

Title	A QUANTITATIVE ANALYSIS OF NEGOTIATED WAGE INCREASES IN JAPAN
Sub Title	
Author	島田, 晴雄(SHIMADA, HARUO)
Publisher	Keio Economic Society, Keio University
Publication year	1969
Jtitle	Keio economic studies Vol.6, No.1 (1969. ) ,p.55- 81
JaLC DOI	
Abstract	
Notes	
Genre	Journal Article
URL	<a href="https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-19690001-0055">https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-19690001-0055</a>

慶應義塾大学学術情報リポジトリ(KOARA)に掲載されているコンテンツの著作権は、それぞれの著作者、学会または出版社/発行者に帰属し、その権利は著作権法によって保護されています。引用にあたっては、著作権法を遵守してご利用ください。

The copyrights of content available on the KeiO Associated Repository of Academic resources (KOARA) belong to the respective authors, academic societies, or publishers/issuers, and these rights are protected by the Japanese Copyright Act. When quoting the content, please follow the Japanese copyright act.

# A QUANTITATIVE ANALYSIS OF NEGOTIATED WAGE INCREASES IN JAPAN\*

BY HARUO SHIMADA\*\*

## I. INTRODUCTION

It has long been a subject of debate whether wages are determined by the market forces of demand for, and supply of labor or by such institutional forces as the relative strength of union and management at the negotiation table.

Conventional economic theory teaches us that wages are determined at the equilibrium point of the demand for, and the supply of labor. This theory may explain most of the problems of wage determination, if it is assumed that the condition of the labor market is perfectly competitive. However, we know, today in modern industry, that the wages of these committed employees are not determined directly by market forces but rather primarily through contract agreements under collective bargaining.

Hence, an important task for any modern inquiry into wages is to explore the effects of both economic and institutional forces upon wage determination. The purpose of this paper is to examine how, and to what extent these forces affect the determination of negotiated wage settlements in Japanese industries.

The data we use in our quantitative analysis are the Negotiated Wage Settlements. Let us call them in this paper, the NWS data. The NWS data have been collected by the Japan Ministry of Labor since the late 1950's when *Shuntō* (or Spring Wage Offensive) started.<sup>(1)</sup>

The NWS data, however, have not so far been fully analysed quantitatively in spite of their importance in any discussion of Japanese wage determination. In comparison with the average monthly wage data, the NWS data tell far better the movement of contracted wage rates under collective bargaining.

In our analysis, we shall pay special attention to the amount of change in the

\* The author is indebted to Professor Kotaro Tsujimura for giving him an opportunity and place to develop the project of this study; to Professor Yoko Sano for her constant encouragement and valuable suggestions throughout the entire process of our collaborative study; to Professor Shunsaku Nishikawa and Professor Robert Evans Jr. for reading the whole paper in its earlier draft and giving precious comments; to Professor Norman Jacobs for reviewing the paper and correcting the style of sentences; and to Professor Masahiro Kuroda for his computational aid. And special thank should also be directed to Professor Hisashi Kawada for his earlier guidance for the author toward the study of labor problems.

\*\* Instructor (Joshu), Department of Economics, Keio University.

(1) Professor Robert Evans Jr. has summarized the leading characteristics of *Shuntō* or Japanese Labor's Spring Wage Offensive. His article is especially helpful to foreign students in understanding *Shuntō* as the institutional basis of the Japanese system of wage determination. See the Reference, Evans [5].

NWS as expressed in terms of money, rather than to percentage change.<sup>(2)</sup> We do this simply because the wage increment in money terms performs a special role as the wage-pattern in Japanese wage negotiations.

In the following paper, we will discuss first, the institutional basis of wage determination, including both the system of wage increment and the leading characteristics of collective wage negotiations in our country on the basis of this information. We will then formulate a model for wage determination and will test the model quantitatively as follows; (1) by examination of the empirical validity of the simple model for wage determinations, (2) by investigation of the impact of change in the demand-supply condition of the external labor market upon wage negotiations, and (3) by a test of the applicability of the institutional hypothesis of the Japanese pattern-bargaining practice, or spill-over effect for wage determination behavior.

## II. INSTITUTIONAL CONTEXTS OF JAPANESE WAGE DETERMINATION

It is useful or even indispensable for us to know at the beginning of our discussion a few basic institutional features which characterize wage determination in Japan. One of these is the system of increasing wage rates generally adopted by Japanese firms. And the other is the remarkable characteristic of Japanese wage negotiations, described in the symbolic word "Spring Labor Offensive", especially with respect to wage rounds and the spill-over phenomenon.

### 1. The System of Wage Increments and the Internal Wage Structure

There are two main components in the system of ordinary wage increments in an individual firm. Actually speaking, *ordinary* may be interpreted as *annual*, since most firms reform and raise each of these components annually.

One is *Teikishōkyū*, or the scheduled regular wage increment. This is a system of regular increase in the wages of individual workers. The rate of increase for individual worker is determined completely by initiative of management, based on supervisor's judgements of work performance. These rates are reformulated at certain regular time-intervals which, in most cases, are one year in duration. Interestingly, the rate of increase hardly differs among workers since work performance is usually measured only by attendance.<sup>(3)</sup> Hence, every worker under this system enjoys an almost identical wage schedule and the longer he stays in the same firm, the higher is his wage rate. Consequently, the *Nenko-Joretsu* wage, or

(2) A valuable suggestion in this respect has been made recently by Professor Richard A. Lester. Professor Lester argues that the data of average straight time hourly earnings do not necessarily reflect the wage rate as the price for a unit of labor, whereas the negotiated wage settlement data are closer to the concept of the wage rate. See the Reference, Lester [7] p. 176.

(3) The rate of increase is not necessarily equivalent between different age groups but is identical within the same age group. This is because Japanese firms are primarily interested in recruiting their new workers in spring among those who have just finished school. Since these workers are identical in skill level and qualification, there is no way or reason to make any meaningful distinction in deciding upon their individual wage rates.

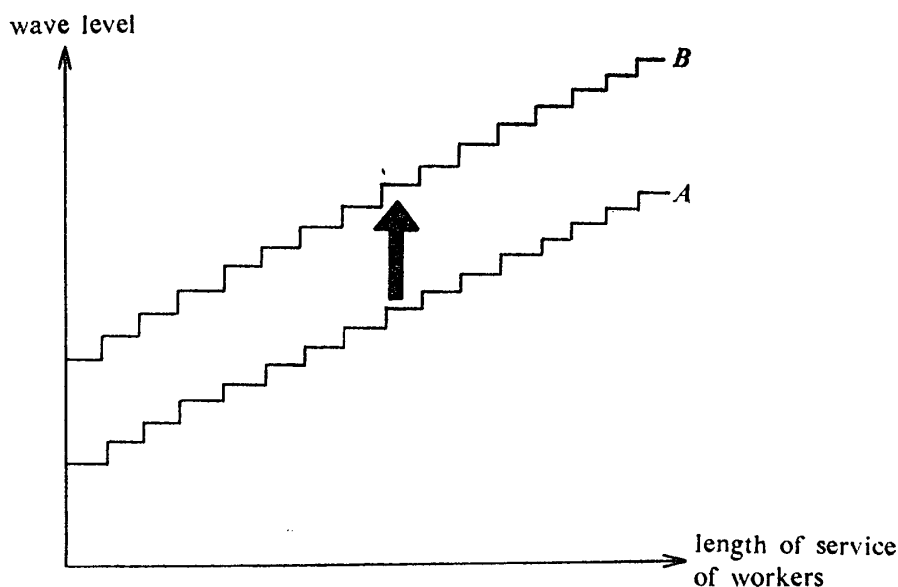
Length of Service Reward System, can be maintained on the basis of *Teiki-Shokyu*.

The other increment system is the so-called *Base-Up* system. In this system the increment of the average level of wages of the employees of a firm is the result of *Shuntō* wage negotiations. As mentioned above, the peculiar feature of *Base-Up* is that the amount of the increment is primarily expressed in terms of money and not as a percentage change.<sup>(4)</sup> In other words, the monetary amount of the *Base-Up* per employee becomes the central focal point of the bargaining negotiations. Noteworthy is the fact that both union and management in a negotiating unit<sup>(5)</sup> concentrate their attention on the change in a single average general rate and not in various rates of various sub-groups of workers.<sup>(6)</sup>

The relationship between the system of *Teiki-Shōkyū* and of *Base-Up* may well be graphically explained. This is done in Fig. I.

*Teiki-Shokyu* is the annual increase in the wage of an individual worker and is expressed as staircase type line A. Needless to say, each step corresponds to the annual increment of an individual worker's wages along with the going wage schedule.

Fig. I. The Relationship Between *Teiki-Shōkyū* and *Base-Up*



(4) This point will be explained more fully later on p. 65 as part of the description of *Shuntō* wage negotiations.

(5) A negotiating unit on an enterprise basis is fundamentally the most important among all levels of negotiation which also include national, industrial or workshop negotiations. By negotiating unit we mean in this paper a unit composed of an enterprise union and management.

