).

These explanation and observations are far from eccentric. In fact, there is no shortage of similar views and analyses in the orthodox literature.[2] Rather, a serious problem is that SSA theorists have failed to provide an adequate explanation concerning the interrelation between the variations in the strength of the reserve army effect over time and the developments in the institutional framework emphasized by the SSA theory. A central question arises in connection with the "labor accord" —— a key institution of the postwar SSA —— which had underpinned the long-term economic growth in the 1950s and 1960s. According to SSA theorists, the labor accord is the fundamental industrial relation accepted by both capital and labor in the postwar period, and its core is the system of collective bargaining agreements. In the case of the U.S. economy, the labor accord consists of the reciprocal capital-labor relationship: employers establish management rights and retain a free hand to organize work places; in exchange, unions can secure collective bargaining rights

2) For example, see Haveman [1978], Sachs [1980], and Schultze [1981].

and obtain rising wages within the bounds provided by productivity growth (Edwards, Garrona and Tödtling [1986] 14–60). Despite their special attention to the institutional framework for wage determination, however, the SSA theorists remain ambiguous as to how this institutional development relates to the above mentioned variations in the reserve army effect. Additionally, they have neglected to analyze potential differences in wage developments between the sector with the labor accord and the sector without it.

2.2 Monopolistic Regulation of Wages

The interrelation between the changes in the strength of the reserve army effect and developments of the institutional framework has been taken up and clarified by a group of the French political economists labeled the regulation school. On changes in wage-unemployment relations, the analysis by the regulation theorists can be sketched as follows.

First, they emphasize the correspondence between the decline in the reserve army effect and the establishment of the collective bargaining system. They characterize the postwar experience of capital accumulation as Fordism, the system of mass consumption combined with the mass production. Under the Fordist regime, wage increases keeping pace with productivity gains translate into increases in aggregate demand for the consumption goods industries, and the expansion of the these industries leads to the growth of purchases from the capital goods industries. This process correlates with wage growth regularized by the system of collective bargaining agreements, and this increase, in turn, puts continuing pressure upon employers to seek further productivity growth (Aglietta [1979] 37–208). Given this understanding between capital and labor, it is not necessary that wage determination be responsive to the short-run fluctuations in labor demand. Rather, what is required is the "monopolistic regulation of wages," in which "the pressures of demand in the labor

market should no longer exercise a major influence on wages" (Boyer [1979] 115). Thus, the decline in the reserve army effect is not anomalous but is rather a natural consequence of Fordism. In other words, contrary to SSA theory, the relation between the decline in the reserve army effect and the establishment of the system of collective agreements is extremely straightforward.

A second point highlighted by the regulation theorists, one which has not been dealt with by the SSA theorists, is the recent re-emergence of wage flexibility. According to the pioneering works of Margirier [1983], and Boyer and Coriat [1987], mass unemployment since the early 1980s in the U. S. and the European countries has led to widespread introduction of union contract clauses which, for the first time in the postwar period, explicitly link relative job security to wage concessions and the reorganization of production. More than that, mass unemployment, associated with the expansion of new forms of employment beyond the bounds of the union sector (such as part-time jobs and personnel supply services), has produced a situation exactly the opposite to the previous postwar practice, namely a situation within which the union rather than nonunion workers are forced to take the lead in accepting concessions in wages and working conditions. To conclude: "a new stage has been reached in the sense that when the existence of collective agreements cannot be attacked, their contents are modified and aimed to re-establish wage flexibility in response to the unemployment rate" (Margirier [1983] 76). Accordingly, there is a strong suggestion about the interrelation between the eclipse of union strength and the recent restoration of macroeconomic wage flexibility.

Regulation theory contains deep insights, but it also contains problems. To begin with, standard empirical studies on the effects of collective bargaining agreements indicate that the presence of unions weakens wage responsive-

ness to the unemployment more significantly than otherwise, but does not eliminate the responsiveness per se.[3] Therefore, it would be an exaggeration to conclude that the monopolistic regulation of wages in the union sector brings about at the same time the complete erosion of the reserve army effect. In addition, although the hypothesis regarding the linkage between the recent re-emergence of wage flexibility and the retreat of the union sector is suggestive, adequate statistical analyses, to my knowledge, have not yet been presented.

