

“Voice” and “exit” in Japanese firms during the Second World
War: *Sanpo* revisited*

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* The earlier version of this paper was presented at the annual meeting of the Socio Economic History Society, Japan in 2002 and a seminar at Stanford University. I would like to thank Takeshi Abe, Masahiko Aoki, Avner Greif, Leslie Hannah, Ryo Kambayashi, Matao Miyamoto, Masaki Nakabayashi, Minoru Sawai, Masayuki Tanimoto, Kazuo Wada, and Gevin Wright for their helpful comments and suggestions. The comments and suggestions of the editor and two anonymous referees of the *Economic History Review* were very helpful. All errors are the author’s responsibility. Financial support provided by the Ministry of Education, Culture, Sports, Science and Technology is gratefully acknowledged.

Abstract

During the Second World War, the Japanese government and private sector searched for and implemented new mechanisms for coordination and motivation. One of these was *sangyo hokokukai* (*sanpo*). *Sanpo* unit was basically an organization of the employer and employees of each firm, which held meetings to moderate labor relations. Due to the government policy to promote *sanpo* units, around 70% of the total workers in Japan were organized into *sanpo* units in the early 1940s. As the members of labor unions and the workers of the companies which had factory committees, were only 7 % and 5% of the total workers in 1936 respectively, *sanpo* was the first large scale mechanism for Japanese employees to voice. In this paper, I examined the role of *sanpo*, using prefecture level data and firm level data, based on a framework integrating the “voice view” of unionism and the transaction cost economics. It was found that *sanpo* reduced the participation rate in labor disputes, and enhanced labor productivity at least in some period.

1. Introduction

The Second World War had a tremendous impact on the Japanese economy and a vast amount of resources were mobilized for the war effort. In managing the war economy under a rapidly deteriorating environment, the Japanese government and private sector searched for and implemented new mechanisms for coordination and new incentives. These included control associations (*toseikai*) that acted as intermediaries to pass information back and forth between the government and firms, decentralization of decision-making, manipulation of production incentives using price controls, intervention in the corporate governance structure, and mediation of syndicate loans by The National Financial Control Association¹.

In addition to these measures, which basically addressed the upper layers of the economic system, a new innovation was introduced at the shop floor level. This new innovation was called *sangyo hokokukai* or *sanpo*. *Sanpo* itself was a three-layered organization. At the bottom, there was a *sanpo* unit at each establishment or each firm. The *sanpo* units were organized into regional associations, which, in turn, were under the *Dai Nihon Sangyo Hokokukai*, the national center of the *sanpo* movement, which was controlled by the government. Here, we focus on the *sanpo* unit. The *sanpo* unit played a number of roles, including holding employee meetings, organizing recreational activities, and rationing of food and clothes.

The *sanpo* system has long been the subject of research in Japan since the early postwar period. Kazuo Okochi, who led the labor research field in postwar Japan, proposed several possible interpretations of *sanpo*. First, in a book published in 1955, he gave a negative assessment of *sanpo*: “*Sangyo hokokukai* formerly dominated the whole country, but it proved to be ineffective as an organizational basis for the war economy in the long run.”² Somewhat in contrast to this position, in another article in 1971, he argued, “It was appropriate to attach importance to workers organizations and to have issues including employment conditions discussed at employee meetings, in order to improve communication between employers and employees, improve work incentives and enhance productivity.” This evaluation corresponds to the view that employee meetings continued to be the core of the *sanpo* organization throughout the war period. Also, he gave *sanpo* the credit for maintaining order on the shop floor during the final stages of the war, and wrote, “(the role of *sanpo*) was related to the

¹ Okazaki and Okuno-Fujiwara, “Japan’s Present-Day Economic System and Its Historical Origins.”

² Okochi, *Sengo Nihon no Rodo Undo*.

sudden emergence of company unions after the war.” Okochi’s second view is noteworthy, in that it can be regarded as a forerunner of “voice view” on the role of labor unions.

The “voice view” of unionism refers here to the view proposed by C. Brown, R. Freeman and J. Medoff that a labor union enhances productivity through making the collective voice of workers effective³. First, if the voice of workers is listened to, this reduces the turnover of workers as complaints are resolved, thereby saving on training costs and promoting the formation of firm-specific skills. Second, it promotes participation and work incentives for workers through sharing information with the employer. Third, it enables workers to transmit local information on the shop floor and express their preferences to their employer frankly.

As progressive it was, Okochi’s second view has not subsequently been adopted by later research on *sanpo*. Andrew Gordon, in his influential book, claimed that employee meetings under the *sanpo* system failed to achieve either harmony between employer and employees or equalization among employees, which were the objectives pursued during the Sino-Japanese War, and it also failed to enhance work incentives, rate of attendance or productivity, which were the objectives during the Pacific War⁴. Yutaka Nishinarita argues that as *sanpo* could not successfully bring about solidarity among workers in the period from 1938 to 1940, it was reorganized into an organization emulating the army, but it damaged the function that mediated labor relations, contrary to the intention of the government⁵ Kazuro Saguchi also gives a negative evaluation of

³ Brown and Medoff, “Trade Union in the Production Process,” Freeman and Medoff, *What do Unions Do?* In these works they applied Albert Hirschman’s framework of “voice” and “exit” (Hirschman, *Exit, Voice and Loyalty*) to the analysis of labor unions. After these seminal works, many empirical studies have been done not only on the U.S., but also on other countries including the U.K. and Japan. Most of the research has confirmed the voice view. For example, Rees found that grievance procedure lowers quit rate, using the data of public school teachers in New York State in the 1970s (“Grievance Procedure Strength”). Wilson and Peel report that, based on the data of U.K. engineering and metal firms in the 1980s, employee participation through labor unions, formal schemes for employee participation in decision-making as well as profit-sharing, make absenteeism and quit rate lower (“The Impact on Absenteeism and Quits”). Muramatsu found that, based on Japanese industry-level data, labor unions lowered the quit rate (“Rishoku Kodo to Rodo Kumiai”). He also reported that trade unions increased productivity mainly by reducing the quit rate. This finding was based on Japanese industry-level data from the 1970s (“Trade Unions and Productivity”). Also, see Lazear, *Personal Economics for Managers*, and Baron and D. Kreps, *Strategic Human Resource Management*.

⁴ Gordon, *Evolution of Labor Relations*.

⁵ Nishinarita, *Kindai Nihon Roshi Kankeishiyu*.

the actual function of *sanpo*, though he ranks it highly in ideological terms⁶.

In this paper, a reconsideration of the role of *sanpo* in line with Okochi's second assessment, from the standpoint of voice view, will be undertaken. In applying voice view to wartime Japan, the insights provided by transaction cost economics will be incorporated. Oliver Williamson made a useful observation regarding the voice view in his book: "Whereas the voice view of unionism attributes beneficial governance features to union organization quite generally, the transaction (or governance) approach predicts that they will vary with the continuity needs of the parties," and "those continuity needs are greatest where human assets are more highly specific."⁷ Interestingly, as discussed in section 2 of this paper, in late 1930s Japan, while the government promoted *sanpo*, it implemented two other labor policies at the same time, namely, restricting inter-firm labor transfers and obliging each firm to train workers. These policies imply the imposition of a restriction on the "exit" option of workers, and the formation of firm-specific skills. Therefore, according to the voice view and by integrating the insight of transaction economics, we can predict that the role of the collective voice of workers became more significant due to these policies. And we can form the hypothesis that the voice mechanism was adopted and advanced by the *sanpo* system. This hypothesis will be examined using quantitative data as well as historical documents.

2. Wartime labor control and its consequences

Japan entered into a full-scale war with China in July 1937, when the Japanese economy was already close to full employment as a result of around four years of expansion. The war stimulated the economy further, which in turn brought about a large increase in the demand for labor. Employment in the manufacturing sector, which had been 1.66 million in 1931 and 2.56 million in 1936, rose to 3.84 million in 1940. The increase in employment numbers was especially sharp in the machinery industry, which was closely related to munitions. It increased from 0.46 million to 1.28 million between 1936 and 1940, an increase of 29.3% per year (Figure 1).

⁶ Saguchi, *Nihon ni okeru Sangyo Minshushugi*. One exception is Sakiko Shioda, "Sangyo Hokoku Undo no Jittai to Kino," which pointed out that *sanpo* was effective in preventing labor disputes, although it failed to induce workers to cooperate to increase production or improve labor control. The view of Makoto Sakurabayashi, *Sangyo Hokokukai* concerning the function of *sanpo*, is not clear, except in the final stage of the war.