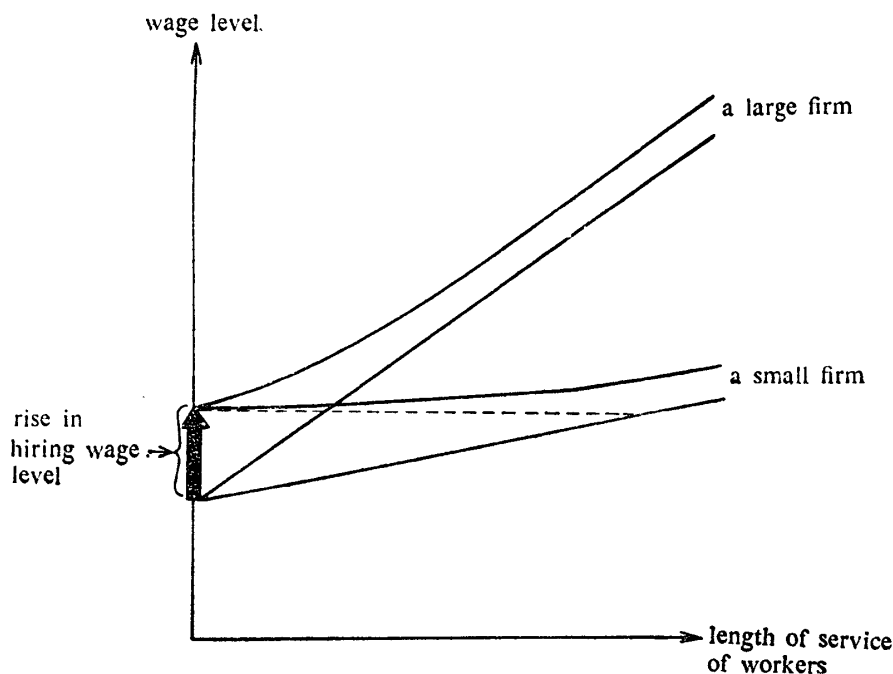
(6) Workers employed in certain plants are not usually perfectly homogenous. Actually speaking, workers heterogenous in skill, age, and sex are organized and structured into various types of production lines, workshops and union organizations. A complex structure of various job clusters is closely connected with the internal wage structure. This has been elaborately analyzed by Professor Livarnash in the Reference [9] and by Professor Dunlop in [3]. In *Shunto* wage negotiations, relatively little attention is paid to these various rates as compared with the average cash amount.

The effect of *Base-Up*, on the other hand, will be expressed as a shift in the curve A up to B. Thus, strictly speaking, the amount of *Base-Up* is equivalent to the gap between A and B. However, we should note here that, according to the common usage of the word *Base-Up* in the business world, it usually implies both *Base-Up* in a strict sense and also *Teiki-Shōkyū* in combination. And since it is the latter meaning of *Base-Up* which represents the wage pattern for negotiated wage settlements, the NWS data employ this more practical instead of the restricted meaning of the term.<sup>(7)</sup>

Now let us shift attention to the relationship between these wage increments and the external labor market. This relationship is not necessarily direct, and, in truth, is rather indirect. For, on the basis of the rigid internal wage structure prevailing in Japanese industry, only *Shoninkyū*, or the Hiring Wage of the Newly Employed Worker, is directly affected by a change in the demand-supply condition in the external labor market. Consequently, change in the internal wage structure will be brought about by change in the level of the hiring wage.

Let us now see how a rise in *Shoninkyū* based on a length of service reward system effects the internal wage structure and how this relates to the *Base-Up*. Fig. II shows how these are related. When the demand-supply condition in the labor market is operative outside an individual firm, that firm may probably need to change

Fig. II. The Impact of the Rise in *Shonin-kyū* upon the Internal Wage Structure



(7) Partly because of difference among firms in the method of determining *Teiki-Shōkyū* and the relative weight of *Teiki-Shōkyū* in the total annual increment, and partly because of the almost simultaneous execution of *Teiki-Shōkyū*, *Base-Up*, and other wage adjustments, the common distinction between the two components may not be easily determined. This is one reason why the two components are treated in combination in any practical discussion of wage increment in Japan.

its hiring wage level for new-comers in order to attract job seekers to the firm. And if the *Shonin-kyū* needs to be raised rapidly (from A 1 to B 1 in the chart) thanks to an excess demand for labor, no one can guarantee that the wage of newcomers would not be higher than the wages of already employed workers who have entered the firm at an earlier data. Hence, unless a careful re-adjustment is made in the inner-firm wage schedule a reverse intra-firm wage differential will quite possibly take place. However, because of seniority system prevalent among Japanese workers and the Japanese personnel management philosophy based on a length-of-service reward system, neither union nor management respectively would ever accept such a reverse differential. Therefore, a reformulated wage schedule which takes into consideration a rise in *Shonin-kyū* would follow the curve B1-P-A2. And the area A1-P-B1 might possibly be interpreted as the impact of the change in the external labor market condition upon the internal wage structure.

Because all these adjustments in wages, which include *Teiki-Shokyū* and a rise in *Shonin-kyū*, are executed at the beginning of the fiscal business year, namely in spring, practically speaking the *Base-Up* settlement in the Spring Labor's Wage Offensive includes all these effects. And the new wage curve after *Base-Up* therefore takes the shape of B1-B2.

As can be easily ascertained, the impact of a rise in *Shonin-kyū* upon the internal wage structure varies according to the steepness of the wage increment curve drawn on the basis of the going wage schedule of each of the firms. The steeper the slope is, the smaller is the relative amount of impact, and vice versa. The difference in relative impact according to the steepness of the slope is shown in Fig. III.

Today, it is well known that in Japan larger firms have relatively steep curves,

Fig. III. The Difference in the Impact of the Rise in *Shoninkyu* according to the Type of Internal Wage Structure.

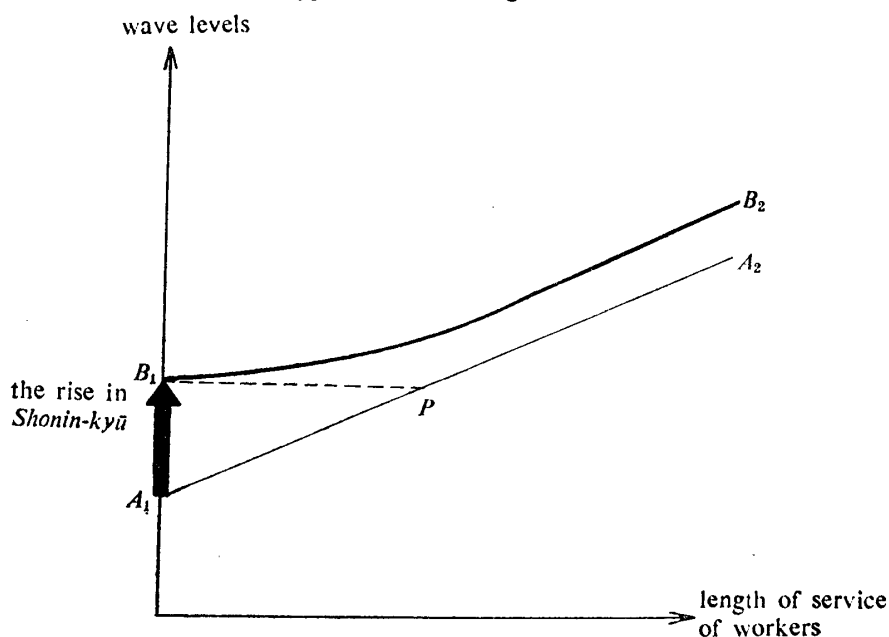
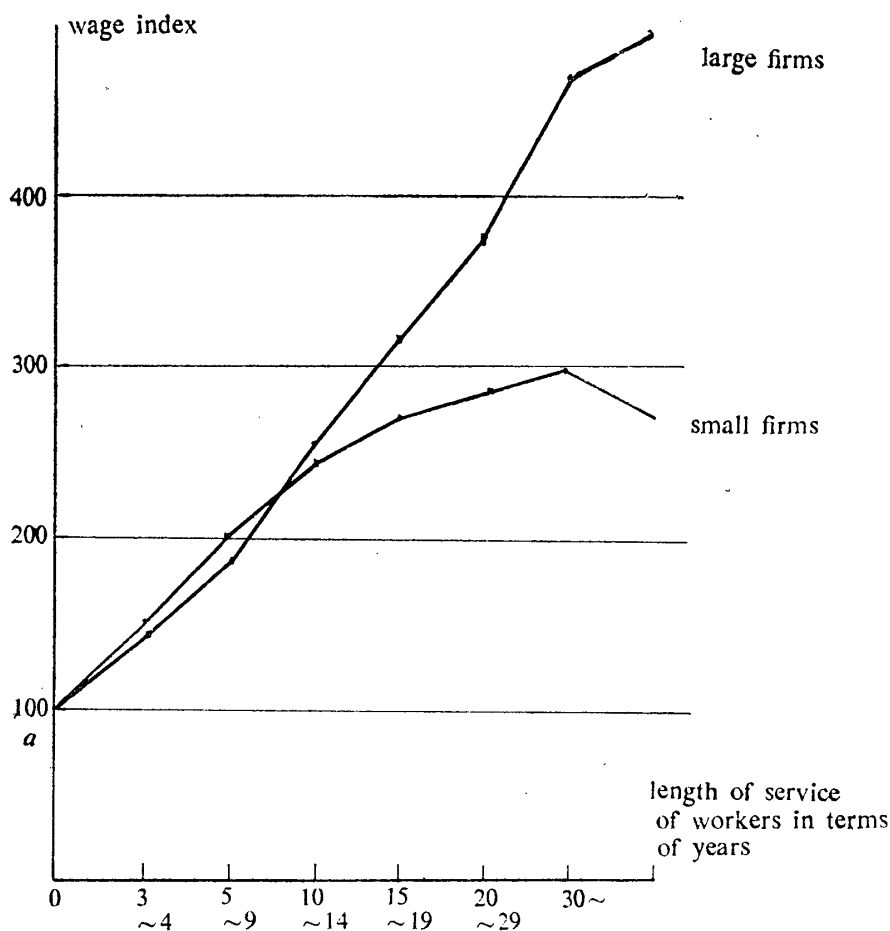


Fig. IV. The Difference in the Wage Curve according to the Size of the Firm.