In summary, both the SSA and the regulation theories provide fundamental insights into the evolution of the wage-unemployment relations in the postwar period. However, since SSA and regulation theories have failed to offer adequate analyses separately, it is necessary to synthesize the elements from both theories for fuller treatment of current wage developments. The combined elements include the points : first, the reserve army effect undergoes changes from subperiod to subperiod, reflecting the underlying relative power between capital and labor ; second, the system of collective bargaining agreements has a significant impact on the strength of the reserve army effect. In the next section, I will analyze the postwar Japanese experience from this perspective.

3. Changes in the Reserve Army Effect in Japan

It is critical, then, to analyze the reserve army effect, paying attention to the existence of the system of collective bargaining agreements. Unfortunately, wage data which distinguish the union and nonunion sectors is not available for the Japanese economy. Accordingly, an indirect method is required. One of the most convenient and frequently used techniques goes through the procedures : to separate various industries into a group of industries with above average unionization rates (i. e., the union sector) and a group of industries with below average unionization rates (i. e., the nonunion sector); and to calculate the percentage change in earnings by the union and nonunion sectors as a weighted average of the earnings for the industries in each sector (See Data Sources). As compared with other potential methods for the division for Japanese labor market, this technique has the advantages of making it posssible to analyze wage developments for a wider range of industries,[4] and to cover a relatively long time period, starting in 1958.

Using the wage data so constructed, let me proceed with the problem concerning changes in the reserve army effect in the postwar Japanese economy. As a first step, I calculated the percentage point change in the rate of change of product wages in the phases of business cycle contraction, where product wages were defined as average hourly regular earnings deflated by the implicit GNP deflator. This indicates the conditions of the operation of the reserve army effect : negative change means normal, procyclical wage movements; and positive change means anomalous, countercyclical wage movements. The results are displayed in Table 1.

As predicted by the SSA and regulation theories, the Japanese economy also saw a substantial decline in the procyclical variability of wages between the late 1960s and early 1970s. Notwithstanding this serious decline, however, wage adjustments have quickly recovered their procyclical variability since the mid–1970s. More specifically, this recovery has reflected slightly different movements by sector. In the union sector, while wage change lost the procyclical variability in the contraction starting at the peak of 1970 : III and even deteriorated in the following contraction, it

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3) For instance, see the statistical analyses by Flanagan [1976] 635–73 and Mitchell [1980] 113–62.

4) However, the data in this paper excludes the service industry, because the data on the industry are available only for the period after 1970.

Table 1. Percentage Point Change in the Rate of
Change of Product Wages[1] Associated with
the Business Cycle Contraction

Percentage Point Decline (−) or Increase (+) in the Rate
of Change of Product Wages, From a Quarter Before Peak
until the Trough

Peak Year	All Industries	Union Sector[2]	Nonunion Sector[2]
1961 : IV	−6.942	−7.977	−5.911
1964 : III	−4.412	−1.513	−7.223
1970 : III	+1.087	+2.825	−0.625
1973 : IV	+11.072	+11.935	+10.163
1977 : I	−2.894	−2.334	−3.436
1980 : I	−1.906	−2.770	−1.064
1985 : II	−5.997	−6.048	−5.947

Notes : 1) Product wages are average hourly regular earnings in
the total nonfarm industries (excluding the service in-
dustry), deflated by the implicit GNP deflator. Calcula-
tions are the difference in the rate of change from a
quarter before peak until the trough.
2) Regarding the method of the division of the union
and nonunion sectors, see text.
Source : See Data Sources.

has substantially regained normality since the mid–1970s. In the nonunion sector, while wage change basically imitated the unionized experience, shifts were more moderate. Inter-estingly enough, it is the union rather than nonunion sector which has exhibited stronger procyclical variability since the mid–1970s.

These calculations are simple but instruc-tive. Along with other advanced economies, Japan appears to exhibit changes in the reserve army effect over time, shifting from normal operation to serious weakening around the late 1960s. However, immediately after the decline, the reserve army effect seems to regain normal operation, especially in the union sector.

What are the factors contributing to such changes in the reserve army effect in Japan? In point of fact, we lack a firm answer informed by systematic quantitative analysis. But, in the light of the preceding discussion, it is possible to touch on some circumstantial evidence on labor market conditions and institutions which could affect the balance of power between capital and labor.

