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Technological Breakthrough and Intra-firm Organization : The Case of Japan

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This paper analyzes the intra-organizational characteristics of the Japanese firm, Kaisha. We want to know how they have been related to the successful story of the Japanese economy, especially to their capability to make a rapid technological breakthrough during the past half century.

Intra-firm characteristics will be dealt with from four different but mutually interrelated aspects, which include production organization at the workshop level, incentive system, labor-management relations, and corporate governance. Each will be discussed in turn.

I. Workshop Organization

Different methods of organizing production on the shop floor and of coordinating

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production among different shop floors have important implications for the nature and speed of technological innovation.

Broadly speaking, there are two ways of organizing work on the shop floor (1) vertical and hierarchical coordination and (2) horizontal and consultative coordination.

Vertical and hierarchical coordination presupposes a detailed job classification. Workers are assigned to a minute subdivision of work and required to repeat the same operation. Their performance is closely monitored by a supervisor and thinking is usually discouraged while working. In such a work system each worker tends to follow a rather narrow job path throughout his career. This particular skill may be highly perfect, yet rather limited in its range.

One important implication of such a work system is that operation tasks become separated from emergency tasks. Each operating worker is required to perform a specific task assigned by a supervisor, according to operating manuals, or the supervisor's directives. However, when something not previously experienced occurs - for example, absenteeism, malfunction of machine, abnormally high rate of defective products - remedies are usually sought, under the direction of the supervisor, by the appropriate specialists, workers, and inspectors.

Operating workers are normally not responsible for coping with unexpected emergencies. They are just waiting around while specialists fix the problem.

Another important implication of such a hierarchical work system is that thinking is separated from working. In other words, it is not the operating worker's job to improve the production process. Innovation in the production process belongs to those engineers who are specifically assigned for innovation.

Thus, innovation in such a hierarchical system usually takes the form of a radical structural change (i.e. a brilliant engineer envisions a revolutionary way to drive down costs). Once the new idea is implemented and working practices are made routine, there is no further change or improvement until another innovative idea emerges.

In contrast, a horizontal and consultative coordination system requires a much simpler and broader job classification. Job demarcation is ambiguous and job assignments are flexible. Work organization on the shop floor is more team-oriented, relying more on horizontal communication and less on a hierarchical structure.

Thus, for example, emergency tasks - unexpected absenteeism, machine

breakdown etc. - tend to be entrusted to a team of operating workers. Usually there is no specialized relief man to handle absenteeism. Instead, this system relies on group relief by the team or the ad hoc reassignment of jobs within the team. Even inspection positions are frequently rotated among operating workers on the shop floor.

In many cases, workers are usually organized into teams, and workers within the teams are rotated among various jobs quite regularly. As a result of this rather regular job rotation and the broader job classification, workers tend to undertake a wide range of jobs and are given an opportunity to develop different skills.

Different from the horizontal system, the consultative system produces multi-skilled and/or multi-functioned workers. Even inexperienced workers are sometimes assigned to very difficult jobs in a job rotation scheme, in which case the most experienced senior workers may assist in side-by-side positions and provide on-the-job training.

Job rotation not only allows every worker to become familiar with the whole work process at the job, but also facilitates knowledge and information sharing as well as the sharing of contextual skills among workers.

Innovation has a different connotation in the horizontal and consultative coordination system. Innovation does not imply abrupt changes introduced by specialist engineers, but continuous improvement carried out by all workers on the shop floor. It is not a job of specialists but an ongoing social process in which all workers participate and problems are solved jointly.

Continuous improvement, Kaizen, is, in fact, a process of incorporating collective learning-from-doing into improved way of doing. Thus, it can not take place in the hierarchical work organization which separates collective learning and thinking from work and eliminates the former. Continuous improvement can only occur in a horizontal work system in which collective sharing of knowledge, ideas, and skills is the prevailing characteristics.

Among these two types of work organizations at the shop floor level, the Japanese firm has adopted horizontal and consultative coordination as the dominant work system.

The same principle of horizontal and consultative coordination applies also to the second dimension of work organization, i.e. coordinating the production at different

shop floors. The Japanese firm, Kaisha, does not separate coordinating tasks from operating tasks. The Kaisha tends to integrate two tasks through mutual participation of shops in inter-shop coordination.