Source: *Basic Survey of Wage Structure*, Ministry of Labor, 1966.

a; The monthly rates for hiring wages are 14.5 thousand yen for large firms and 15.4 for small firms.

whereas smaller firms have moderate ones.<sup>(8)</sup> As shown in Fig. IV, taking large firms which employ 1,000 and more workers and small firms which employ less than 30 but not less than 10 workers, as examples, the two wage curves, drawn according to year groups of length of service of workers, differs considerably.

This implies that the impact of *Shonin-kyū* change is relatively larger in smaller firms than in larger ones. In other words, labor shortage has a greater and direct impact upon wage determination in smaller firms, and has a relatively mild and indirect influence in larger firms.

On the other hand, labor unions are more active and organized a higher percen-

(8) As stressed by Professor Koji Taira, in his elaborate and comprehensive study, one of the leading characteristics of the Japanese wage differential structure has been the sharp wage differential according to the size of the firm. And because of the rapid rise in the hiring wage level of smaller sized firm in recent years, this type of wage differential is reflected essentially in a difference in the steepness of the curve. See the Reference, Taira [20] Part I, chapter V.

tage of employees in larger firms as compared with smaller firms.<sup>(9)</sup>

All these facts suggest that wage determination in smaller firms may fairly well be explained by change in the external labor market conditions, whereas this may not be as true in larger firms.<sup>(10)</sup> In larger firms on the other hand, the influence of unions, and thus the effect of *Shuntō* wage negotiations, is important in the determination of wages.

## 2. Shuntō Wage Negotiations

*Shuntō*, or Spring Labor's Wage Offensive, is one of the most outstanding, influential labor union wage policies which unions have developed in the post-war period. This policy was initiated in 1955 by *Shuntō-Kyōtō-Inkai* or Spring Wage Hike Joint Council. This council consisted of eight *Tansan*<sup>(11)</sup> or National Industrial Federation of Enterprise Unions which are affiliated to the largest national center, namely *Sōhyō*. In 1961 another national center of labor, *Chūritsu-Rōren* took part in this council. The council's aim is to promote united actions in wage struggles by the many enterprise unions in an industry, thus strengthening the bargaining power of union against management. The council has been instrumental in getting member unions to appeal wage demands and to hold almost simultaneous negotiations in early spring.

This strategy has turned out to be fairly successful, at least as follows; (1) The timing of negotiations at the beginning of a fiscal year is convenient for reviewing the whole existing program of wage schedules as part of a general consideration of a payroll for a new fiscal year. Although this is one of the main reasons that unions select this time point for submitting their wage demands, management also is more likely to meet union demands at this time for the very same reason. And, consequently, the practice of holding wage negotiations every spring seems to have become established for many enterprise unions and management. (2) The great spurt in wage struggles throughout Japanese industry which have been concentrated in spring has produced a peculiar social atmosphere in which the necessity of *Base-Up* is taken for granted not only among workers but also among employers and others

(9) For instance, the union organizing ratio by size of firm in 1966 is 64% for firms employing more than 500 workers, 32% for firms employing less than 500 and more than 100, 10% for firms employing less than 100 and more than 30, and merely 4% for small firms employing less than 30 workers. Wage disputes in *Shuntō* periods also more frequently take place in larger firms. For this point, see Evanse [5] p. 27.

(10) An interesting quantitative analysis was done by Mr. Atsushi Nakamura in this regard. He found that the movement of the average wage level is less correlated to the movement of the hiring wage level in larger firms in comparison with smaller firms. See Nakamura [14] pp. 99-102.

(11) In December 1954, a joint council was organized by 5 *Tansan* such as *Tanrō* or Coal miners, *Shitetsu-Sōren* or Private Railway Workers, *Gōka-Rōren* or Synthetic Chemical Industry Workers and *Kamipa-Rōren* or Paper and Pulp Workers. And in January 1955, three more *Tansan* joined the council such as *Denki-Roren* or Electric Machinery Workers, *Zenkoku-Kinzoku* or Metal Industry Workers and *Kagaku-Dōmei* or Chemical Industry Workers. For comprehensive information on the structure and function of *Tansan* or national industrial unions, see Alice H. Cook, *Japanese Trade Unionism*, the Reference [2] pp. 63-88.



concerned. Although quite a few strikes do break out, they do not last long—at most a few days—and workers succeed in obtaining their *Base-Up* wage increments. For this reason, one should better term this atmosphere *Shuntō Ceremony*, in contrast to the situation in Western countries including the United States,<sup>(12)</sup> in which serious and prolonged wage disputes occur. However, it is not mere ceremony in that each negotiator eagerly consults other negotiations in the hopes of settling for only that amount of *Base-Up* as is being agreed upon in other negotiating units.

The *Shuntō* movement has grown remarkably within the most recent period. An interesting fact is that even those unions which have not been members of *Kyōtō-Iinkai* or the Joint Council have taken part in the unions' Spring Wage Offensive. And as a result, the movement now covers a large portion of unionized workers, as can be seen in Table I.

The number of participants in the Spring Labor's Wage Offensive has grown steadily so that today it amounts to approximately one fifth of the total employed labor force in Japan, and about half of the unionized workers.

TABLE I. THE GROWTH OF THE SHUNTŌ MOVEMENT

year	number of workers who participated <i>Shunto</i> (thousand persons)			total number of employed		total number of union membership	
	member of the council	non-member of the council	total (A)	(B)	A/B %	(C)	A/C %
1955	(700)	—	(700)				
1956	(1600)	—	(1600)	16620	9.63	6286	25.45
1957	1870	—	1870	18240	10.25	6463	28.93
1958	2039	—	2039	19050	10.70	6763	30.15
1959	2396	—	2396	20310	11.80	6984	34.31
1960	2609	274	2883	21470	13.43	7211	39.98
1961	2864	929	2793	22690	12.31	7662	36.45
1962	3287	527	3814	23160	16.47	8360	45.62
1963	3611	1367	4978	24770	20.10	8971	55.49
1964	3723	1282	5005	25940	19.29	9357	53.49
1965	3850	884	4734	27010	17.53	9800	48.31
1966	3933	1213	5166	28100	18.38	10047	50.91
1967	3994	1192	5186	29390	17.65	10404	49.85

Source: (A) Data are from unpublished data collected by the Labor Union Section of the Ministry of Labor.

(B) Data are from Sorifu-Tokeikyoku, *Rōdōryoku Chōsa* (the Bureau of Statistics, the Office of the Prime Minister, *Labor Force Survey*)

(C) Data are from Rōdōshō, *Rōdōkumiai Kihonchōsa* (the Ministry of Labor, *Labor Union Basic Survey*)

Notes: See the Reference [6] p. 32.

(12) See Evans [5], pp. 26–27.

These figures show that the wage struggles of the Spring Labor's Wage Offensive play the dominant role in Japanese wage negotiations. Moreover, quite a few of the practices formulated in *Shuntō* during these annually repeated negotiations for renewal of collective wage agreements have become institutionalized to the extent that they now represent the dominant Japanese pattern of wage determination under collective bargaining.

Now, let us look more closely at two interesting characteristics of *Shuntō* wage negotiations. One characteristic is wage round and the other is pattern bargaining or spill-over phenomenon.

Let begin with the former. To reiterate, the fact that most negotiations are concentrated in a short period in spring and that most of these negotiations are repeated yearly by the same or additional participants. Such facts are shown in Table II.

TABLE II. THE CONCENTRATION OF NEGOTIATION TIMING (%)

year	earlier than April	April	May	later than May
1955	25.4	59.9	7.3	7.4
1956	34.6	60.0	3.6	1.8
1957	53.6	44.9	1.5	—
1958	23.2	50.7	3.0	23.1
1959	45.9	49.4	2.4	2.3
1960	1.1	76.2	22.7	—
1961	1.1	82.4	10.5	6.0
1962	—	77.9	21.0	1.1
1963	1.2	61.3	17.5	20.0
1964	1.8	47.3	49.0	1.8
1965	1.0	41.6	55.9	1.5
1966	1.4	60.1	37.6	1.4
1967	2.0	40.6	53.6	3.6

Source: From the Unpublished Data collected by the Labor Union Section of the Ministry of Labor.

- Notes: 1. The figures denote the ratio of the number of unions which settled wage negotiations within a certain period to the total number of 87 principal enterprise unions, expressed as a percentage.  
2. See the Reference [1] p. 42.