⁷ Williamson, *The Economic Institutions of Capitalism*, p.257. K. Noda reports that, based on data of Japanese manufacturing firms in the 1990s, labor unions had a positive effect on firm productivity only if the employees had accumulated firm-specific human capital ("Rodo Kumiai to Seisansei").

This sharp increase in the demand for labor brought about serious problems in the labor market and in labor relations. First, was the emergence of a substantial shortage of skilled workers, which caused active poaching of skilled workers among firms. Second, as a sudden rise in inflation occurred and increases in the nominal wage lagged behind, there was accelerating labor unrest over demands for wage increases. There was a marked increase in large-scale disputes in particular, and the number of workers involved in disputes was 3.7 times greater in the first half of 1937 than it had been in the latter half of 1936, although the days lost were still fewer than in the 1920s. The surge of labor disputes suddenly subsided when the Sino-Japanese War broke out in July 1937, mainly because of the patriotic mood caused by the war⁸. This situation continued until the end of 1938 (Figure 2).

Meanwhile, as part of its preparations for a prolonged war, the government was drawing up a long-term plan for production capacity expansion. The government regarded the shortage of skilled workers as a serious problem, and took two measures, namely, promotion of worker training and regulation of inter-firm labor transfers. With respect to training, the government established three national training centers, and provided subsidies to regional and private training centers. The annual objective was to train 750 skilled workers at the national training centers and 1000 at the regional and private centers⁹. However skilled workers were still in short supply. In 1939, based on the National Mobilization Law, the Factory and Establishment Skilled Workers Training Act was passed. Under the Act, the government had the authority to order a private establishment with more than 200 male employees older than 16 years, to train a certain number of employees as skilled workers. To begin with, private companies operating in 22 industries including mining, metal, machinery etc. were designated to train workers¹⁰.

Two points concerning this training policy should be mentioned. First, whereas at first the government had determined that training centers would operate outside the firm, it changed its policy to allow training inside the firm. Second, the Factory and Establishment Skilled Workers Training Act clearly set out the attributes the skilled workers were expected to acquire. That is, “skilled workers should have a broad technical expertise in the production area of the establishment they work at, and should be able to perform their work correctly without supervision from a superior,” and “they should not be so-called specialized workers whose skills are confined to a very limited

⁸ Kyochokai, *Rodo Nenkan*, 1938, pp.195-196; Ministry of Welfare, *Rodo Jiho*, 1938 July, p.14.

⁹ Asahi Shinbunsha, *Asahi Keizai Nenshi*, 1938, p.496

¹⁰ Sumiya ed. *Nihon Shokugyo Kunren*, pp.295-297.

area.”¹¹ Even before the Sino-Japanese War, discussions were held among policy makers and researchers on the types of skilled workers that should be produced through such a training program, namely, whether general skilled workers or specialized skilled workers were preferable. The Act clearly indicated a preference for training general skilled workers. Also, it is notable that this concept of the skilled worker closely resembles that of the worker with “intellectual skill” in contemporary Japanese manufacturing industries¹². Summing up these two points, we can say that during the war, the government aimed at creating workers with general and intellectual skills inside the firm.

The regulations covering inter-firm labor transfers, the other policy measure introduced to address the shortage of skilled workers, will now be described. In 1939, at the time when the Factory and Establishment Skilled Workers Training Act was introduced, the Employment Restriction Act was passed. This Act was also based on the National Mobilization Law. According to the Act, the employment of male workers aged 15 to 50 years, who had been employed by another employer for more than three months, including those who left that employer within six months, had to be approved by the chief of the public job introduction office¹³.

It should be noted that there was a reason why these two Acts were introduced at the same time in addition to their common purpose, namely, coping with the shortage of skilled workers. The workers who were restricted from transferring from one firm to another under the Employment Restriction Act included those who had been undergoing training according to the Factory and Establishment Skilled Workers Training Act for more than three months and those who had completed their training within past six months. This was to prevent trainees from being poached by another firm¹⁴. The intention of the Act was to prevent a firm from taking unfair advantage of the training provided by another firm, and thereby created greater incentives for a firm to train its own workers. In this sense, the restriction placed on transferring from one company to another supported the training policy.

Meanwhile, labor disputes, which had subsided following the outbreak of the war, flared up again in 1939 (Figure 2)¹⁵. In a 1939 report, the Police Bureau of the Ministry of Home Affairs attributed the unrest to a decline in “the cooperative spirit

¹¹ Kyochokai, *Senji Rodo Jijo*, pp.118-119.

¹² Koike, *The Economics of Work*, pp.63-74; Koike, “Learning and Incentive Systems in Japanese Industry.”

¹³ Asahi Shinbunsha, *Asahi Keizai Nenshi*, 1939, pp.293-294.

¹⁴ Hirosaki, *Nihon no Romu Kanri*, p.545

¹⁵ Showa Kenkyukai, *Rodo Shintaisei*, pp.137-8.

under the emergency” between employers and employees due to the prolongation of the war, workers’ apprehension about life due to economic controls and inflation, and the decline in incomes due to labor controls.¹⁶ In another report issued two years later, the Police Bureau documented the influence of labor controls in more detail: “As labor controls have aimed at mobilizing the labor force and its appropriate allocation, these controls have basically focused on workers. Consequently, workers have felt pressures, and some of them complain of the partiality of the government policy, which in turn has substantially decreased worker morale and efficiency. Concerning the Workers Transfer Restriction Act and National Labor Certificate Law, many workers thought that these acts have tied them down at a single work place. Therefore, while inter-firm labor transfers have been restricted, complaints from workers regarding labor conditions have been building up, and as a result, efficiency has declined due to explicit or implicit sabotage and a decrease in worker morale.”¹⁷

These observations by the Police Bureau are noteworthy in relation to the framework discussed in section 1. They imply that as labor controls restricted the option of workers to exit from a firm, their complaints had been mounting inside the firm, which in turn caused labor disputes and a decline in efficiency. A researcher also reported on the Employment Restriction Act in 1940: “Prior to this, conflicts could be resolved by essentially moving them out of the firm. However, the restrictions imposed on changing companies have confined the conflict to within the firm, which led to disputes and sabotage everywhere.”¹⁸ Another researcher pointed out, “As a result of various restrictive acts, workers have been unable to choose what factories they work at.” Exacerbating the situation, wages were frozen, and as a result, “The general disposition of workers has worsened, which in turn has had a negative influence on production efficiency, and resulted in a mood conducive to acts of sabotage”¹⁹

3.Promotion of *sanpo* by the government

The rise in the number of labor disputes in 1937 compelled the government to examine existing labor relation measures, which resulted in the introduction of the *sanpo* system²⁰. The idea of *sanpo* originated in a document entitled “Emergency Measures for Moderating Labor Relationships,” drafted by the Police Department of Aichi Prefecture in October 1937. This document proposed the setting up of factory

¹⁶ *Shakai Ubdo no Jokyo*, 1939, pp.656-7.

¹⁷ *Ibid*, 1941, p.635.

¹⁸ Hirano, “Jikyoku ka Rodo Jijo,” p.131

¹⁹ Nishi, “Rodo Sogi no Gaikan,” p.280.

²⁰ Ujihara and Hagiwara, “Sangyo Hokoku Undo.”

committees, in which representatives of the employer and employees participated, in order to resolve and prevent labor disputes. In pre-war Japan there was no legal framework to protect labor union activities, and accordingly union members were a small proportion of the total workforce. The ratio of union members was only 6-8 % in the late 1920s and early 1930s²¹. Some large companies had factory committees that allowed discussion between employers and workers about labor conditions. However, the numbers of workers participating in this system were relatively few. According to the survey by the Ministry of Welfare in July 1936, there were 274 committees, and 315,436 workers were involved²², which represented only 5.1 % of the total workforce in 1936. The document issued by the Aichi Prefecture Police Department wanted to see an expansion of the factory committees. On the other hand, employers were opposed to the policy promoting these committees, as it presupposed that there was a pre-existing conflict of interest between employers and employees. While there some ideological differences between the government and employers remained, in August 1938, the Ministry of Home Affairs and the Ministry of Welfare instructed prefectural governors to promote the setting up of *sanpo* units to facilitate meetings between employers and employees at all factories²³. Actually, many *sanpo* units were established as a result of the *sanpo* promotion policy. The proportion of workers participating in *sanpo* (members of *sanpo*/total workers) exceeded 40% at the end of 1939, and reached 70% by the end of 1941 (Figure 3). As stated below, the position of *sanpo* in the labor policy changed over time during the war, but *sanpo* continued to be a dominant labor organization, at least in terms of the number of the members, until it was dissolved after the war ended.