To begin with, the Japanese labor market witnessed extraordinary demand pressure dur-ing the period of the decline in the reserve army effect, and extraordinary demand slack-ness during the period of the restoration of the reserve army effect. Table 2 presents the mean values of the labor market indicators for the business cycles. First, the rate of unemployment reached bottom in the 1965–1971 cycle, and since then has shown an upward trend. In fact, 1.06 percent in the 1969 : IV records the lowest level not only for the period covered in this paper, but also for the entire postwar period. Second, this point can be more clarified further by reference to the ratio of job offers to applicants, which is allegedly an alternative and more accurate measure of demand conditions in the labor market. This ratio exceeded unity only in the period from the late 1960s to the early 1970s ; it has declined since the mid–1970s. Such demand pressure ought to affect the underlying bargaining position of labor, as is illuminated by looking at the productivity-wage differential, which is defined as the gap between percentage changes in physical productivity growth and percentage changes in product wage growth. The product wage increase around 1970 was so strong that it exceeded the bounds provided by productivity growth. Thus, these figures confirm that the decline in the reserve army effect is associated with the labor market conditions in favor of labor, and its normal operation is associated with the conditions unfavorable for labor.

In addition to these external market conditions, the variations in the reserve army effect have been affected by changes in the labor market institutions attributable to transformations of the system of collective bar-gaining agreements; the Japanese-type pattern bargaining associated with the Shunto (spring offensive) system reached a peak in the late 1960s, and has experienced a serious erosions since the early 1970s.

It is necessary to pause here to explain the Shunto system. It was started in 1954 by the five industry unions which joined the General Council of Trade Unions of Japan, and became

Table 2. Labor Market Indicators, Averaged for
Business Cycles

Dating of Business Cycles	Rate of Unemployment (%)	Ratio of Job Offers to Applicants[1]	Productivity Wage Differential
1958 : II–1962 : IV	1.623	0.609[2]	5.584
1962 : IV–1965 : IV	1.219	0.704	4.658
1965 : IV–1971 : IV	1.210	1.103	4.319
1971 : IV–1975 : I	1.374	1.321	−2.819
1975 : I–1977 : IV	1.964	0.608	1.622
1977 : IV–1983 : I	2.195	0.656	2.744
1983 : I–1985 : IV[3]	2.664	0.643	4.070

Notes : 1) The ratio of job offers to applicants excludes new graduates.
2) This measures the average for the 1959 : I–1962 : IV period because of data limitations.
3) The figures calculated for the 1983 : I–1986 : IV cycle are 2.694, 0.639, and 3.107 respectively. However, 1986 : IV is the trough which has been tentatively identified by the Economic Planning Agency.
Source : See Data Sources.

established with the introduction of centralized negotiation in the private railroad and chemical industries in the 1958–1959 period. This is the system for wage negotiations in the union sector, and is characterized as follows. First, the Shunto constitutes a mechanism to compensate for, at least in part, the vulnerability of Japanese enterprise unions through the formation of united fronts at the level of industries. Second, the Shunto system contributes to spreading the going rate determined in the leading sector of the economy (such as steel and motor vehicle industries) to other industries through the synchronization of the wage negotiations to springtime. As a result, the Shunto system yielded a so-called Shunto pattern as a frame of reference for wage determination in the individual firms (Sano, Koike, and Ishida [1969] 93–273). In addition, the Shunto system, assisted by high employment in the late 1960s, resulted in not only substantial but also relatively equalized increase of wages among industries. In fact, in the latter half of 1960s, wage growth was annually more than 10 percent, and this increase spread to various industries, regardless of the industry's productivity growth. Consequently, the system of collective bargaining agreements based on the Shunto began to put labor cost pressure on the employers by the late 1960s (Hyodo [1981] 4–52).[5]

However, as argued by some observers of Japanese labor market and labor movement, the Shunto system characterized above was virtually dismantled by the employers' quick and systematic response by the mid–1970s. An especially important offensive has been the introduction of "the principle of productivity criterion" and the subsequent guidepost wage policy by the Japan Federation of Employers' Associations since 1970. This principle mandates that the employers adopt as a criterion for wage bargaining the productivivity growth or the ability to pay of the industry or the firm but not the general Shunto pattern. The implied object, therefore, is to dissolve pattern bargaining under the Shunto system. Indeed, this principle has been successfully applied to the wage negotiations, arguably assisted by the increased unemployment pressure on that occasion; wage increases have developed far below the guidepost since 1975. Thus, the union sector saw the erosion of the basic practice of the collective bargaining system in the postwar industrial relations (Yamashita [1978] 34–54; Hyodo [1981] 106–36; and Totsuka [1982] 3–36).