As market demand fluctuates rapidly, product differentiation rises sharply and small batch production becomes a dominant feature of modern factories, the inter-shop coordination activities become increasingly complex and complicated. Thousands of materials, parts, and half products should be supplied at the right time and at the right place.

For the production of multiple products with small-batch, even the set-up should be changed from time to time in the middle of work. If an emergency arises in a particular shop such as quality defects in parts production or a malfunction of a machine, a chain of repercussions is certain to affect the productivity of the entire downstream process. To handle these cases, highly organized inter-shop coordination is required

In the vertical and hierarchical organization, the principle of specialization prevails in this sphere of coordination as well. Inter-shop coordination becomes the specialized function of hierarchically-ordered administrative offices. The central planning office makes the optimal plan of production for final outputs. The plan is then broken down successively into detailed accommodating plans, as it is passed down the ladder of the hierarchy. The actual flow of materials, parts, and half-products between shops is controlled, monitored and revised, if necessary, by the Central Office.

The coordinating and operating functions are completely separate in this hierarchical system. Communications necessary for inter-shop coordination during unexpected market demand changes and in-process emergencies are all channelled through the central office only.

Different from the above model, Kaisha relies more on the decentralized method of inter-shop coordination. The centralized scheduling of production only provides a general framework or guideline. As a supplement to the centralized play, horizontal and direct dealing between shops for the actual transfer of materials, parts, and in-process products takes place. Especially for the cases of changing market demand and in-process emergencies, horizontal communication plays a more important role in inter-shop coordination.

The well-known and much-publicized Kanban system a characteristic of Toyota factory system, provides a good example of this type of coordination.

The Kanban refers to a card placed in a vinyl envelope. The final assembly line places a Kanban for each type of part on a post adjacent to the relevant inventory store, located near the assembly line, whenever it withdraws its inventory. The Kanban specifies the kind and quantity of withdrawal as well as the desired time of delivery for its replacement. The upstream shop supplying the part collects the Kanban regular intervals during the day. The Kanban functions as an ordering form and is returned to the inventory store together with the actual delivery at a specified time. Thus, Kanban plays a dual role of order form and delivery notice.

The shop that receives the Kanban from the final assembly line, in turn, sends its own Kanban order form to the shop located immediately upstream and, through this flow of Kanban, the order-delivery link extends to outside suppliers, many of which are medium- and small-scale firms producing parts or half products for the final assembly manufacturer.

Upstream shops are supposed to adapt their production according to demands by their downstream shops, as indicated by Kanban. Thus, they don't have to stick to the original command of the central office, which may become quickly outdated because of many unexpected factors. In summary, through the chain of flow of Kanban, the entire system becomes more directly responsive to changes in market demand.

In this sense, the Kanban system can be characterized as a demand-pull system rather than a supply-push system. The market demand and downstream shop "pulls" the operation of the upstream shop rather than the supply of the latter "pushing" the operation of the former.

Responding to market signals successively transmitted from down stream, each shop in the Kanban system should adjust the machine manning quickly. In other words, the quantity and kind of machines should be adjusted in order to minimize the idle time of workers. Thus, a multi-skilled or multi-functioned worker is an essential ingredient of the Kanban system. Multi-skilled or multi-functioned workers provide the basis for organizational flexibility, which is an indispensable prerequisite for a successful Kanban system.

Besides the Kanban system, there is another important feature in the Toyota

factory system, namely, automation. Taiich Ohno, the creator of the Toyota production system, said the basic concept of the Toyota system is “through elimination of wasteful practices.” The fundamental principles of the system are “right on time” and “automation.”¹⁾ The Kanban system is related to the principle of “right on time.”

Concerning the principle of automation, Ohno distinguishes “automation” from automotion. He stated whereas the Ford assembly line was “self-moving”(automotion), the Toyota line is “self-working(automation).” A self-working machine is a machine that is designed to detect abnormalities and stop automatically before any defective products are produced. For the Toyota system, automation implies machines with a built-in capacity to stop.

According to Ohno, there are many advantages of automatic machinery in organizing production.²⁾

First, automatic machinery liberates the machine operator from constant attention to a single machine. A single worker can now oversee several machines without fear that defective products will go undetected.