While the Ministry of Home Affairs and the Ministry of Welfare at first placed importance on the proper management of labor relations at *sanpo* meetings, from late 1939 they began to modify their official view. They announced an alternative official view that work was a national duty and *sanpo* meetings were a way of fulfilling that duty. As the document pointing to this change in policy, precedent literature has focused on “Outline of the *Sanpo* Movement,” issued by the Labor Bureau of the Ministry of Welfare (November 1939)²⁴. It is true that the document clearly stated, “the discussions on labor conditions during the early stages of the *sanpo* movement were due to a misunderstanding regarding the essence of the *sanpo* meeting.” However, at the same time, the *sanpo* meeting itself was still strongly emphasized in this document.

²¹ Nihon Rodo Undo Shiryo Iinkai ed. *Nihon Rodo Undo Shiryo*, vol. 10, p.424.

²² Social Bureau of Ministry of Domestic Affairs ed. *Rodo Jiho*, December 1936, pp.374-9.

²³ Ohara Shakai Mondai Kenkyujo ed. *Taiheiyo Senso*, p.40.

²⁴ Kanda, *Shiryo Nihon Gendaishi*, p.597.

Also, it was still thought to be desirable for members to talk frankly about their experiences, research, original ideas, opinions and desires.

In November 1940, the *Dainihon Sangyo Hokokukai* was established as the national center of the *sanpo* movement, and was a part of the New Economic System in a broad sense.²⁵ The policy of the *Dainihon Sangyo Hokokukai* on the *sanpo* unit conformed to the “Outline of the *Sanpo* Movement” mentioned above. In fact, a document issued by the *Dainihon Sangyo Hokokukai*, “The New Aims of the *Sanpo* Movement Facing the War” written in September 1941, has been frequently cited as evidence indicating the change in the nature of the *sanpo* system.²⁶ The major thrust of the document was to reorganize the *sanpo* unit into a hierarchical organization corresponding to the firm’s organization, emulating the army, and to make *sanpo* meetings a supplementary organ of authoritarian control. Makoto Sakurabayashi wrote that “Downgrading the meeting to a supplementary organ, this reform formally as well as actually abolished the *sanpo*’s function of managing or changing labor relations focusing on labor conditions.”²⁷ However, this document did not reject the idea that *sanpo* meetings played a role in the moderation of labor relations, and also stressed that *sanpo* meetings should be utilized more effectively.

As a matter of fact, the government authorities retained high expectations that *sanpo* would continue to function as a moderating influence on labor relations, and greatly valued the role it was actually playing. A report by a judge of the Nagoya Regional Court, Hisaaki Okagaki, contains a lot of useful information about the views of the government authorities on *sanpo*.²⁸ A document issued by the Tokyo Metropolitan Police wrote about the functions of the *sanpo* system as follows:

It is abundantly clear that the *sanpo* movement has spawned many *sanpo* units at individual establishments in a year or so, and has been exerting a positive influence on various aspects of the industrial labor relations and society. -- Omission-- Consequently, harmonization between employers and employees, saving money and resources, and preventing industrial accidents have been gradually realized, which, in turn, has lifted morale in the work place. These are desirable phenomena. Also, this positive state of affairs has been directly reflected in production activities to enhance efficiency, improve work processes, upgrade

²⁵ Concerning the New Economic System, see Okazaki, “Corporate Governance.”

²⁶ Kanda, *Shiryō Nihon Gendaishshi*, p.604; Sakurabayashi, *Sangyohokokukai*, p.12; Nishinarita, *Kindai Nihon no Rōshi Kankei*, pp.400-1.

²⁷ Sakurabayashi, *Sangyo Hokokukai*, p.12.

²⁸ Okagaki, *Shina Jihen kano Rodo Undo*.

technology, and develop a cooperative working environment. It is notable that these have had a marked positive effect on technology and production. Furthermore, concerning labor management, improvements in personnel administration, rationalization of labor conditions, establishment of welfare organizations and communication have been realized. These outcomes have been effective in addressing complaints, obviating conflicts and resolving class confrontations.²⁹

We can say that, aside from the official line, the Metropolitan Police recognized that class confrontation was a reality, and that the *sanpo* system had been helping to resolve workers' complaints including labor conditions as well as contributing to the improvement of productivity.

On the other hand, Okagaki's report also cited articles critical of *sanpo*. An article written by Masami Matsuzaki, a bureaucrat at the Ministry of Welfare, falls into this category. It is true that this article criticized management of *sanpo* meetings at some firms, but it concluded "generally speaking, we cannot deny that due to the establishment of *sanpo* meetings, opportunities for frank discussions have been given to employers and employees, which have generated a sense of personal trust between the two parties and have been helping to raise morale in the work place. Specifically, it is clearly observed that active utilization of *sanpo* meetings has been effective in preventing and resolving labor disputes".³⁰ As evidence, Matsuzaki wrote, "by referring to the fact that labor disputes have frequently occurred at those factories where the *sanpo* movement is relatively inactive and both employers and employees are indifferent to the holding of *sanpo* meetings, we can presume that *sanpo* meetings are effective in preventing and resolving labor disputes."³¹

Finally, Okagaki's report cited a document issued by the Police Bureau of the Ministry of Home Affairs, "Sangyo Hokoku Undo Gaikan" (An Overview of the *Sanpo* Movement). In this document, the Police Bureau concluded that *sanpo* had three major effects. First, *sanpo* contributed to industrial productivity: "It is thought to be one of the achievements of the *sanpo* movement that under the prevailing bad social and economic conditions, productivity has been maintained at the present level, and that some establishments are even achieving higher levels of productivity than before." Second, *sanpo* has contributed to both preventing and resolving labor disputes: "The gap between prices and wages, which is the major cause of labor disputes, is presently

²⁹ *Ibid*, p.485.

³⁰ *Ibid*, p.550.

³¹ *Ibid*, p.570.

the widest it has ever been, and there is ample justification for an explosion in the number of labor disputes. However, labor disputes have been kept down to a reasonable level. This is partly because of the wartime emergency situation, but we need to recognize that the *sanpo* movement convinced employers and employees that disputes were anti-state, and that the causes of disputes have also been removed in some cases by utilizing *sanpo* meetings. Also, we can regard as an achievement of this movement the fact that there are many cases where the expansion of disputes was checked and they were resolved quickly, owing to the *sanpo* meetings.” Third, “as the *sanpo* movement requires the establishment of personal trust between employers and employees, it has increased opportunities for contacts between them. As a result, trust and understanding have gradually grown, which in turn has improved the overall atmosphere in work places.”³²

All of the documents cited above indicate that the government authorities had high expectations of and positively evaluated the functions of *sanpo*, especially the capacity of *sanpo* meetings to prevent disputes and to enhance productivity, at least until 1940-1941. Moreover, this kind of evaluation was not limited to government authorities. Tadao Kikukawa, the ex-general secretary of the Japan Federation of Labor, the largest federation of labor unions, argued against the position that *sanpo* was not only ineffective in preventing labor disputes but also caused them. He said, “Facts clearly indicate that labor disputes have been prevented by the *sanpo* movement. In those prefectures where the *sanpo* movement has proliferated, for example in Tokyo, the number of disputes has been declining over the last two years. On the other hand, in those prefectures where disputes have increased since last year, the growth of the *sanpo* movement has generally been limited.”³³

4. Function of *sanpo*

In order to see how *sanpo* worked, first let us look at frequency of *sanpo* meetings (Table 1). This table is based on a survey of *sanpo* units conducted by the Ministry of Welfare in September 1940. According to the table, the average frequency of *sanpo* meetings was about 0.3 to 0.5 per month. In other words, meetings were held every two to three months. It is true that there were a substantial number of *sanpo* units that had only held one meeting since their establishment³⁴, but on the other hand there were *sanpo* units which held meetings fairly frequently. Then the question is how the

³² *Ibid*, pp.576-578.,

³³ *Ibid*, pp.555-556.

³⁴ Saguchi, *Nihon niokeru Sangyo Minshushugi*, p.178.

meetings worked, or more specifically whether they worked as a voice mechanism for employees.

Although material showing how *sanpo* meetings worked is limited, Andrew Gordon discussed this issue focusing on the Ishikawajima Dockyard. Using the periodical issued by Ishikawajima Jikyokai, the *sanpo* unit in question, he argued that the meetings addressed only a narrow range of innocuous issues, including a lecture series on patriotic spirit, a new discussion center, vacation days, supply of breakfast after all-night work, and so on³⁵. On the other hand, we have a case where *sanpo* meetings played a more substantial role, the example of Nippon Hassoden Co. (Nippon Electricity Generation and Transmission). Nippon Hassoden was established in April 1939 as a semipublic company and, under government supervision, it had a monopoly on the generation and transmission of electricity. In December of that year, a *sanpo* unit was organized at Nippon Hassoden with 13000 members³⁶. The *sanpo* headquarters was located at the company head office, and 25 *sanpo* branches (*shibu*) were situated at company branches and large establishments. In addition, there were 102 *sanpo* sub-branches (*bunkai*) under the *sanpo* branches.