This institutional understanding——that the Shunto pattern bargaining observed in the 1950–1960s was destroyed in the 1970s and that this has reflected the retrogression of the union strength——has some quantitative support. For example, Moriguchi [1988] reports the finding that the influence of the Shunto wage increase on the average wage change has declined significantly since 1974 (Moriguchi [1988] 234). In addition, Ono [1983] observed the narrowing gap between the wage increase

5) Econometric analyses focused on the impact of unions have been provided by, for example, Sano [1970], Ono [1973], and Hamada and Kurosaka [1986]. They have demonstrated the significant effect of unions on wage increases in the postwar Japanese labor market.

Figure 1. Union Members and Number of Strikers
as a Percentage of the Employed Workers
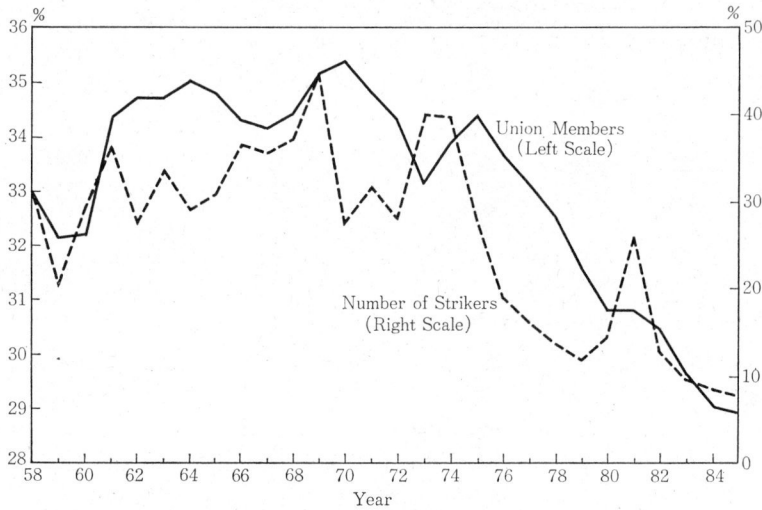
Source: See Data Sources.

demanded by unions and the wage increase actually agreed since the latter half of the 1970s, and interpreted that this was brought about exclusively by the union side retreat despite the genuine efforts of the unions to obtain their demands (Ono [1983] 85–7). Furthermore, to add some other evidence, Figure 1 plots the general decline of the union sector. As is readily seen, since the turning point of the early 1970s, the union sector has become increasingly minor component of labor force and deteriorated considerably in its bargaining power.

Having taken account of the evidence on changes in the cyclical variability of wages by the union and nonunion sectors and the evidence on the labor market conditions and institutions, I will now present the hypotheses to be tested. First, the reserve army effect has undergone changes from subperiod to subperiod: it operated normally in the late 1950s-late 1960s period; it declined from the late 1960s to early 1970s; and it has been toward the normal operation since the mid–1970s. Second, the union sector has had a relatively large impact on this development, in particular on the recent restoration of the reserve army effect.

4. The Econometric Results

To test the hypotheses statistically, the following wage change equations are specified. For the adjustment of product wages,

$$(1) \quad \dot{\omega}_t = \alpha_0 + \alpha_1 D_{1t} + \alpha_2 D_{2t}$$
$$+ \sum_{i=0}^{2} \beta_i U_{t-i}^{-1} + \sum_{i=0}^{2} \gamma_i (D_{1t} * U_{t-i}^{-1})$$
$$+ \sum_{i=0}^{2} \delta_i (D_{2t} * U_{t-i}^{-1}) + \varepsilon_{1t}.$$

For the adjustment of more conventional nominal wages,

$$(2) \quad \dot{w}_t = \alpha_0 + \alpha_1 D_{1t} + \alpha_2 D_{2t}$$
$$+ \sum_{i=0}^{2} \beta_i U_{t-i}^{-1} + \sum_{i=0}^{2} \gamma_i (D_{1t} * U_{t-i}^{-1})$$
$$+ \sum_{i=0}^{2} \delta_i (D_{2t} * U_{t-i}^{-1})$$
$$+ \sum_{i=0}^{2} \zeta_i \dot{p}_{t-i} + \varepsilon_{2t}.$$