Table II shows that most negotiations held by the leading 87 enterprise unions have been settled in April or May in each of these 13 years; that is, the *Shuntō* movement has helped to create a unique type of wage round which starts regularly every spring.<sup>(13)</sup> The suggestion may well be valid for students to focus on wage-round data

(13) By wage round we mean in this paper the period which starts with the opening of wage negotiations at the first negotiating unit within the total of units contained in a certain industrial society and which ends with the closing of the negotiation sessions at the final unit. For further explanation, see Eckstein and Wilson, [4], Maher, [10] and [11].

rather than on annual in any discussion of movement in wage rates in unionized industries.<sup>(14)</sup> This is plausible because once a wage agreement in which wage rates are prescribed is contracted, the agreement continues to be effective until its overall renewal in the next wage round. In this respect, the *Shuntō* wage round is unique. Hence, although the data used in this study, the NWS data being available on an annual basis, these data correspond also to wage-rounds.

Pattern bargaining or spill-over phenomenon is the second subject that is to be noted here. If we observe closely wage negotiations during the period of the Spring Labor's Wage Offensive, we find that some industries play the role of pattern setters for other industries. Iron and steel, chemicals, and private railways are the leading examples.<sup>(15)</sup>

The striking fact is that the amount of *Base-Up* wage increment in money terms of the various negotiation units do not differ much, but rather concentrate at a certain level at each wage round. This is seen in Fig. V, in the movement of negotiated wage settlements (equivalent to the amount of *Base-Up*) in money terms by thirteen selected industries as derived from the NWS data.

In this general cyclical movement, a remarkable fact is that most industries show very similar movements in the amount of NWS, except for certain industries such as mining, paper and pulp, and electric power, which deviate considerably from the general movement. This similarity becomes extreme in those years when the NWS rises sharply. And in recent years, the range between the high NWS and the low NWS by firm seems to be narrowing.<sup>(16)</sup>

We must keep in mind that such an extreme similarity in the movement of the NWS in money terms is not directly connected with the movement of the average monthly wage level. For, it is the change in the money amount of the increment of the monthly wages and not the change in the total monthly wages. That is important. And because of the difference in the level of the total monthly wages of individual industries, it may be possible that the larger increment in money terms does not mean a higher percentage rise but rather a lower percentage change than may exist in other industries due to the high level of a total monthly wages.

(14) Professor Otto Eckstein and Thomas Wilson formulated their model of wage-determination based on an institutional hypothesis of wage rounds (Hypothesis 5). They suggest that this is valid because environmental factors are more thoroughly taken into consideration at the renewal of the wage contract than at times of more application of the contract. Therefore the data corresponding to the wage round are more meaningful than the annual data in any discussion of wage determination. See Eckstein and Wilson [4] pp. 386–387 and pp. 408–410.

(15) For detailed information on the process of wage negotiation, see *Shiryō Rōdō Undōshi, Rōdōshō* (The Collected Documents of the Labor Movement, the Japan Ministry of Labor), yearly.

(16) This finding may be supported by another fact depicted in the following Table; namely, that the coefficient of quartile variance of the NWS of 157 principal enterprise unions is decreasing.

In the same table, that the coefficients calculated by the same method for 7000 small and medium sized enterprises shows a steady declining trend. This may reflect an increasing difficulty in hiring new and young workers for those enterprises.



Therefore, unless the total monthly wage level is equivalent among industries, a contradictory trend appears such that a high similarity in money terms in the movement of the NWS in various industries causes a large divergence in the movement of percentage changes in the same industries. This difference between the movement in money terms and percentage change in the NWS can be demonstrated also by the following calculations as in the Table III.

TABLE III. CLASSIFIED FREQUENCY OF CORRELATION COEFFICIENTS  
BETWEEN THE NWS OF 78 PAIRS OF 13 INDUSTRIES

coefficient	in money terms	in percentage changes
0.9 and over	34	14
0.8-0.9	28	19
0.7-0.8	10	19
0.6-0.7	5	12
0.5-0.6	0	4
less than 0.5	0	10
Total	78	78

Notes: For further explanation, see the Reference [6] p. 36, and [1] p. 111.

This tells us that although many industries do not necessarily follow the same pattern of wage change in terms of percentage, they walk the same path in terms of money. For four-fifths of 78 pairs of industries show a high degree of correlation exceeding 0.8.

These facts obviously suggest that the NWS in money terms, or the amount of *Base-Up*, has now become the strategic focal point of collective bargaining, as viewed from the standpoint of either union or management. For it has become extremely difficult for a union to gain more than the level attained by other unions and it is

Continued from footnote (16)

Coefficient of Variation of the Negotiated Wage Settlements

year	large firms	medium sized and small firms
1963	0.31	0.47
1964	0.20	0.41
1965	0.31	0.39
1966	0.24	0.36
1967	0.13	0.33

Sources: For large firms, the data are from the unpublished NWS data of the Ministry of Labor, and for small and medium sized firms, from *Chūshō Kigyō Rōdō Jōhō*, Rōdōshō (Labor Information in Small and Medium Sized Enterprises, Ministry of Labor)

Notes: 1. The figures denote the quartile variance coefficients of the negotiated wage settlements of sample firms.

1. See the Reference [1] p. 43.

terribly hard for management to keep the *Base-Up* lower than the prevailing "Social Standard." However, on the contrary, it is fairly easy for either side to have a settlement at a level similar to settlements in other negotiating units, especially, as mentioned earlier, in the special atmosphere of *Shuntō*. This sort of behavior in wage negotiations contributes to produce so-called "Standardization Phenomenon" in the monetary NWS as observed in previous Charts and Tables. Needless to state this phenomenon is dependent on both the institutionalization of pattern setting and following relationship in industry and on the widely accepted and rapidly established principle of a social standard on wage negotiations.

However, some distinctions may exist between pattern setting industries and follower industries. Potential differences in the behavior of these industries will be examined quantitatively later in the study.<sup>(17)</sup>

### III. THE MODEL

Our model for determining negotiated wage settlements has been formulated on the basis of the institutional information of the previous section.

Although the model tries to pursue the course of wage determination in each negotiating unit—practically speaking, the enterprise union and its corresponding management—in effect, the model has employed data based upon individual industries and not upon individual enterprises. This has had to be mostly for computational ease. And such use of data is not unreasonable since the behavior of member unions of the same industrial federation are quite similar under united action policies on the one hand, and since management's behavior in the same industry can not differ materially on the basis of almost identical technological, economical and organizational conditions for firms, on the other hand.

One of the key concerns in formulating the model has been to explain what is it in wage determination behavior causes the "Standardization Phenomenon" in wage increments. Because it is evident that any index which directly reflects the peculiar conditions characteristic of the economic activities of a particular industry can not explain well the movement in wage increment in industry as a whole, it is suggested that a certain variable common to all industries, yet theoretically meaningful as a criterion affecting the determination of wages, needs to be employed as an explanatory variable for this phenomenon. For this purpose, we have adopted as that variable, "the average profit level for all industries."

Our model, then, can be conveniently expressed as

$$\Delta W = f(\pi_1, \pi_2, P),$$

where  $\Delta W$  denotes the negotiated wage settlement, or the *Base-Up* wage increment, on the basis of individual industries;  $\pi_1$  the average profit level per employee for all industries;  $\pi_2$  the profit level per employee of an individual industry; and  $P$  the

(17) See Stage III of the quantitative experiments, below.

consumer prices index.<sup>(18)</sup>

According to our hypothesis of pattern bargaining, it is expected that the  $\Delta W$  of each of the pattern-following industries relates closely to the  $\Delta W$  of the pattern-setting industry. However a high correlation coefficient of the pattern setter's  $\Delta W$  in explaining the  $\Delta W$  in other industries, does not necessarily explain the causal relationship in wage determination among various industries. Therefore, the model does not employ the  $\Delta W$  of the pattern setter as an independent variable explaining the  $\Delta W$  of the leading sector.

By  $\pi_1$ , we intend to represent the general ability to pay of all industry as a whole. This does not, of course, reflect the financial situation of any individual industry, but rather shows the phase of the business cycle.

It is worth reviewing the implications of the "Standardization Phenomenon" in negotiated wage increments. This phenomenon suggests that the immediate financial condition of an individual industry does not necessarily explain the movement of the  $\Delta W$  of individual industry. Because  $\Delta W$  of individual industries show somewhat similar movements, in sharp contrast with the variations of profit level of corresponding industries which move in diversified patterns, the general movement of  $\Delta W$  rather seems to trace the track of the movement of  $\pi_1$ . Therefore the model employs this variable with the intention to let it explain the standardized movement of the  $\Delta W$  in various industries.

$\pi_2$  represents the ability to pay of individual industries. A difference in the relative explanatory ability of  $\pi_1$  and  $\pi_2$  may indicate a difference in the behavior of wage determination. That is, in some industries, wages may be determined according to the individual industries' ability to pay, but in other industries, wage determination may be strongly influenced by the general economic situation rather than those industries' own financial situation.

We add  $P$  into the model, since  $\Delta W$  is expressed in terms of a money wage and not in terms of a real wage. Moreover, as is well known, the main reason for wage demand by labor unions is a rise in consumer prices, and hence a rise in the cost of living, it may therefore also be possible to have the variable  $P$  represent the unions' willingness to strive for, or their ability to maintain a real wage level.