Meetings at *sanpo* sub-branches were held every two months, while meetings at *sanpo* branches were held every four months. After a meeting, the company manager who was in charge of the company branch or establishment, made a decision on each issue that had been discussed. The decision options were “acceptance,”(*saiyo*) “examination,” (*kenkyu*) “rejection,”(*fusaiyo*) “agreement,”(*ryokai*) and “transmission to a working group” (*dentatsu*)³⁷. The number of issues discussed at *sanpo* branch meetings and *sanpo* sub-branch meetings up until the end of September 1940 was 169 and 2154, respectively. It is notable that out of 169 issues discussed at branch meetings, 5 were on wages, and 21 were on allowances including family allowance, inflation allowance, residential allowance, while various innocuous issues were also discussed as in the case of Ishikawajima. Although none of the applications for a wage increase or allowance had been approved by the end of September 1940, it is noteworthy that at least the *sanpo* meetings made a positive contribution to information sharing on the wage and allowance issues. Furthermore, *Hassoden*, the periodical of Nippon Hassoden Sanpo, reported that employees continued to request allowances for family,

³⁵ Gordon, *Evolution of Labor Relations*, p.304.

³⁶ *Shukan Romu Jiho (Labor Weekly)* vol.115 (May 8, 1941), pp.2-13. The following description is based on this source, unless noted otherwise.

³⁷ The working group chose acceptance, rejection or examination. In the case of *sanpo* sub-branch meetings, there was another alternative, asking for instructions from the *sanpo* branch meeting.

large cities and inflation at subsequent *sanpo* meetings³⁸, and finally in October 1941, the company introduced a monthly family allowance of 2 yen per dependent³⁹.

Because the source material for detailed case studies is limited and the results are mixed, it is useful to examine the function of *sanpo* using a quantitative methodology. As stated in the previous sections, as the major expected functions of *sanpo* were moderating industrial relations and enhancing productivity, we will focus on these two functions. In relation to industrial relations, we have theoretical and empirical literature on labor disputes. Most of the literature focuses on collective bargaining by trade unions, in particular, on the conditions that make bargaining result in disputes⁴⁰. The key variables include inflation rate, growth rate of real wages and tightness of the labor market. The assumption is that a high inflation rate, low real wage growth and a tight labor market lead to trade unions adopting a more aggressive approach that raises the probability of a dispute occurring, and *visé versa*. Based on this framework, we analyze the labor disputes in wartime Japan to evaluate the function of *sanpo*.

Whereas firm level data on labor disputes are not available for the wartime period, we have monthly prefecture level data on the number of disputes as well as the number of participants in disputes contained in several issues of the *Rodo Jiho (Labor Bulletin)* released by the Ministry of Welfare. Also, semiannual prefecture level data on the labor force are available from the same source. Dividing the number of dispute participants in each prefecture by the total number of non-agricultural workers in the same prefecture⁴¹, we have the dispute participation ratio. The prefectural data on the days lost are not available. The participation ratio reflects frequency and scale of disputes, and not their duration. In other words, the analysis using the participation ratio captures how well *sanpo* functioned to prevent disputes in advance⁴².

³⁸ *Hassoden*, vol.1-5, September 1941, p.10.

³⁹ *Ibid*, vol.1-6, October 1941, p.10.

⁴⁰ Tracy, "An Investigation"; Vroman, "A Longitudinal Analysis; Ohtake and Tracy, "The Determinants."

⁴¹ Forestry and fishery workers are also excluded, but we refer to this group as the non-agricultural labor force for the sake of simplicity.

⁴² This attribute might be desirable to elucidate the function of *sanpo*, because during the war, the police authorities actively intervened in disputes, and therefore their duration was influenced by such intervention (*Rodo Jiho*, 1940 extra issue, p.19). While the percentage of disputes in which the police authorities intervened to mediate was 7.3% in 1930, the percentage was 55.9% in 1940 (*Nihon Rodo Undo Shiryo*, vol. 10, p.518). The police intervention is reflected in the decline in dispute duration. While the percentage of strikes which were resolved within four days was 20.5% in 1930, the percentage was 81.9% in 1940. (*Ibid*, p.489). This is a major reason why the days lost did not go up in 1939 and 1940, while the number of disputes and participants increased (Figure 2). It is true that the number of disputes and participants might be influenced

The panel data on the dispute participation ratio for 47 prefectures * 4 semiannual periods from 1940.1-6 to 1941.7-12 (DISPUTE) are constructed. We regress DISPUTE to standard variables affecting labor dispute, namely, inflation rate, growth rate of real wages, and tightness of the labor market, as well as a variable that captures the extent of the influence of sanpo. Tightness of the labor market is measured by growth rate of the non-agricultural workers in each prefecture (GLABOR). Consumer price and real wages are taken from *Chingin Tokei (Wage Statistics)* and *Rodo Tokei Geppo (Monthly Labor Statistics)* released by the Statistics Bureau of the Cabinet Office⁴³. Inflation rate (INFLA) and growth rate of real wages (GRWAGE) are calculated from these data. INFLA and GRWAGE are district level semiannual panel data⁴⁴. We assume that INFLA and GRWAGE were the same in the prefectures in each district. As a *sanpo* variable we use the ratio of non-agricultural sanpo members to the total non-agricultural workers in each prefecture at the end of each semiannual period (SANPO). SANPO is prefecture level semiannual panel data. Sanpo member data are taken from various issues of *Rodo Jiho*. The baseline equation to be estimated is as follows.

$$\text{DISPUTE}_{it} = a_0 + a_1 \text{SANPO}_{it-1} + a_2 \text{INFLA}_{it} + a_3 \text{GRWAGE}_{it} + a_4 \text{GLABOR}_{it} + a_5 \text{MALE}_{it-1} + \sum a_t \text{PERIOD}_t + \sum a_i \text{PREFE}_i + e_{it}, \quad (1)$$

MALE, PERIOD and PREFE refer to the ratio of male workers, the semiannual period dummies, and the prefecture dummies, respectively, and e is an error term⁴⁵. The subscript i indicates prefecture and t indicates period. PERIOD captures the macro

by police intervention as well. In fact, it was the intention of the police authorities to prevent disputes in advance (*mizen boshi*), and disputes prevented (*mizen boshi sogi*) were not counted in the dispute statistics. However, at least a percentage of *mizen boshi* could be attributed to the influence of sanpo. The Police Bureau of the Ministry of Home Affairs wrote that the *sanpo* movement contributed to obviation (*mizen boshi*) of disputes (The Police Bureau of the Ministry of Home Affairs, *Shakai Undo no Jokyo.*, 1940, p.914. Also, see Labor Bureau of Ministry of Welfare, *Rodo Jiho*, August 1941, p.274). On the other hand, it may represent another possible bias in the dispute statistics, namely a change in how thoroughly all disputes were (I owe this point to an anonymous referee). As the government authorities became more concerned about labor disputes, smaller disputes might come to be detected and counted. It is difficult to confirm this possibility, but at least the average number of participants did not decline substantially until 1943 (*Nihon Rodo Undo Shiryo*, vol. 10, op cit. p.440).

⁴³ *Chingin Tokei* was succeeded by *Rodo Tokei Geppo* in September 1939.

⁴⁴ The districts comprise Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku-Shikoku and Kyushu.

⁴⁵ Currie and Ferrie, "The Law and Labor Strife" analyzed the effect of legal innovations on labor disputes, using U.S. state-level data

shocks across all the prefectures. Therefore, the rise and fall of the patriotic mood is captured by this variable, so long as it was a nation-wide phenomenon. Out of the total 188 observations (47 prefectures * 4 semiannual periods), the 7 observations where $SANPO > 1$ were excluded. Basic statistics of the variables are reported in Table 2. Because DISPUTE is zero for 41 observations, we estimate equation (1) using the Tobit model⁴⁶.

The results are reported in Table 3. In equation (1)-1, a_1 is negative as expected, but not statistically significant. a_4 and a_5 are positive and statistically significant as expected, while a_2 and a_3 are not significant. The reason why a_2 is insignificant is considered to be the correlation between INFLA and the period dummies. That is, as the cross-sectional variance of inflation rates is not large enough, the effect of inflation rate is absorbed by the period dummies. In fact, in equation (1)-2, where we exclude the period dummies, a_2 is positive and strongly significant. The positive impact of inflation on disputes is consistent with the observations for the days cited in section 2. In equation (1)-3, the interaction terms SANPO and PERIOD were added. This was done to take into account the possibility that the effect of *sanpo* on labor disputes changed over time.