The dependent variables are: the annualized percentage changes in the average hourly regular earnings for the nonfarm industries (excluding the service industry) deflated by the implicit GNP deflator ($\dot{\omega}$) in the case of equation (1); and the annualized percentage changes in the average hourly regular earnings for the above industries ($\dot{w}$) in the case of equation

(2). The independent variables are: the dummy variables for the shift of the intercept (D_{1t} and D_{2t}); the inverse of the unemployment rate at time $t(U_t^{-1})$; the interaction term between the dummy variable and the inverse of the unemployment rate, to represent the shift of slope of the unemployment rate ($D_{1t}*U_t^{-1}$ and $D_{2t}*U_t^{-1}$); the percentage changes in the Consumer Price Index at time $t(\dot{p}_t)$; and the mean-zero stochastic error terms (ε_{1t} and ε_{2t}).

Before going into the estimated results, it is necessary to comment on a couple of questions concerning the empirical procedure. First, as is hypothesized, after the normal operation, the reserve army effect shifted toward decline from late 1960s to early 1970s and toward the restoration between mid–1970s and mid–1980s. Econometrically, the usual and simple technique to capture this kind of movement is to introduce a structural change dummy variable and to examine the interaction term between the dummy variable and the unemployment rate. In this situation, the dummy variable equals 1.0 for the period where the conditions of the reserve army effect seemingly changed, namely the 1969 : I–1973 : IV period and the 1974 : I–1985 : IV period, and equals 0.0 otherwise. Second, according to my computation (not shown here), changes in wages from quarter to quarter not only correlate with the contemporaneous quarterly changes in the above explanatory variables, but also associate with their lagged values. In order to represent such a lag structure as appropriately as possible, an Almon type distributed lag model is utilized. But, it is necessary to note here that there is little reason to assume that the impact of the macroeconomic changes on the wage adjustment in the case of Japanese labor market is durable. As is revealed in the questionnaire survey by Sano et al. [1971], there is no institutional framework to cause the influence of the independent variables to last more than a year, because the frequency of wage revision for the unionized establishments is almost once

a year and the frequency for the unorganized establishments is once or twice a year (Sano, Ishida and Inoue [1971] 23–40). Hence, taking this fact and other test statistics into account, the explanatory variables enter into the distributed lag model with a two period lag and first order lag function. Third, in order to check the hypothetical difference of the developments between the union and nonunion sectors, the wage change equations are applied to each sector separately, as well as to the total nonfarm industries.

Table 3 summarizes the results for the equations which are estimated for the period from 1958 : II to 1985 : IV, using the ordinary least squares technique (See Data Sources).

The results for the all industries are given in columns (1) and (2). As shown by the signs and high levels of confidence of the estimated coefficient of the unemployment rate, the expected and normal responsiveness of wages to unemployment is observed in the 1958–1968 period. Yet, such a responsiveness declines in the 1969–1973 period, and then there is a movement toward restoration in the 1974–1985 period, judging from the signs and significance of the interaction term between the dummy variable and the inverse of unemployment rate. In addition, such shifts in the coefficient of unemployment are accompanied by the significant upward movement of the intercept in the 1969–1973 period. Moreover, for nominal wage adjustment, the coefficients of the changes in the Consumer Price Index have the expected signs with high levels of confidence.

The results for the union and nonunion sectors are displayed in columns (3)–(6). Although the results share basic features together with the all industries, they show certain remarkable differences. First, the wage responsiveness to unemployment in the union sector is weaker than in the nonunion sector for the 1958–1968 period. Second, while both sectors show the decline in the wage responsiveness to

Table 3. Wage Adjustment Equations, 1958: II–1985: IV[1] (Dependent Variable=Annualized
Percentage Change in the Average Hourly Regular Earnings in Product or Nominal Term)