#### IV. THE RESULTS OF THE EMPIRICAL TEST

##### *Application of the Pooled Data*

Linear approximation of our model,

$$(I.1) \quad \Delta W = \alpha_1 \pi_1 + \alpha_2 \pi_2 + \alpha_3 P + \alpha_0$$

is fitted to the data pooled inter-industry cross-section and 1960-1967 time series to obtain 104 observations ( $N = 104$ ).

$$(I.2) \quad \Delta W = 8.747\pi_1 + 1.441\pi_2 + 3.404P - 508.7,$$

(1.892)      (0.233)      (7.157)      (462.2)

(18) For detailed information of data, see APPENDIX and STATISTICAL APPENDIX.

$$\bar{R} = 0.774 .$$

$\bar{R}$  denotes the coefficient of multiple correlation adjusted. Figures in parentheses are standard deviation of respective coefficient.

Since, in (I.2),  $P$  is not statistically significant, the new equation without it is computed again,

$$(I.3) \quad \Delta W = 9.524\pi_1 + 1.420\pi_2 - 336.4$$

$$(0.950) \quad (0.231) \quad (286.1)$$

$$\bar{R} = 0.776 .$$

The regression coefficient is still not very high. An examination of residuals tells us that the deviation of mining industry is particularly large. This suggests that the mining industry has some exceptional conditions.<sup>(19)</sup>

Such an exceptional condition in the mining industry will be taken into account by introducing a dummy variable,  $D_m$ , taking 1 for the mining industry and 0 for the others. The result obtained is as follows,

$$(I.4) \quad \Delta W = 9.817\pi_1 + 0.819\pi_2 - 1248.3 D_m - 165.5$$

$$(0.798) \quad (0.209) \quad (189.1) \quad (241.4)$$

$$\bar{R} = 0.848 .$$

Here, we find that both of  $\bar{R}$  and  $t$ -value of each regression coefficient are improved.

This regression reveals the leading features of wage determination under collective bargaining in present day Japan. That is, in the special atmosphere generated by the annual Spring Labor's Wage Offensive, certain wage patterns are set in certain influential, "leading" industries which vitally affect collective bargaining in other negotiating units. Therefore, wage increments are likely to be determined not necessarily by either the existing financial situation or an ability to pay in those particular industries but are determined rather in a convergent trend toward a "Social Standard", which does, however, respond sensitively to up and down swings in the general economy. The results of the quantitative experiments have adequately supported these assumptions.

#### *Impact of External Labor Market*

In recent years, Japan has found that she can no longer enjoy an abundant and unlimited labor supply. It is said that such a remarkable change in the demand-supply condition of the labor force took place in about the beginning of the 1960's. This change may be clearly observed in the following charts.

Fig. VI shows that the average monthly wage level increased rapidly during the recent decade. It should be noted, especially, that the rate of increase changed

(19) In recent years, production activities of mining industry can be continued only under special financial aid by the government. Moreover, since *Sei-Ten Tōsō*, or "switching policy struggle", has been initiated by the Miners' Union in 1961-1962, wage increments have been determined by political considerations rather than by economic conditions in the industry. For further information, see *Shiryō Rōdō Undōshi*, Rōdōshō (*The Collected Documents of Labor Movement*, the Ministry of Labor), 1961.



Fig. VI. The Increase in the Average Wage Level and the Hiring Wage (middle school leavers; male)

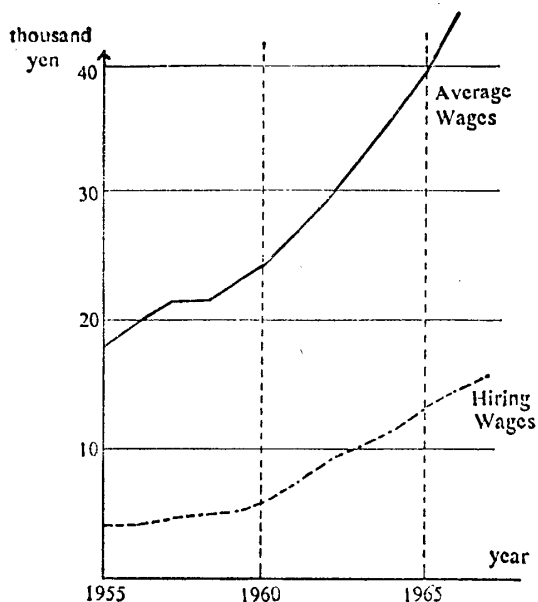
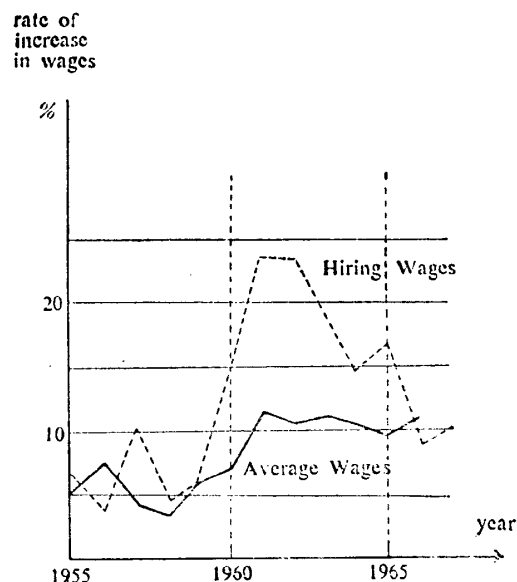


Fig. VII. The Rate of Increase in the Average Wage Level and the Hiring Wage



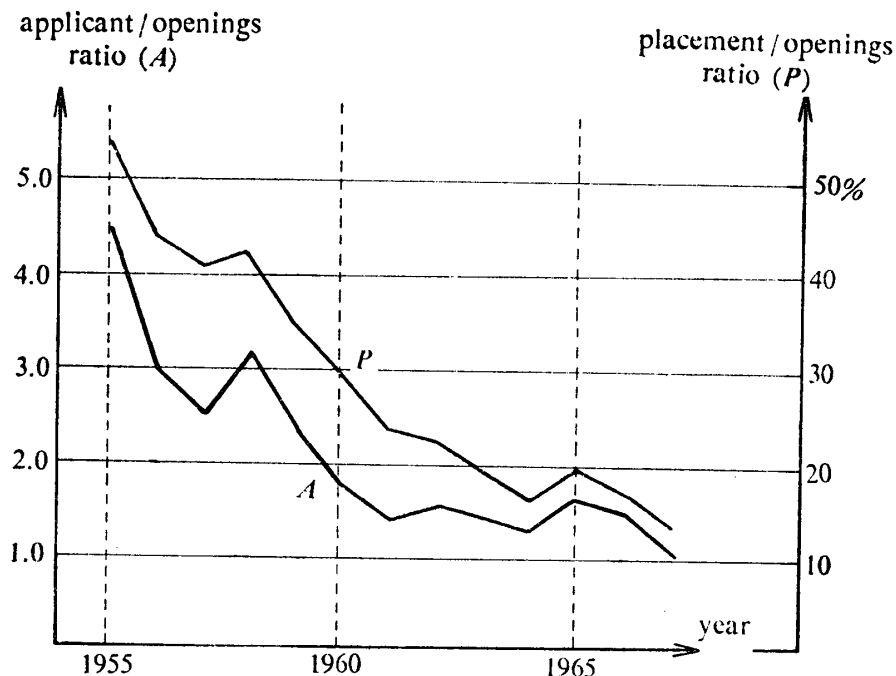
Source: Rōdōshō, *Maigetsu Kinrō Tōkei* (Ministry of Labor, *Monthly Labor Survey*), Rōdōshō Shokugyō-Antei-Kyoku, *Shokugyō Antei Gyōmu Tōkei* (Bureau of Employment Security, Ministry of Labor, *Advance Report on Local Public Employment Security Offices Employment Activities*)

remarkably between the former and the latter half of the period as is seen in the Fig. VII. Consequently, the wage level doubled but a few years after 1960. And even more rapid growth occurred in the hiring wage rate for young male workers. During the period under discussion this rate tripled. The rapid increase in the rate of hiring wage was attained in a few years after 1960. In other words, an excess demand for laborers newly entering the labor market has given rise to a competitive labor market in which the rate of increase in the hiring wage level has been extremely high.

Although, in the existing structure of the Japanese labor market, government is obliged to concern itself with only a relatively minor segment of the job market; namely, elder workers, the less skilled, and seasonal or temporary workers, still the Fig. VIII clearly shows that relative labor-supply shortage exists recently even in this fringe area of the labor market. A remarkable change in the demand-supply condition in this market is attested by the decrease in both the competition index and the placement ratio, especially since the beginning of the 1960's.

If there has been a considerable change in the external labor market situation and if there has been an indirect relationship between wage negotiation and the external labor market, then some impact of that change should be expected to affect wage negotiations. However, this impact cannot be examined explicitly by our model because the model has not independent or explanatory variable which represents

Fig. VIII. The Decrease in the Applicant/Opening Ratio and the Placement/Opening Ratio



Notes: The applicant/openings ratio (A) and the Placement/openings ratio (P) are defined here as;

$$(A) = \frac{\text{The number of effective applications during the year}}{\text{The number of effective job openings during the year}}$$

$$(P) = \frac{\text{the number of new job placements during the year}}{\text{the number of effective job openings during the year}}$$

Source: Rōdōshō Shokugyo-Antei-Kyoku, *Shokugyō Antei Gyōmu Tōkei* (Bureau of Employment Security, Ministry of Labor, Advance Report on Local P.E.S.O. Employment Activities)

change in the labor market.