In this equation, a_1 coefficient is positive but not significant. On the other hand, the interaction term with the period dummy for the second half of 1940 and first half of 1941 are negative and significant. Also, the sum of a_1 and the coefficient of each of these interaction terms are negative. These results imply that *sanpo* contributed to reducing the participation of workers in labor disputes. One might suspect that high SANPO captures some other attributes which reduced labor disputes. In other words, SANPO is an endogenous variable. For example, in prefectures where industrial relations were good, SANPO would be high and at the same time DISPUTE would be low. However, as equation (1) includes the fixed effect of prefecture (PREFE), such prefecture-specific factors correlating with SANPO as well as DISPUTE are controlled for. The estimation result that the *sanpo* participation ratio was negatively associated with dispute participation ratio in 1940 and 1941 is consistent with the observation by Kikukawa cited in the previous section.

Next, we examine the effect of *sanpo* on firm productivity. For this purpose, firm or establishment information on *sanpo* is necessary. Fortunately, *Rodo Jiho* records the name and the founding date of each *sanpo* unit established from July 1938 to July 1939

⁴⁶ Whereas this specification does not explicitly take into account the decline of skills due to mobilization of the labor force, skill level change across the firms is controlled for by the month dummies.

by establishment or firm. Matching this data with other relevant firm or establishment data, we can analyze the effect of *sanpo* on productivity.

There are few industries for which detailed firm or establishment production data are available at frequent time intervals. One of them is the cotton spinning industry. Monthly firm production data, number of operating machines, consumption of raw cotton, and number of workers by sex can be found in *Dainihon Meishi Boseki Rengokai Geppo (Monthly Bulletin of Japan Cotton Spinning Association)*. To standardize for any sex-related efficiency discrepancy we converted male workers into female workers based on the wage ratio (the male wage/the female wage). The monthly wage data on the cotton spinning industry by sex are collected from *Rodo Tokei (Labor Statistics)* by the Bank of Japan⁴⁷. The monthly data on working hours in the cotton spinning industry are also taken from *Rodo Tokei*. Using these data, we derived the following Cobb-Douglas type production function, to examine whether *sanpo* shifted the function or not.

$$\begin{aligned} \log(Y_{it}) = & b_0 + b_1 \text{SANPO}_{it-1} + b_2 \log(K_{it}) + b_3 \log(\text{LH}_{it}) + b_4 \log(R_{it}) + \sum b_t \text{MONTH}_t \\ & + \sum b_i \text{FIRM}_i + e_{it} \end{aligned} \quad (2)$$

Y, K, LH and M denote production of cotton yarn, number of operating machines, input of labor (man-hour) and consumption of raw cotton, respectively. MONTH is the month dummies, and FIRM is the firm dummies. SANPO_{it-1} is a dummy variable, which equals 1 if there was a *sanpo* unit in firm *i* at the end of month *t-1*, and 0 otherwise. If b_1 is positive, *sanpo* brought about an upward shift in the production function, or in other words, *sanpo* enhanced the total factor productivity (TFP).

The sample used was 59 firms whose production data were continuously available from January 1938 to December 1939. Concerning these firms we constructed panel data from January 1938 to August 1939. Figure 4 shows the number of firms with *sanpo* units in the 59 sample firms. As stated in section 2, the government started to promote the establishment of *sanpo* units in August 1938. In fact, from that date, the cotton spinning firms with *sanpo* units increased sharply. The basic statistics and estimation results of equation (2) are reported in Table 4 and Table 5. We include the fixed effect of firm in equation (2). This is to resolve the endogeneity problem. In other words, firm-specific factors which correlated with SANPO as well as productivity, including the quality of management, are controlled for by the fixed effect. The coefficient b_1 is positive and statistically significant with a value of 0.039, implying that

⁴⁷ Reprinted in Nihon Keieishi Kenkyujo ed, *Rodo Tokei*.

sanpo increased TFP by 3.9%.

5. Concluding Remarks

Many articles and books have been written on *sanpo*. However, there has been no attempt to evaluate *sanpo* quantitatively. As mentioned in section 1, most of the recent literature has evaluated the function of *sanpo* in negative terms, but they have basically relied on a small number of case studies or negative contemporary observations. But, as discussed in section 3, there is a significant body of anecdotal evidence which indicates that *sanpo* had substantial positive effects in terms of preventing labor disputes and enhancing efficiency. In order to finally resolve this question, quantitative examinations are necessary. This paper is the first attempt to do this.

According to the analysis of prefectural data, *sanpo* reduced the level of participation in labor disputes until around 1941, and enhanced labor productivity until 1942. Also, estimating production function by monthly firm level data from the cotton spinning industry, we found that *sanpo* increased TFP by 3.9%. In this paper, these results were interpreted within a framework that integrated the voice view of unionism advanced by Freeman et al. and transaction cost economics. The effects of *sanpo* confirmed in this paper are consistent with the hypothesis that *sanpo* provided the workers with a collective voice. The significance of this collective voice mechanism was arguably greater in wartime Japan, because inter-firm labor transfers were regulated and at the same time employees were trained to become skilled workers with “intellectual skill” inside each firm.

The wartime government intervention in industrial relations in Japan was unique, when we compare this with what occurred in Britain. In Britain, a well-established mechanism for collective bargaining between trade unions and employers already existed when the Second World War broke out, and the role of the government was basically to supplement its function, typically through compulsory arbitration according to Order 1305⁴⁸. On the other hand, as stated in section 2, in pre-war Japan the proportion of workers who participated in collective bargaining, was very small. Put another way, Japan was in a far earlier stage in the development of collective

⁴⁸ Jaffe, “The Ambiguities” (An anonymous referee told me about this article); G.D.H. Cole, *A Short History*, p.458; Wrigley, “The Second World War”; Pelling, *A History*, pp.220-221.

bargaining. Thus, introducing a voice mechanism for employees was one of the central issues of Japan's wartime labor policy. As a result of the policy promotion, the voice mechanism diffused into Japanese industrial relations to a significant degree for the first time, and the mechanism, *sanpo*, functioned to mitigate disputes and enhance productivity, at least for a certain period of time.

Footnotes References

- Asahi Shinbunsha, *Asahi Keizai Nenshi, (Asahi Economic Year Book)*, 1939 (Tokyo, 1939).
- Baron, J.M. and Kreps, D.M., *Strategic Human Resource Management* (New York, 1999).
- Brown, C. and Medoff, J. "Trade Union in the Production Process," *Journal of Political Economy*, 86 (1978), pp.355-78.
- Currie J. and Ferrie, J. "The Law and Labor Strife in the United States, 1881-1894," *The Journal of Economic History*, 60-1 (2000), pp.42-66.
- Cole, G.D.H., *A Short History of the British Working-Class Movement 1789-1947*, (London, 1948).
- Dainihon Menshi Boseki Rengokai, *Dainihon Meishi Boseki Rengokai Geppo (Monthly Bulletin of Japan Cotton Spinning Association)*, various issues.
- Freeman, C. and Medoff, J., *What do Unions Do ?*, (New York, 1984).
- Gordon, A., *Evolution of Labor Relations in Japan* (Cambridge, MA, 1988).
- Hirano, S. "Jikyoku ka Rodo Jijo no Rodo Seisaku ni Oyoboshita Eikyo," (The Influence of the Present Emergent Labor Condition on the Labor Policy," *Shakai Seisaku Jiho (Periodical of Social Policy)*, 241 (1940), pp.127-49.
- Hirosaki, S, *Nihon no Romu Kanri (Labor Management in Japan)*, (Tokyo, 1941).
- Hirschman, A. O., *Exit, Voice and Royalty* (Cambridge, MA, 1970).
- Jaffe, J.A., "The Ambiguities of Compulsory Arbitration and the Wartime Experience of Order 1305," *Historical Studies in Industrial Relations*, 15 (2003), pp.1-25.
- Kanda, F., *Shiryō Nihon Gendaishi, (Materials of the Contemporary Japanese History)* (Tokyo, 1981).
- Koike, K., *The Economics of Work in Japan* (Tokyo, 1991).
- Koike, K., "Learning and Incentive Systems in Japanese Industry," in Aoki, M and Dore, R. eds., *The Japanese Firm: Sources of Competitive Strength* (New York, 1993).
- Kyochokai, *Rodo Nenkan (Labor Yearbook)* 1938 (Tokyo, 1938).
- Kyochokai, *Senji Rodo Jijo (Wartime Labor Affairs)* (Tokyo, 1944).
- Lazear, J.E., *Personal Economics for Managers* (New York, 1998).
- Muramatsu, K. "Trade Unions and Productivity in Japanese Manufacturing Industries," in Aoki, M. ed. *The Economic Analysis of the Japanese Firm*" (Amsterdam, 1984).
- Muramatsu, K., "Rishoku Kodo to Rodo Kumiai: 'Hatsugen-Taishutsu Apurochi' kara" (Quits and Labor Union: 'Voice-Exit Approach'), in Koike, K. ed. *Gendai no Shitsugyo (Present Unemployment)* (Tokyo, 1984).
- Nihon Hassoden Co., *Hassoden, (Electricity Generation and Transmission)*, various issues.
- Nihon Keieshi Kenkyujo ed. *Rodo Tokei (Labor Statistics)*, (Tokyo, 1971).