	All Industries		Union Sector		Nonunion Sector	
Variable	(1) Product Wages	(2) Nominal Wages	(3) Product Wages	(4) Nominal Wages	(5) Product Wages	(6) Nominal Wages
Constant	−10.07** (−3.10)	−5.69** (−2.13)	−9.41** (−2.76)	−4.75* (−1.73)	−10.07** (−3.21)	−5.09* (−1.68)
Intercept Shift Dummy[2]						
1969: I–1973: IV	13.05** (2.33)	32.79** (4.89)	14.70** (2.50)	35.29** (5.10)	12.06** (2.23)	32.70** (4.65)
1974: I–1985: IV	−2.53 (−0.53)	−5.70 (−1.28)	−4.51 (−0.90)	−6.48 (−1.41)	0.23 (0.05)	−4.42 (−0.87)
Unemployment[3]	19.95** (4.54)	17.67** (4.57)	18.93** (4.10)	16.37** (4.11)	20.46** (4.82)	17.20** (3.99)
Slope Shift Dummy[3]						
1969: I–1973: IV	−13.39* (−1.88)	−34.47** (−4.11)	−15.35** (−2.05)	−37.47** (−4.33)	−11.91* (−1.73)	−34.19** (−3.87)
1974: I–1985: IV	14.95* (1.74)	16.60* (1.76)	18.99** (2.11)	17.39* (1.78)	8.09 (0.97)	12.53 (1.18)
Consumer Price Index[3]	⋯	0.48** (3.64)	⋯	0.48** (3.56)	⋯	0.50** (3.41)
Summary Statistics						
Adj. R^2	0.344	0.800	0.327	0.793	0.360	0.797
Standard Error	4.252	3.197	4.460	3.298	4.100	3.203
Durbin-Watson	2.082	1.847	2.190	2.028	2.000	2.052
rho	⋯	⋯	⋯	⋯	⋯	0.106

Notes : 1) Numbers in parentheses are *t*-statistics. The symbol * denotes significance at a 90 percent
confidence level. The symbol ** denotes significance at a 95 percent confidence level.
2) The dummy variables equal 1.0 during the covered period.
3) The coefficients for these variables are the sum of their respective lag coefficients.
Source : See Data Sources.

unemployment between 1969 and 1973, the striking contrast is observed for the 1974–1985 period : the coefficients for the union sector show the statistically significant shifts in the responsiveness ; those for the nonunion sector fall in the rejection area of hypothesis of such shifts in the responsiveness. In other words, vis-à-vis the nonunion sector, the union sector exhibits a distinct asymmetry in the sense that it shows relatively weak responsiveness for the 1958–1968 period and the relatively strong sensitivity for the 1974–1985 period. On the other hand, concerning the impact of inflation, it could be pointed out that there is no such a large difference between the union and nonunion sector in the case of the Japanese economy.[6]

These estimates provide considerable support for the hypotheses presented above. First, the changes in the strength of the reserve army effect has shown the movements from

subperiod to subperiod hypothesized earlier, because the coefficients of the interaction term between the dummy variable and the unemployment rate show the statistically significant shifts for the 1969–1973 period and for the 1974–1985 period in the opposite directions respectively. Second, the union sector has stronger impact on the shifts in the reserve army effect, because the coefficients for the slope shift in the union sector yield the greater absolute values of the coefficients than in the nonunion sector. In particular, the wage developments for the 1974–1985 period reflects the divergent developments by sector. In the union sector, the tendency toward restoration of the reserve army effect is firm and clear. By contrast, in the nonunion sector, there is no evidence on such a tendency. Consequently, since the total economy shows the determined tendency toward the restoration of the reserve army effect, this tendency is principally associated with the above-mentioned unionized experience.

6) In order to correct autocorrelated errors, the Cochrane-Orcutt procedure is utilized.

5. Conclusions and Implications

The foregoing analysis indicates that the subperiod to subperiod variations in the strength of the reserve army effect has been observed for the particular case of the postwar Japanese labor market. It also confirms that the developments of the union rather than nonunion sector have correlated with the restoration of the strength of the reserve army effect in recent years.

This paper has not dealt directly with international comparative analysis. But, taking account of the above-mentioned findings by the SSA and regulation theorists and certain studies of the recent U. S. experience (Mitchell [1985] and Tsuru [1987]), it is a marked characteristic of the Japanese labor market that the duration of the decline in the reserve army effect is quite short (1969–1973) and the weakening of the union sector is so considerable.