Nevertheless, it is possible to assume that labor market conditions are different before and after a certain time-point. A good example of this assumption would be the turning point mentioned previously. However, information presently available is not enough to specify the timing of the turning point. In order to specify the time-point, let us therefore introduce a dummy variable into the equation. Several alternative time-points have been selected, e.g. between 1959-60, 1960-61, 1961-62, 1962-63, and 1963-64. The dummy variable is set equal to 1 for the period prior to each of these points, and 0 for the period after the points. The results are shown in Table IV.

As Table IV shows, the regression which assumes that a change would occur after 1960-61 provides the most satisfactory result. That is, the dummy variable turns out to be sufficiently significant when the critical point of sharp change is assumed to lie between 1960 and 61. Conversely, this turning point coincides with the observed kinky curves in indices of labor market conditions. Hence, coincidence with the change in the labor market which has vitally affected the climate

TABLE IV. THE SHIFT OF WAGE DETERMINATION FUNCTION DUE TO THE IMPACT OF CHANGE IN THE LABOR MARKET

critical time point	$\pi_1$	$\pi_2$	$P$	$D$	constant	$\bar{R}$	$D.F.$
1959-60	8.629 (1.699)	1.273 (0.108)	4.912 (6.500)	-73.109 (185.113)	-637.946 (435.240)	.872	121
1960-61	6.832 (1.281)	1.329 (0.186)	1.725 (5.695)	-596.994 (144.861)	352.814 (471.356)	.889	121
1961-62	9.058 (1.234)	1.287 (0.199)	1.107 (7.141)	-122.003 (162.224)	-292.983 (658.362)	.873	121
1962-63	8.896 (1.254)	1.261 (0.198)	9.361 (8.815)	169.639 (202.247)	-1308.541 (872.831)	.873	121
1963-64	9.332 (1.252)	1.279 (0.977)	3.370 (9.916)	237.096 (224.280)	233.728 (955.035)	.873	121
1959-60	9.719 (0.895)	1.256 (0.196)		-21.958 (171.991)	-379.823 (269.279)	.873	122
1960-61	7.125 (0.838)	1.323 (0.184)		-601.197 (143.657)	472.692 (255.159)	.890	122
1961-62	9.198 (0.841)	1.286 (0.198)		-135.426 (136.647)	-199.317 (260.683)	.874	122
1962-63	9.867 (0.860)	1.255 (0.984)		13.118 (138.572)	-429.925 (278.300)	.873	122
1963-64	9.007 (0.881)	1.282 (0.196)		-175.014 (146.449)	-98.258 (301.182)	.874	122

in which wage negotiations are held, the wage determination function has remarkably shifted upward. That the dummy variable is significant suggests that there was a relative upward pressure in wage determination during the period after the point, 1960-61, in comparison with the period prior to it. This shift in function implies that wage determination behavior has changed since the point 1960-61 in such a manner as to raise wages much higher than they did in the previous period for a certain level of profit, and that change in labor market conditions has probably much to do with this change in wage determination behavior.<sup>(20)</sup>

(20) We also have tried to explain the shift in function by a time-trend variable, since the change in labor market conditions seems to resemble to some extent a secular trend. The result is shown in Table V.

TABLE V. THE TIME-TREND SHIFT IN THE WAGE DETERMINATION FUNCTION

case	$\pi_1$	$\pi_2$	$P$	time trend	constant	$\bar{R}$	$D.F.$
I	8.073 (1.451)	1.279 (0.197)	-6.147 (9.763)	80.579 (61.254)	146.594 (752.186)	.874	121
II	8.035 (1.446)	1.285 (0.196)		50.187 (30.619)	314.937 (168.322)	.875	122
III	9.807 (0.575)	1.257 (0.196)			-407.998 (153.672)	.874	123

As Table V shows, although the time-trend variable may explain to some extent the shift in function,

*Difference in Wage Determination by Industry and by Cyclical Change*

The difference in wage determination behavior by industry will be examined by comparing the relative influence (strength) of two explanatory variables,  $\pi_1$  and  $\pi_2$ . Table VI shows the results of calculations according to the (I.3) type equation by nine individual industries. These industries have been selected on the basis of availability of data over somewhat long periods. Table VII presents the same results in terms of the standard coefficient value for the parameter of the same independent variables. The partial standardized regression coefficient more clearly demonstrates the relative explanatory ability of these variables.

TABLE VI. COMPARISON OF THE WAGE DETERMINATION BEHAVIOR BY INDUSTRY

Union (Industry)	$\pi_1$	$\pi_2$	constant	$\bar{R}$	$N^a$
1. <i>Shitetsu</i> (Private Railways)	9.711 (2.782)	4.157 (5.203)	-488.6 (271.3)	.961***	12
2. <i>Tekko</i> (Iron and Steel)	5.760 (3.288)	2.736 (1.559)	50.5 (644.8)	.866**	9
3. <i>Denki</i> (Electrical Machinery)	9.932 (0.992)	-0.118 (1.688)	-58.0 (384.1)	.967**	10
4. <i>Sharyo</i> (Railway Car Manuf.)	10.704 (2.835)	3.097 (7.558)	-552.1 (611.2)	.888**	11
5. <i>Goka</i> (Chemicals)	7.839 (3.565)	3.304 (2.867)	-126.5 (322.4)	.946**	12
6. <i>Sekiyu</i> (Oil Refineries)	13.890 (2.131)	0.260 (0.439)	-869.4 (613.0)	.899**	11
7. <i>Semento</i> (Cement)	9.234 (1.911)	0.627 (0.679)	43.9 (542.7)	.866**	10
8. <i>Tanro</i> (Mining)	6.616 (1.426)	3.555 (2.024)	-363.5 (357.6)	.822**	12
9. <i>Denro</i> (Electric Power)	7.344 (3.110)	2.841 (1.366)	-124.0 (406.7)	.955**	10

Notes: a.  $N$  denotes sample size.  
 b. \*\* statistically significant at 1% level.

According to the results in most cases,  $\pi_1$  appears to be superior to  $\pi_2$  as an explanatory variable. This suggests that an immediated ability to pay  $\pi_2$  does not play a large role in determining wage increments in many industries but that, instead,  $\pi_1$  does. In some industries however,  $\pi_2$  has a considerable influence. Good examples of this are the iron and steel, chemicals, mining, and electric power industries. Iron and steel, and chemicals are known to have often played the role of pattern-setters in the Spring Labor Wage Offensive. In these industries wage determination is dependent more upon their own conditions, whereas in other (so-called follower) industries, wage determination is more strongly affected by the general prosperity or depression of the whole Japanese economy.

such an explanation is not very adequate. This implies that the impact of labor market conditions, upon wage negotiations changed drastically, rather than gradually, during the period under discussion.

TABLE VII. COMPARISON OF WAGE DETERMINATION BEHAVIOR BY INDUSTRY  
(standardized regression coefficient)

Union (Industry)	$\pi_1$	$\pi_2$
1. <i>Shitetsu</i> (Private Railways)	.796	.182
2. <i>Tekko</i> (Iron and Steel)	.779	.480
3. <i>Denki</i> (Electrical Machinery)	.978	-0.006
4. <i>Sharyo</i> (Railway Car Manuf.)	.840	.091
5. <i>Goka</i> (Chemicals)	.636	.333
6. <i>Sekiyu</i> (Oil Refineries)	.906	.082
7. <i>Semento</i> (Cement)	.839	.160
8. <i>Tanro</i> (Mining)	1.079	.408
9. <i>Denro</i> (Electric Power)	.527	.463

$\pi_2$  seems to explain the variation of  $\Delta W$  of individual industry either well or poorly depending on cyclical change of average  $\Delta W$ . In years of large wage increases (that is, when  $\Delta W_t - \Delta W_{t-1}$  is positive and large), the influence of  $\pi_2$  seems to decrease. On the other hand, in years of moderate wage increases (that is, when  $\Delta W_t - \Delta W_{t-1}$  is negative), the influence of  $\pi_2$  is more evident. This is shown in Table VIII.

TABLE VIII. CORRELATION  $\Delta W$  OVER  $\pi_2$ 

year	$\pi_2$	constant	R	N	$\Delta W_t - \Delta W_{t-1}^b$
1960	0.698 (0.372)	1565.9 (177.5)	.416	13	—
1961	1.006 (0.611)	2741.2 (278.3)	.353	13	+1187
1962	3.198 (0.920)	1802.2 (265.0)	.692***	13	-455
1963	2.625 (0.519)	1622.2 (159.4)	.819**	13	-278
1964	1.742 (0.789)	2779.2 (251.2)	.493	13	+1068
1965	2.453 (0.528)	2355.2 (156.6)	.794**	13	-291
1966	1.961 (0.637)	2538.1 (254.7)	.643*	13	+259
1967	1.714 (0.566)	2479.9 (283.0)	.636*	13	+941

Notes: a. \*\* denotes statistical significance at 1% level and \* denotes statistical significance at 5% level.

b. The data for  $\Delta W_t - \Delta W_{t-1}$  are the average *Base-Up* of all industrial unions except for public corporations and government offices.