- Nihon Rodo Undo Shiryo Inkai ed. *Nihon Rodo Undo Shiryo*, vol. 10 (Tokyo, 1959).
- Nishi, M., "Rodo Sogi no Gaikan," (An Overview of Labor Disputes), *Shakai Seisaku Jiho (Social Policy Bulletin)*, 234 (1940), pp.278-310.
- Nishinarita, Y., *Kindai Nihon Roshi Kankeishi no Kenkyu (Research on the History of Labor Relation in Modern Japan)*, (Tokyo, 1988).
- Noda, T., "Rodo Kumiai to Seisansei" (Labor Union and Productivity) *Momoyama Gakuin Daigaku Keizai Keiei Ronshu (Momoyama Gakuin University Journal of Economy and Management)*, 40-1(1998), pp.145-63.
- Ohara Shakai Mondai Kenkyujo ed. *Taiheiyo Senso kano Rodo Undo (Labor Movement under the Pacific War)*, (Tokyo, 1965).
- Ohtake, F. and Tracy, J.S., "The Determinants of Labor Disputes in Japan: A Comparison with the US," in T. Tachibanaki eds. *Labor Market and Economic Performance: Europe, Japan and the USA* (New York, 1994).
- Okagaki, H., *Shina Jihen kano Rodo Undo (Labor Movement under the Sino-Japanese War)*, (Tokyo, reprinted in 1971).
- Okazaki, T., "Corporate Governance," in Okazaki, T. and Okuno-Fujiwara, M. eds. *The Japanese Economic System and Its Historical Origins* (New York, 1999).
- Okazaki, T. and Okuno-Fujiwara, M., "Japan's Present-Day Economic System and Its Historical Origins, in Okazaki, T. and Okuno-Fujiwara, M. eds., *op cit.*
- Okochi, K., *Sengo Nihon no Rodo Undo, (Labor Movement in Postwar Japan)*, (Tokyo, 1955).
- Okochi, K., "Sangyo Hokokukai' no Mae to Ato," (Before and After 'Sanpo') in Cho, Y. and Sumiya, K. eds., *Kindai Nihon Keizai Shiso Shi (History of Economic Thoughts in Modern Japan)*, vol.2, (Tokyo, 1971)
- Pelling, H., *A History of British Trade Unionism* (London, 4th edn., 1987).
- Rees, D.I., "Grievance Procedure Strength and Teacher Quits," *Industrial and Labor Relations Review* 45 (1991), 31-43.
- Sangyo Rodo Chozajo, *Shukan Romu Jiho (Labor Weekly)*, various issues.
- Saguchi, K., *Nihon ni okeru Sangyo Minshushugi no Zentei: Roshi Kondan Seido kara Sangyo Hokokukai he (Precondition of Industrial Democracy in Japan: From Factory Committee System to Sanpo)*, (Tokyo, 1991).
- Sakurabayashi, M., *Sangyo Hokokukai no Soshiki to Kino (Organization and Function of Sanpo)* (Tokyo, 1985).
- Shioda. S., "Sangyo Hokoku Undo no Jittai to Kino," (The Reality and Function of Sanpo Movement," in Shakai Seisaku Gakkai ed., *Gendai Nihon no Chingin Mondai (Wage Issues in Contemporary Japan)*, (Tokyo, 1982).
- Showa Kenkyukai, *Rodo Shintaisei Kenkyu (Research on the New Labor System)*, (Tokyo, 1941)
- Sumiya, M. ed. *Nihon Shokugyo Kunren Hatten Shi (History of Vocational Education in Japan)* vol.2 (Tokyo, 1971).
- Tracy, J.S., "An Investigation into the Determinants of U.S. Strike Activity," *American Economic Review* (1986), pp.423-36.
- Ujihara, S. and Hagiwara, S. "Sangyo Hokoku Undo no Haikei," (Background of Sanpo Movement), Institute of Social Science, The University of Tokyo ed. *Fashizumuki no Kokka to Shakai, (States and Societies during the Fascism Period)*, vol.6 (Tokyo, 1974).
- Vroman, S.B., "A Longitudinal Analysis of Strike Activity in U.S. Manufacturing: 1957-1984, *American Economic Review* (1989), pp.816-26.
- Wilson, N and Peel, M.J. "The Impact on Absenteeism and Quits of Participation,

Profit-Sharing and Other Forms of Employee Participation,” *Industrial and Labor Relations Review* 45 (1991), pp.454-67.

Williamson, O.E., *The Economic Institutions of Capitalism* (New York, 1985).

Wrigley, C., “The Second World War and State Intervention in Industrial Relations, 1939-45,” in Wrigley, C., ed. *A History of British Industrial Relations, 1939-1979*, (Brighton, 1996).

Official Publications

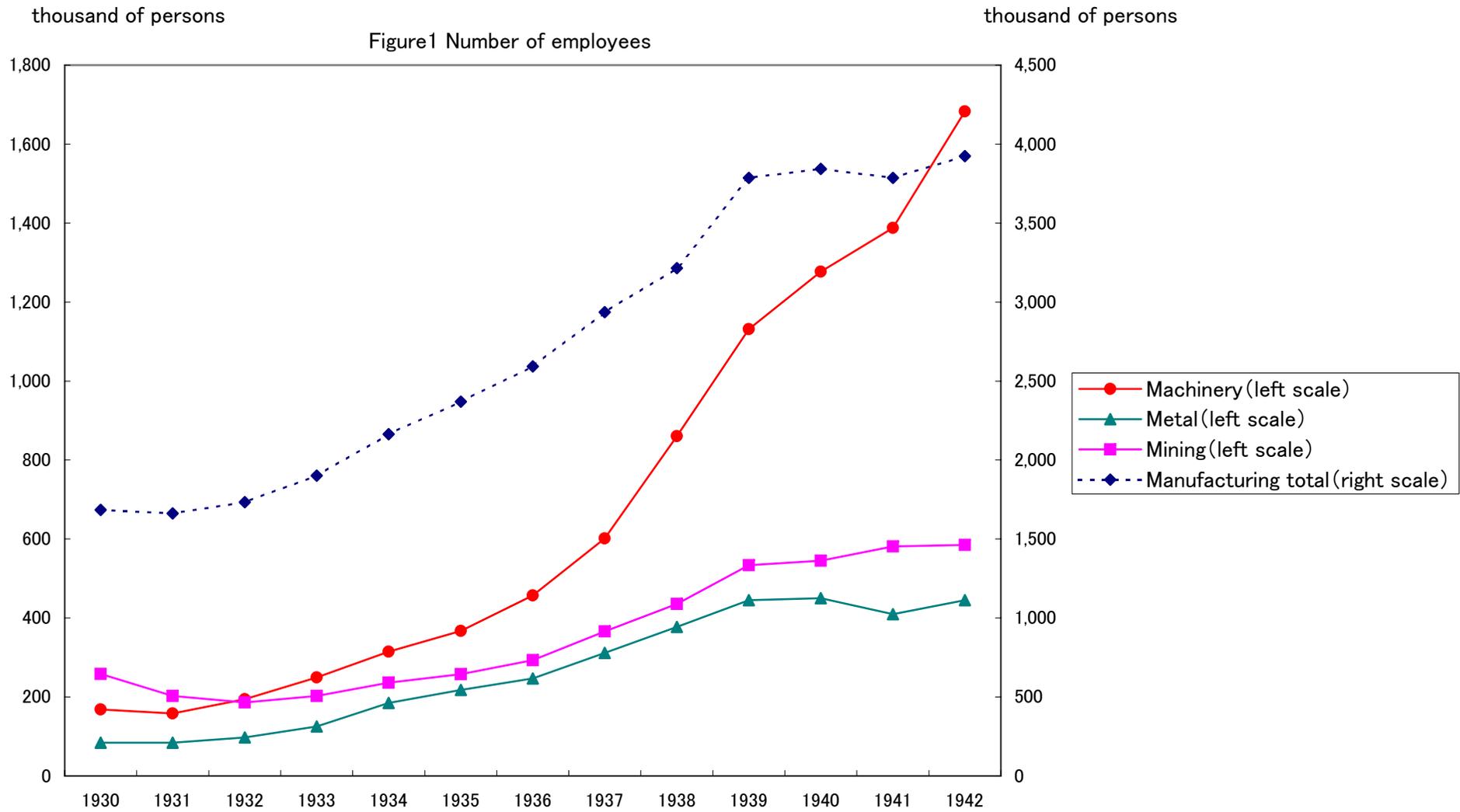
Ministry of Commerce and Industry, *Kojo Tokeihyo (Census of Manufacturing Industries)*, various issues