Why has this weakening been so pronounced for the union sector as opposed to the nonunion sector ? To begin with, it should be re-emphasized that both the employers' systematic offensive towards pattern bargaining and the diminishing relative size of the union sector contribute to such a consequence. In addition to these subjective factors, it is necessary to examine some objective factors, particularly the traits of the industries on which the union and nonunion sectors are based. The three largest components of each sector are the transportation and communication, electric machinery equipment, and transportation equipment industries for the union sector, and the wholesale and retail trade, construction, and food and tobacco industries for the nonunion sector. This listing seems to imply that the industries of the union sector have suffered relatively more from supply shocks and intensified international competition in the 1970s, and that in face of such different circumstances, each sector appears to have traced the different trajectory.

(The Institute of Economic Research, Hitotsubashi University)

Data Sources

[1] Wages[1] : Wages are average hourly regular earnings in the total nonfarm industries (excluding the service industry). Indices of wages and hours worked by regular employees by industry are obtained as magnetic data tape from the Policy Planning and Research Department, Minister's Secretariat, Ministry of Labor, Japanese Government.

[2] Deflators[2] : Implicit GNP deflators are from : the Economic Planning Agency, Japanese Government. 1969 : *Revised Report on National Income Statistics, 1951–1967*, Table 5 ; 1985 : *Report on Revised National Accounts on the Basis of 1980*, Volume 1, Table 3–[1]–III –1 ; and 1987 : *Annual Report on National Accounts*, Table 3–[1]–III–1.

[3] Unionization Rate by Industry : Data for unionization rate by industry are calculated from the number of union members by industry and the number of employees by industry. The numbers of union members are from the Policy Planning and Research Department, Minister's Secretariat, Ministry of Labor, Japanese Government. 1970 : *Basic Survey of Trade Unions*, Table 1. The numbers of employees are from the Bureau of Statistics, Office of the Prime Minister, Japan. 1970 : *Annual Report on Labor Force Survey*, Table 5.

[4] Unemployment[1] : Data for the rate of unemployment are from the Statistics Bureau, Management and Coordination Agency, Japan. 1986 : *Annual Report on the Labor Force Survey*, Reference Table 1.

[5] Ratio of Job Offers to Applicants[1] : Data for the ratio of job offers to applicants except new graduates for all industries are from : the Economic Planning Agency, Japanese Government. 1974 : *Annual Report on Business Cycle Indicators*, Table 214 ; and 1987 : *Annual Report on Business Cycle Indicators*, Table 195.

[6] Productivity[2] : Data for productivity are from the Japan Productivity Center. *Quarterly Journal of Productivity Statistics*, various issues.

[7] Union Members : Union members as a percentage of the employed workers are from the Japan Productivity Center. 1988 : *Practical Handbook of Productivity and Labor Statistics* (in Japanese), Table H–1.

[8] Number of Strikers : Number of strikers as a percentage of the employed workers are calculated from : the Policy Planning and Research Department, Minister's Secretariat, Ministry of Labor, Japanese Government. 1968 : *Labor Dispute Statistics*, Table 1 ; and 1986 : *Labor Dispute Statistics*, Table 1.

[9] Consumer Price Index[1] : Consumer price indices (general, excluding imputed rent) are from the Nihon Keizai Shinbunsha. NEEDS data tape.

Notes : 1) The data are deseasonalized, using the X–11 seasonal adjustment program.

2) The data are deseasonalized, using the E. P. A. method.

References

[1] Aglietta, M. 1979 : *A Theory of Capitalist Regulation : The US Experience*, London : NLB.

[2] Bowles, S. 1985 : "Production Process in a Competitive Economy : Walrasian, Neo-Hobbesian, and Marxian Models," *American Economic Review*, 75(1), 16–36.

[3] Bowles, S., and Gintis, H. 1982 : "The Crisis of Liberal Democratic Capitalism: The Case of the United States," *Politics and Society*, 11(1), 51–93.

[4] Boyer, R. 1979 : "Wage Formation in Historical Perspective : the French Experience," *Cambridge Journal of Economics*, 3(2), 99–118.

[5] Boyer, R., and Coriat, B. 1987 : "Technical Flexibility and Macro Stabilisation : A Tentative Analysis," mimeo.

[6] Edwards, R., Garonna, P., and Tödtling, F. (eds.) 1986 : *Unions in Crisis and Beyond : Perspectives from Six Countries*, Dover, Massachusetts : Auburn House.

[7] Flanagan, R. J. 1976 : "Wage Interdependence in Unionized Labor Markets," *Brooking Papers on Economic Activity*, 3 : 1976, 635–81.