These facts suggest that the pattern-bargaining relationship, or spill-over effect, appears more evidently in years of sharp wage increase rather than in years of moderate wage increase.

## V. CONCLUSIONS

This study has attempted to examine, for Japan, the effects of both market and institutional forces upon wage determination under conditions of collective bargaining.

The focus of the quantitative analysis has been limited to the movement of negotiated wage settlements, by utilizing the NWS data collected by the Japanese Ministry of Labor. In this short study, it was considered necessary to concentrate attention upon those enterprises in which the practices of wage negotiations have been well established and, hence, to eliminate the analysis of wage determination in innumerable smaller enterprises.

The quantitative experiments supported the earlier institutional hypotheses concerning the behavior of wage negotiations. Interestingly, one of the quantitative results suggest that changes in conditions of the external labor market affect considerably the behavior of determining wages under conditions of collective bargaining.

Let us, in conclusion, briefly recapitulate the findings of the quantitative analysis.

(1) The negotiated wage determination model, which was derived from the institutional hypothesis has been verified. The fundamental feature of the hypothesis is that, in the special negotiation atmosphere generated by the Spring Labor Offensive, attention is paid to the amount of *Base-Up*. This *Base-Up* pattern plays the dominant role in forming the standard for wage increments. That is to say, negotiated wage settlements do not necessarily reflect an ability to pay by individual industries but rather more likely follow a general trend in a social standard which in turn seems to respond to the existing level in the general economy.

(2) It was revealed that the market forces in the external labor market do affect, though not substantially, the behavior of determining wages by negotiations. There are two possible channels through which such external changes influence internal wage negotiations. One channel is through change in the hiring wage level with subsequent adjustment in the internal wage schedule. The other channel is through general pressure upon negotiations of a keen awareness of a relative shortage in labor supply. Since the samples chosen for our experiments are large firms where an impact through the former channel can not become great, the observed change in the behavior of wage determinations after 1961 might be explained on the basis of the latter channel. However, further research is necessary in order to specify the impact of either channel upon the rise in wage settlements.

(3) Quantitative analysis of the pattern-bargaining practice and the spill-over phenomenon has brought to light on the one hand, the difference in wage determination behavior between pattern setting industries and follower industries and, on the other hand, the environmental conditions in which the spill-over phenomenon apparently seems to appear. In the former case, the pattern-setter is considerably dependent upon an ability to pay, whereas the follower is moved by general economic conditions; namely, the average profit level of all industries rather than its own.

In the latter case, the spill-over, or in other words the standardization effect on negotiated wage increments, appears strongly in a year of sharp wage rise. In other words, boom and spill-over effect seem to go together.

## APPENDIX

*The Data and Sources*

$\Delta W$ : Negotiated Wage Settlements Expressed in Money Terms (which is equivalent to the amount of the *Base-Up*)

As described above, Ministry of Labor has been collecting data of negotiated wage settlements of a sizable number of main enterprise unions since the *Shunto* movement was first launched. These data are termed the NWS data. The Ministry publishes annually the average NWS of individual industrial union federations, which is calculated from the NWS data of approximately 160 enterprise unions. These federations called *Tansan*, roughly correspond to two digit level industry in standard industrial classifications. The data used in our calculation are the NWS of 13 industries.<sup>(1)</sup>

As mentioned earlier, since it is the money amount of, rather than a percentage change in the *Base-Up* per employee that is the critical issue in wage negotiations, we employ the former in our quantitative analysis. By percentage change we mean the *Base-Up* amount divided by the average monthly wages of the previous term. This may be denoted as  $\Delta W_t/W_{t-1}$ . As we have already seen, these two kinds of data do not naturally present the same patterns of movement. And it is the former in which the "Standardization Phenomenon" usually is observed:

Source: Rōdōshō, *Shiryō Rōdō Undōshi* (Ministry of Labor, Collected Documents of Labor Movement); annual.

$\pi$ : The Net Profit Per Employee of Principal Enterprises

In taking the net profit per employee as the index of an enterprise's ability to pay, we assume that both the previously attained profit level and the anticipated profit level for the near future affect spring wage negotiations. Hence, we must use the total of the profit level data of both the latter term (that is, October to March) of the previous fiscal year and the former term (that is, April to September) of the forthcoming fiscal year.

Since the system of classification on a basis of industry is not the same between the profit data and the wage (NWS) data, coverage of individual enterprise data is not exactly the same but rather roughly corresponds between these two categories of data. For further information on the coverage of data, see statistical appendix, Table III and IV.

Source: Nihon-ginkō Tōkeikyoku, *Shuyō-Kigyō Keiei Bunseki* (Statistics Depart-

(1) See the statistical appendix, Table III, for the sample size and the time-span of the data. In the following calculations, the sample size is not always the same but varies according to the stage of calculation. This is so because we are trying to obtain somewhat longer time-series data in Stage II of our experiment

ment, Bank of Japan, *Analysis of Financial Statements of Main Industrial Corporations in Japan*); an annual in two installments.

*P*: Consumer Prices Index (for Urban Areas) in Previous Year

We have assumed that the variation, especially the rise of the consumer prices, prior to the period of *Shunto* affects wage negotiations.

*Source*: Sōrifu Tōkei-Kyoku, *Kakei Chōsa* (The Statistics Bureau of the Office of the Prime Minister, *Family Income and Expenditure Survey*), monthly.



## STATISTICAL APPENDIX

Table I. NEGOTIATED WAGE SETTLEMENTS (BASE UP) OF INDIVIDUAL INDUSTRIES  
(yen)

year	1. <sup>a</sup>	2.	3.	4.	5.	6.	7.	8.
1956	900	—	—	—	—	—	—	1477
1957	1350	—	—	—	—	—	1713	1615
1958	1058	—	1344	—	—	—	812	1219
1959	1270	1420	1570	—	—	—	1125	1400
1960	1622	1840	2140	1869	2424	1772	1763	2073
1961	3049	3200	2625	2939	3940	2804	3800	2478
1962	2400	2634	2415	2578	3358	2458	2900	2605
1963	2228	1492	2178	2199	2616	1869	2350	2257
1964	3336	3160	2898	3618	3538	2810	3188	3737
1965	3035	2440	2741	2817	3228	2739	2913	3526
1966	3536	2480	3132	3198	3472	2952	3300	3772
1967	4336	4286	4465	4471	4601	4134	4300	4553
year	9.	10.	12.	11.	13.	all <sup>b</sup> industry	C.P.I. <sup>c</sup>	
1956	—	—	—	450	—	—	92.7	
1957	1358	—	—	1300	—	—	93.0	
1958	412	1314	—	770	1261	—	95.9	
1959	1252	1550	—	600	1500	—	95.5	
1960	2288	1984	1402	395	1821	1792	96.5	
1961	3775	3690	1973	1500	3247	2970	100.0	
1962	3550	3170	1618	1375	3023	2515	105.3	
1963	3125	3050	2081	1375	3025	2237	112.5	
1964	3525	3308	3692	2063	3690	3305	121.0	
1965	3675	2690	2878	1719	3824	3014	125.6	
1966	4000	2840	2711	1533	4284	3273	135.2	
1967	4528	4370	3555	1880	4895	4214	142.1	

Notes: a. The number indicates individual industrial unions whose coverage roughly correspond to 2 digit industrial classifications; 1. *Shitetsu-Sōren* (Private Railways), 2. *Tekko-Rōren* (Iron and Steel), 3. *Denki-Rōren* (Electrical Machineries), 4. *Zōsen* (Ship Building), 5. *Zenkoku-Kinzoku* (Fabricated Metals), 6. *Zen-Densen* (Wire Manuf.), 7. *Sharyō-Rōren* (Railway Car Manuf.), 8. *Gōka-Rōren* (Chemicals), 9. *Zen-Sekiyu* (Oil Refineries), 10. *Zenkoku-Semento* (Cement), 11. *Kamipa-Rōren* (Paper and Pulp), 12. *Tanrō* (Mining), 13. *Denrō* (Electric Power)

b. The average NWS of all industries except for public corporations and government offices

c. Consumers Prices Index as controlled 100.0 as of 1961

Source: See the latter part of the section III of this paper.