Social Bureau of Ministry of Home Affairs and Labor Bureau of Ministry of Welfare
Rodo Jiho (Labor Bulletin) various issues

Statistics Bureau of the Cabinet Office, *Chingin Tokei (Wage Statistics)*, various issues

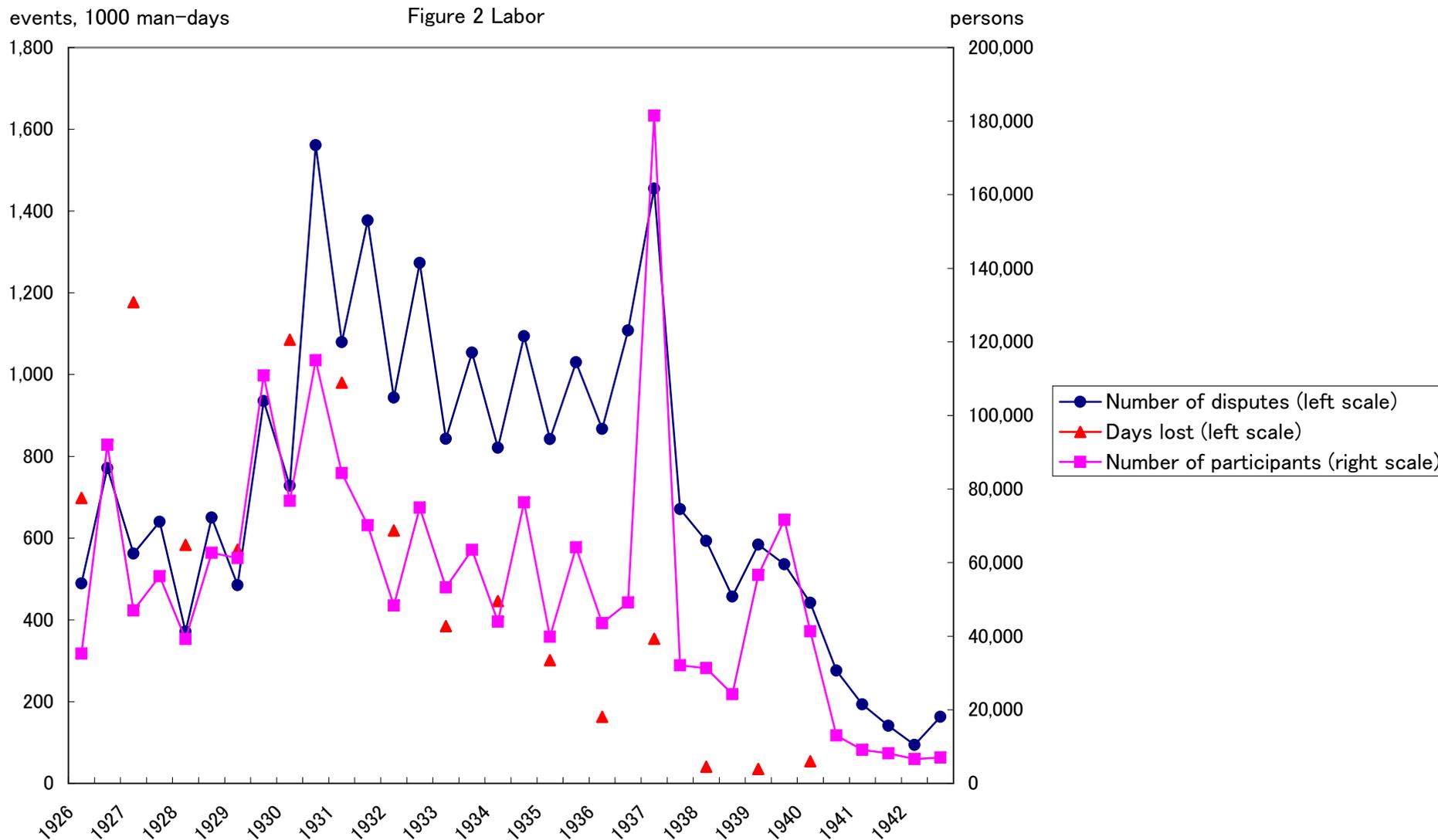
Statistics Bureau of the Cabinet Office, *Rodo Tokei (Labor Statistics)*, various issues

Police Bureau of the Ministry of Home Affairs, *Shakai Udo no Jokyo (State of Social Movement)*, various issues.



Source: Ministry of Commerce and Industry, Kojo Tokeihyo (Industry Census), various years.

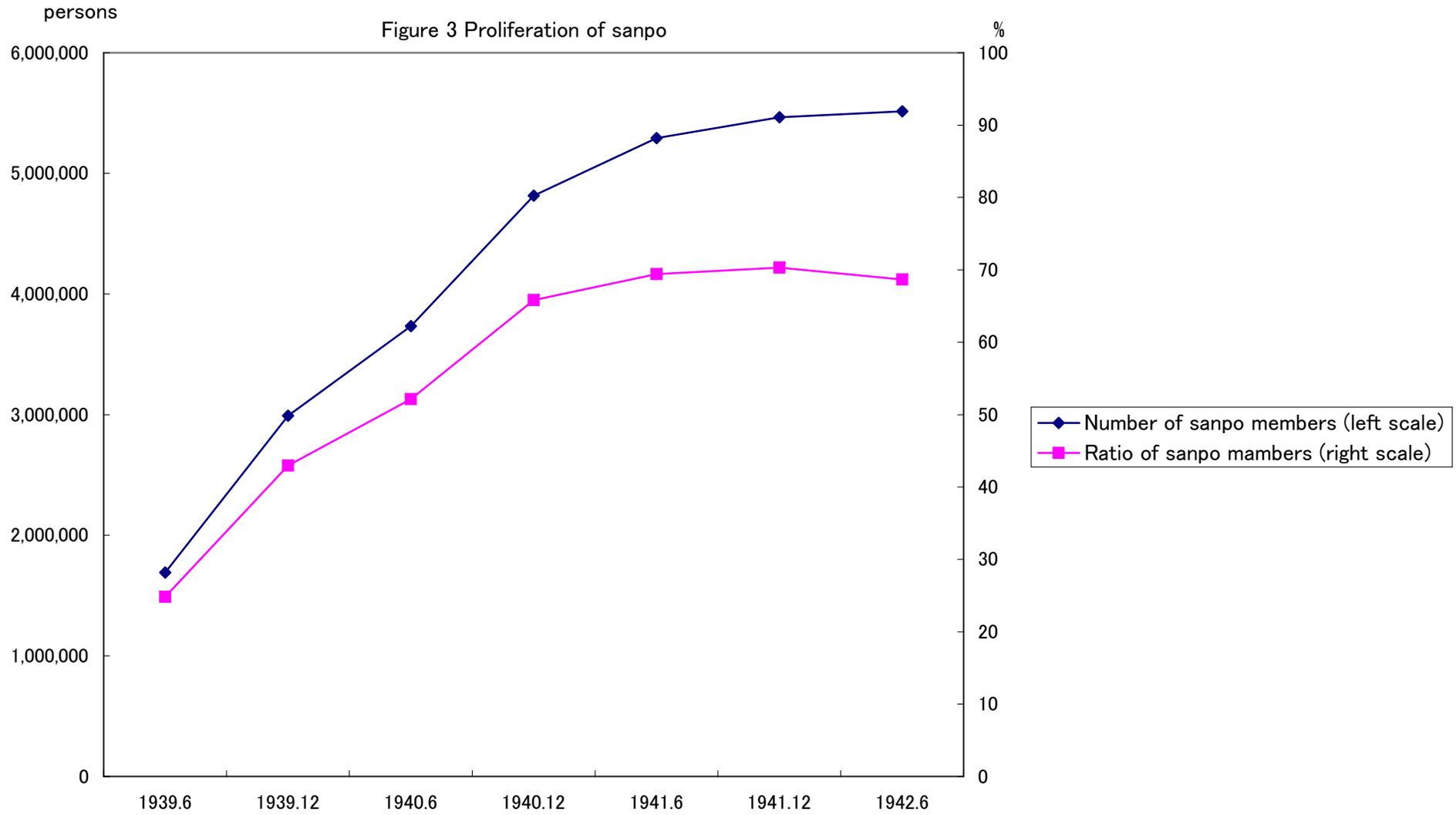
Figure 2 Labor



Source: Rodo Jiho, 1936 July, p. 24, 1942 July, p.16, 1943 Jan., pp.16-

Note: Number of disputes and number of dispute participants are semiannual data, and days lost are annual data.