[8] Gordon, D. M., Weisskopf, T. E., and Bowles, S. 1983 : "Long Swings and the Nonreproductive Cycle," *American Economic Review*, 73(2), 152–7.

[9] Hamada, K., and Kurosaka, Y. 1986 : "Trends in Unemployment, Wages, and Productivity : The Case of Japan," in Bean, C. R., Layard, P.R.G., and Nickell, S. J. (eds.), *The Rise in Unemployment*, Oxford : Basil Blackwell, 275–96.

[10] Haveman, R. H. 1978 : "Unemployment in Western Europe and the United States : A Problem of Demand, Structure, or Measurment?" *American Economic Review*, 68(2), 44–50.

[11] Hyodo, T. 1981 : *Contemporary Labor Movement* (in Japanese), Tokyo : Tokyo Daigaku Shuppankai.

[12] Kalecki, M. 1943 : "Political Aspects of Full Employment," *The Political Quarterly*, 14(4), 322–31.

[13] Margirier, G. 1983 : "The 'Eighties : A Second Phase of the Crisis?" *Capital & Class*, (21), 61–86.

[14] Marx, K. 1867 : *Capital*, Vol. 1, Harmondsworth : Penguin Books(1976).

[15] Mitchell, D. J. B. 1985 : "Shifting Norms in Wage Determination," *Brookings Papers on Economic Activity*, 2 : 1985, 575–99.

[16] Mitchell D. J. B. 1980 : *Unions, Wages, and Inflation*, Washington, D.C.: The Brookings Institution.

[17] Moriguchi, C. 1988 : *The Changing Japanese Economy* (in Japanese), Tokyo : Sobunsha.

[18] Ono, A. 1973 : *Wage Determination in Postwar Japan* (in Japanese), Tokyo : Toyo Keizai Shimposha.

[19] Ono, A. 1983 : *Labor Economics* (in Japanese). Tokyo : Toyo Keizai Shimposha.

[20] Rebitzer, J.B. 1985 : "Long-Term Employment Relations in the United States," Ph. D. dissertation, University of Massachusetts.

[21] Sachs, J. 1980 : "The Changing Cyclical Behavior of Wages and Prices: 1890–1976," *American Economic Review*, 70(1), 78–90.

[22] Sano, Y. 1970 : *The Econometric Analysis of Wage Determination* (in Japanese), Tokyo : Toyo Keizai Shimposha.

[23] Sano, Y., Ishida, H., and Inoue, S. 1971 : *Wage Determination in the Medium and Small Size Firms* (in Japanese), Tokyo : Toyo Keizai Simposha.

[24] Sano, Y., Koike, K., and Ishida, H.(eds.) 1969 : *The Behavioral Science of Wage Negotiations* (in Japanese), Tokyo : Toyo Keizai Shimposha.

[25] Schor, J. B. 1982 : "Changes in the Cyclical Variability of Wages : Evidence from Nine Countries, 1955–1980," Ph.D. Dissertation, University of Massachusetts.

[26] Schor, J. B. 1985a: "Changes in the Cyclical Pattern of Real Wages : Evidence from Nine Countries, 1955–80," *Economic Journal*, 95(378), 452–68.

[27] Schor, J. B. 1985b: "Wage Flexibility, Social Walfare Expenditures, and Monetary Restrictiveness," in Jasulic, M.(ed.), *Money and Macro Policy*, Boston : Kluwer-Nijhoff Publishing, 135–54.

[28] Schultze, C. 1981 : Some Macro Foundations for Micro Theory," *Brookings Papers on Economic Activity*, 2 : 1981, 521–92.

[29] Totsuka, H. 1982 : *The Course of the Labor Movement* (in Japanese), Tokyo : Tokyo Daigaku Shuppankai.

[30] Tsuru, T. 1987 : "Wage Deceleration in the Long-Term Crisis : Developments in the U. S. Economy, 1975–1985," The Institute of Economic Research, Hitotsubashi University, Discussion Paper Series No. 161.

[31] Weisskopf, T. E., Bowles, S., and Gordon, D. M. 1983 : "Hearts and Minds : A Social Model of U. S. Productivity Growth," *Brookings Papers on Economic Activity*, 2 : 1983, 381–441.

[32] Yamashita, F. 1978 : "The Wage Policy of the Japan Federation of Employers' Associations (in Japanese)," *Gekkan Rodo Mondai Zokan* (5), 33–54.