TABLE II. THE NET PROFIT PER EMPLOYEE OF INDIVIDUAL INDUSTRIES  
(HALF A YEAR)

(thousand yen)

year	1. <sup>a</sup>	2.	3.	4.	5.	6.	7.	8.
1956	51.0	—	—	—	—	—	—	140.0
1957	62.0	—	—	—	—	—	59.0	163.0
1958	62.5	—	190.0	—	—	—	84.0	132.5
1959	72.0	181.0	231.0	—	—	—	85.5	154.0
1960	86.5	371.5	285.5	205.5	275.0	377.0	97.5	211.5
1961	88.0	386.0	304.0	185.0	303.5	398.5	123.0	227.5
1962	94.0	261.5	310.5	195.5	279.5	278.5	141.5	207.5
1963	120.5	161.0	268.0	180.5	291.5	151.5	144.0	250.5
1964	149.5	320.5	262.5	222.0	361.5	266.5	150.5	367.5
1965	149.0	244.5	197.0	160.0	300.5	309.0	157.0	386.5
1966	179.0	288.5	211.5	167.0	319.5	473.5	136.5	375.5
1967	198.0	702.0	337.5	257.0	400.5	416.0	137.5	471.5

year	9.	10.	11.	12.	13.		all <sup>b</sup> industry
1956	—	—	—	25.0	—		120.0
1957	915.0	—	—	45.0	—		170.0
1958	248.0	497.0	—	18.0	150.5		128.0
1959	324.0	402.0	—	-2.0	203.0		150.5
1960	1405.5	573.0	184.5	2.5	267.0		233.0
1961	1301.5	521.0	186.0	24.0	305.5		263.0
1962	430.5	541.0	137.5	38.0	384.5		251.5
1963	374.5	666.5	178.0	27.0	522.0		260.5
1964	192.0	513.5	278.5	27.5	579.5		327.0
1965	475.5	-55.5	177.0	-12.5	612.5		290.5
1966	925.5	352.0	156.0	-28.0	631.0		312.5
1967	751.5	897.5	258.0	-196.5	695.5		431.0

Notes: a. The cardinal number stands for individual industries as follows; 1. Private Railways, 2. Iron and Steel, 3. Electrical Machineries, 4. Ship Building, 5. Fabricated Metals, 6. Wire Manufacturing, 7. Railway Car Manufacturing, 8. Chemicals, 9. Oil Refineries, 10. Cement, 11. Paper and Pulp, 12. Mining, 13. Electric Power. This order is coincident with that of the previous Table I.

b. The average net profit per employee of all industries that include more industries than these selected 13 industries.

Source: See the latter part of the section III of this paper.

TABLE III. AVAILABILITY AND THE SIZE OF NWS SAMPLES ON THE BASIS OF INDIVIDUAL ENTERPRISE UNIONS<sup>a</sup>

Industrial Union <sup>b</sup>	1957	58	59	60	61	62	63	64	65	66	67
1. <i>Shitetsu-Soren</i>	13	14	13	14	14	14	14	14	14	14	14
2. <i>Tekko-Roren</i>	5		5	5	5	5	5	5	5	5	5
3. <i>Denki-Roren</i>	10	18	20	19	20	19	20	20	20	20	20
4. <i>Zosen<sup>c</sup></i>	8	3	9	8	10	6	9	10	8	8	8
5. <i>Zenkoku-Kinzoku</i>	1			3	4	4	4	4	4	4	4
6. <i>Zen-Densen</i>	5	4	7	6	6	6	6	6	6	6	6
7. <i>Sharyo-Roren</i>	4	3	4	4	4	4	4	4	4	4	4
8. <i>Goka-Roren</i>	15	28	34	35	36	36	36	37	37	37	37
9. <i>Sekiyu</i>	4	4	5	4	4	4	4	4	4	4	4
10. <i>Zenkoku-Semento</i>	2	5	5	3	5	5	5	5	5	5	5
11. <i>Kamipa-Roren</i>	7	7	6	8	9	9	9	9	9	9	9
12. <i>Tanro</i>	14	14	14	12	12	12	12	12	12	12	12
13. <i>Denroren</i>	9	9	9	9	9	9	9	9	9	9	9

Notes: a. The data of the Negotiated Wage Settlements employed in the calculation of the quantitative analysis of this paper are the average NWS on the basis of an individual industrial union. This average NWS of the industrial union is made up from the NWS data of enterprise unions which are affiliated to the industrial union. For instance, the NWS of *Tekkō-Rōren* (Iron and Steel Workers' Union) is made up from the NWS of 5 principal enterprise unions in 1967. In principle, these enterprise unions have been fixed over time.

b. For corresponding industries to these industrial unions, see the note, a of the Appendix Table I.

c. The selected samples are not affiliated to only one industrial union. Therefore, in place of giving the name of anyone of these industrial unions, only *Zōsen* (Ship Building) is put.

Source: Rōdōshō, *Shiryō Rōdō Undōshi* (the Ministry of Labor, Collected Documents of Labor Movement), every year issue from 1957 to 1967.

TABLE IV. COVERAGE OF ENTERPRISE PROFIT DATA CLASSIFIED BY INDUSTRY: 1967

Industry	sample size enterprise	Industry	sample size enterprise
1. Private Railways	17	8. Chemicals	68
2. Iron and Steel	32	9. Oil Refineries	9
3. Electrical Machineries	34	10. Cement	7
4. Ship Building and Repairing	10	11. Pulp and Paper	21
5. Fabricated Metals	11	12. Coal Mining	13
6. Wire and Cable Manufacturing	7	13. Electric Power	9
7. Railway Car Manufacturing	6		

Source: Nihon-Ginkō, *Shuyō-Kigyō Keiei-Bunseki* (Bank of Japan, *Analysis of Financial Statements of Main Industrial Corporations in Japan*), March 1967. For further explanation, see the latter part of the section III of this paper.

## REFERENCES

- [1] Chingin Kettei Kiko Senmon Iinkai (Expert Research Committee on Wage Determination Mechanism). *Showa 42 Nen Shunki Chingin Kosho Bunseki* (An Analysis of Spring Wage Negotiations in 1967), Tokyo: Nihon Seisensei Honbu (Japan Productivity Center), 1968.
- [2] Cook, Alice H. *An Introduction to Japanese Trade Unionism*. New York: Cornell University Press, 1966.
- [3] Dunlop, John T. "The Task of Contemporary Wage Theory," in G. Taylor and F. Pierson (eds.), *New Concepts in Wage Determination*. New York: McGraw-Hill, 1957.
- [4] Eckstein, Otto and Wilson, Thomas A. "The Determination of Money Wages in American Industry," *The Quarterly Journal of Economics*, LXXVI No. 3 (August, 1962), 379-414.
- [5] Evans, Robert Jr. "Shunto: Japanese Labor's Spring Wage offensive," *Monthly Labor Review*, Vol. 90, No. 10 (October 1967), 23-28.
- [6] Keizai Kikaku Kyokai (Economic Planning Association), *Chingin Hendo no Bunseki* (An Analysis on Movement of Wages). Tokyo: 1968.
- [7] Lester, Richard A. "Negotiated Wage Increases, 1951-1967," *Review of Economics and Statistics*, L. No. 2 (May 1968), 173-181.
- [8] Levinson, Harold M. "Pattern Bargaining: A Case Study of the Automobile Workers," *Quarterly Journal of Economics*, LXXIV, No. 2 (May 1960), 296-317.
- [9] Livernash, E. Robert. "The Internal Wage Structure," in G. Taylor and F. Pierson (eds.), *New Concepts in Wage Determination*. New York: McGraw-Hill, 1957.
- [10] Maher, John E. "An Index of Wage Rates for Selected Industries, 1946-1957," *Review of Economics and Statistics*, XLIII, No. 3 (August 1961), 277-282.
- [11] ————. "The Wage Pattern in the United States, 1946-1957," *Industrial and Labor Relations Review*, Vol. 15, No. 1 (October 1961), 3-20.
- [12] McGuire, Timothy W. and Rapping, Leonard A. "Interindustry Wage Change Dispersion and the "Spillover" Hypothesis," *American Economic Review*, LVI, No. 3 (June 1966), 493-501.
- [13] ————. and ————. "The Determination of Money Wages in American Industry: Comment," Eckstein, Otto. and Wilson, Thomas. "Reply," *Quarterly Journal of Economics*, LIII, No. 4 (November 1967), 684-694.
- [14] Nakamura, Atsushi. "Rodo Shijo, Chingin Kosho to Chingin Kettei (Labor Market, Wage Negotiations and Determination of Wages)," in *Koza Nihon Keizai* (Lecture Series: Japanese Economy) No. 3. Tokyo: Nihon Hyoron, 1965.
- [15] ————. "Shūgyō Kōzō no Kindaika to Chingin Seisaku no Tenkan (Modernization in Job-Holding Structure and the Change in Wage Policy)," in *Gendai Rōdo Mondai Koza* (Contemporary Labor Problems: Lecture Series) No. 2. Tokyo: Yuhikaku, 1966.
- [16] Ripley, Frank C. "An analysis of the Eckstein-Wilson Wage Determination Model," *Quarterly Journal of Economics*, LXXX, No. 1 (February 1966), 121-136.
- [17] Sano, Yoko. "Wagakuni Chingin Kettei Kikō no Keiryō Bunseki (A Quantitative Analysis of Wage Determination in Japan) No. 2," *Mita Gakkai Zasshi* (Mita Journal of Economics), Vol. 61, No. 7 (July 1968), 51-80.
- [18] Shimada, Haruo. "Wagakuni Chingin Kettei Kikō no Keiryō Bunseki (A Quantitative Analysis of Wage Determination in Japan) No. 1," *Mita Gakkai Zasshi* (Mita Journal of Economics), Vol. 61, No. 5 (May 1968), 34-64.
- [19] ————. "Chingin Hikaku Kōdō to Chigin Hakyū no Kōzō (Wage Comparison and Spillover: An Empirical Analysis of Wage Determination in Japan) No. 1 and 2," *Mita Gakkai Zasshi* (Mita Journal of Economics), Vol. 61, No. 6 and 7 (June and July 1968), 56-70, 81-98.
- [20] Taira, Koji. *The Dynamics of Japanese Wage Differentials, 1881-1959*. (An Unpublished Doctor Dissertation Submitted to Stanford University) Stanford: 1961.