Figure 3 Proliferation of sanpo



Source: Ministry of Welfare, Rodo Jiho (Labor Bulletin), various issues.

Figure 4 Number of cotton spinning firms with sanpo units in the samples

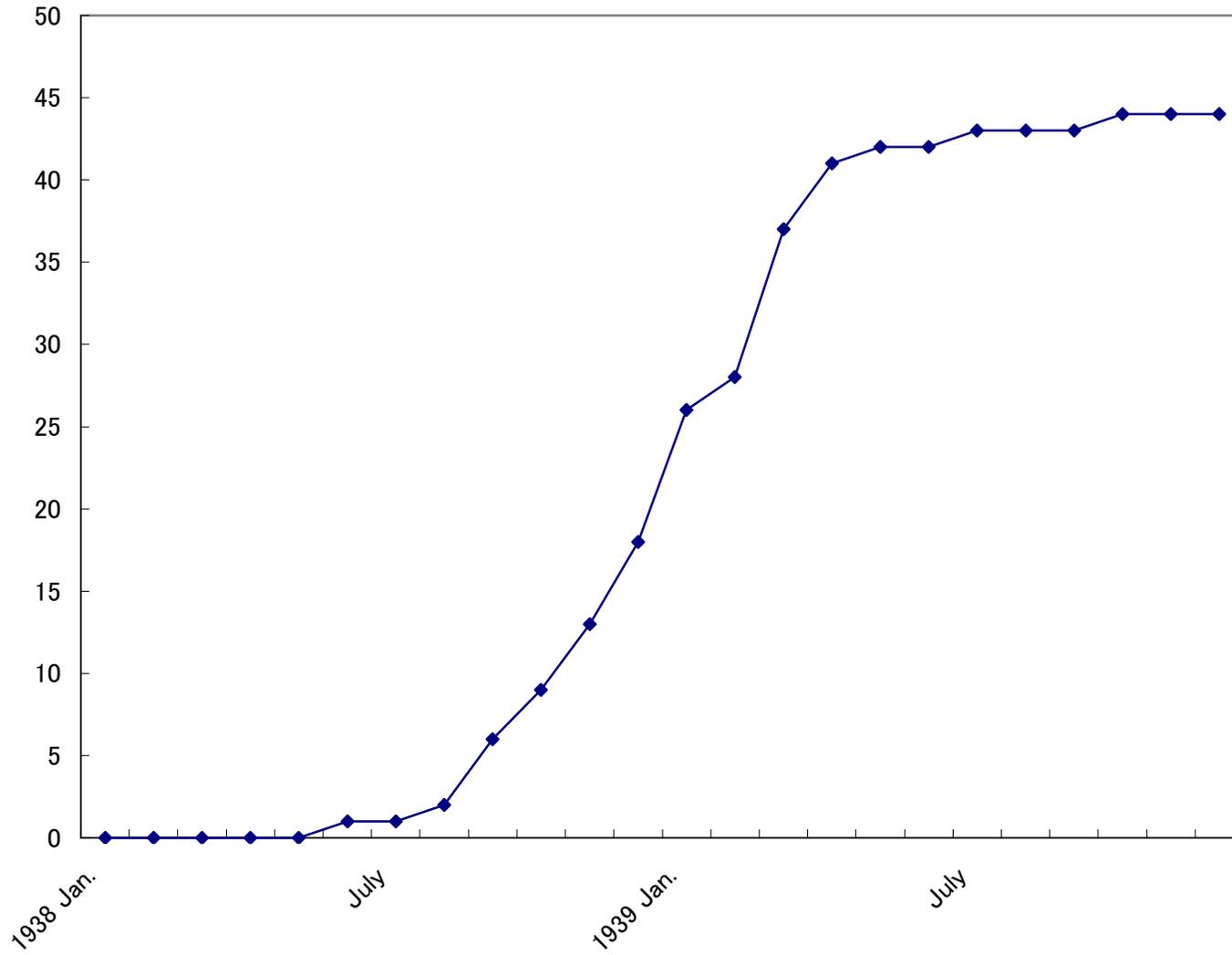


Table 1 Frequency of sanpo meetings

Month of establishment	Total observations of	Data n.a.	Average number of meetings	Average number of meetings per month	
1938	before Oct.	75	10	21.3	...
	Nov.	72	4	20.2	0.297
	Dec.	57	3	21.0	0.389
1939	Jan.	44	1	11.3	0.263
	Feb.	111	11	35.6	0.356
	Mar.	64	6	19.3	0.332
	Apr.	72	5	27.1	0.404
	May	68	6	26.6	0.428
	Jun.	57	4	23.5	0.443
	Jul.	56	9	23.0	0.489
	Aug.	75	7	34.3	0.505
	Sep.	72	1	35.6	0.501
Total/average		823	67	25.2	0.402

Source: The Labor Policy Section, the Bureau of Labor, the Ministry of Welfare, "Sangyo Hokokukai no Sishiki Katsudo Jokyō sono 1," (The organization and activities of sanpo, 1), September 1940.

Table 2 Basic statistics on labor disputes

	DISPUTE	MALE(-1)	SANPO(-1)	INFLA	GRWAGE	GLABOR
Average	0.00301	0.685	0.621	0.102	0.002	0.059
Stdev.	0.00613	0.117	0.179	0.123	0.064	0.149
Max.	0.06366	0.904	0.995	0.293	0.125	0.632
Min.	0.00000	0.373	0.163	-0.078	-0.103	-0.368

Source: See the text.

Table 3 Effect of sanpo on labor disputes

Dependent variable: DISPUTE
Method of estimator Tobit

	(1)-1		(1)-2		(1)-3	
Constant	-0.01860	(-0.918)	-0.0220	(-1.077)	-0.00913	(-0.469)
SANPO(-1)	-0.00094	(-0.165)	-0.0047	(-0.859)	0.00717	(1.173)
INFLA	-0.01090	(-0.170)	0.0665	(3.179)	***	0.01280 (0.208)
GRWAGE	-0.00197	(-0.0349)	0.0272	(1.552)		0.01420 (0.262)
GLABOR	0.00936	(1.867)	*	0.0099 (1.963)	**	0.00335 (0.588)
MALE(-1)	0.06510	(2.446)	**	0.0608 (2.283)	**	0.05090 (1.970) **
1940L	-0.00298	(-0.961)				0.00846 (1.499)
1941F	-0.00656	(-1.310)				0.00802 (1.241)
1941L	-0.00859	(-1.500)				-0.01310 (-1.520)
SANPO(-1)*1940L						-0.01580 (-2.381) **
SANPO(-1)*1941F						-0.02020 (-3.291) ***
SANPO(-1)*1941L						0.00628 (0.714)
Prefecture dummies	YES		YES		YES	
Log of Likelihood	516.148		513.784			
Obs.	181		181		181	
Positive obs.	140		140		140	

Note: See the text. t-values are in parentheses.

- *** statistically significant at 1% level
- ** statistically significant at 5% level
- * statistically significant at 10% level

Table 4 Basic Statistics on production function of cotton spinnig industry

	ln(Y)	ln(K)	ln(LH)	ln(R)	SANPO
Average	4.913	4.705	12.586	4.966	0.303
Stdev	0.581	0.593	1.132	0.576	0.460
Max	6.357	6.270	15.454	6.409	1.000
Min	3.522	3.240	10.404	3.625	0.000

Source: See the text.

Table 5 Production function of cotton spinning industry

Dependent variable: $\log(Y)$
Method of estimation: OLS

Constant	0.423	(1.377)
SANPO(-1)	0.039	(2.578)
$\log(K)$	0.561	(18.062)
$\log(LH)$	0.261	(7.157)
$\log(R)$	0.139	(4.564)
adR2	0.989	
log likelihood	674.095	
Observations	1180	

Note: See the text. T-values by White heteroscedasticity robust estimator of standard deviation are in parentheses.
Month dummies and firm dummies are included, although not reported.