Consequently, Toyota could develop the concept of multi-machining based upon machines in U-shapes with a single worker overseeing a group of machines around him as opposed to a straight line layout with one person per machine.

Second, the fact that machines shut themselves down, whenever time an abnormality occurred, focused worker and staff energy on detecting the problem and developing a solution. Increasingly the task of workers shifts from being mere operators of a single machine to maintaining machines and improving the production process. Thus, workers become problem solvers as opposed to merely machine operators.

To facilitate this new role, the internal mechanisms of machines were deliberately made visible so that they could be more easily understood and the necessary modification and suggestions could be more easily made. Ohno said, “make your workplace into a showcase that can be understood by everyone at the place.”

In terms of quality, it means to make the workplace's defects immediately

1) Michael Best, *The New Competition*, Harvard University Press (1990), p.153.

2) For more details, see Japan Management Association(ed.), *Kanban:Just-in-time at Toyota*, Productivity Press (1985).

apparent. In terms of quantity, it means that progress or delay is made immediately apparent. When this is done, problems can be discovered immediately and everyone can initiate improvement plans.

Not only can the machine stop itself automatically when abnormalities are found, but also each worker on the line is allowed to stop the line. For example, if within the work area the work is not likely to be completed, the worker can push a button to stop the line. The work may be delayed when the parts are not correctly assembled or become defective, etc.

If for any reason the line is stopped, fellow workers and a supervisor nearby come immediately to study the problem carefully and fix it. In this way, the same mistake and problem is not repeated. It is another form of skill and knowledge sharing among workers.

So far, we examined the way to organize work at the shop floor level in a Japanese firm based on the horizontal and consultative method. Broader job classification with greater emphasis on team work, knowledge sharing, and multi-functioning skills heavily characterize Japanese work organization at the shop level.

Of course, there is obviously some costs involved in this system, namely, some sacrifice of the economics of specialization. However, the Japanese seem to believe that the loss in static efficiency can be more than fully compensated for by other dynamic benefits associated with the horizontal system. The historical record of economic performance of Kaisha proves its belief is not incorrect.

The decentralized coordination between and among different shops also has some danger of losing efficiency in coordination, especially when each shop and/or team develops a collective interest for itself.

One possible way to cope with this danger is to rotate supervisors and senior workers among neighboring shops. These may serve to discourage shops and/or teams from pushing their specific interests and may encourage shops to share knowledge and thereby prevent inter-shop haggling.

The above characteristics of the work organization of Kaisha seem to have greatly contributed to the technological breakthroughs of the Japanese economy. Though there was some costs involved, the "continuous improvement"(Kaizen, based on the skill-and knowledge-sharing of all multi-functioned workers, has been the major

device through which technological advancement has taken place in Japanese economy.

This type of communal approach to technological improvement inevitably requires the development of an "internal labor market" characterized by long-term employment, firm-specific skill, and on-the-job training. As already pointed out, for successful and effective Kaizen, sharing of knowledge and skills and active participation of workers are prerequisites.

However, the sharing of knowledge and skills is impossible when workers are recruited from and frequently released to the external labor market. If a firm depends heavily on the external labor market for its labor supply, workers tend to compete with each other so they become reluctant to share knowledge and skills. Thus, the workers become less active in technological improvement, because Kaizen may threaten their job security.

The success of Kaizen, based on the full participation of all workers, is possible only when the internal labor market is well developed. Only when long-term employment is guaranteed and career development is possible within the same firm, the Kaizen can exercise its full advantage and produce the greatest benefits.

So, the practice of long-term employment, frequently called life-time employment or permanent employment, has been one of the three main elements of the so-called Japanese-style management. The other two elements are: (1) a pay system based on seniority and (2) the enterprise union system whereby all employees of the corporation belong to a single union with no differentiation of occupational categories.

The long-term employment system usually has following key elements.

First, the workers are hired directly from school, rather than from the external open labor market. Second, the workers are hired for general characteristics, such as ability to learn and to cooperate with other fellow workers rather than for a particular skill or a particular job.

Third, the workers are expected to remain with the firm for a life-long career, and in turn the workers expect not to be laid-off or discharged. Fourth, the workers must be ready to take all training, formal and informal, as well as on-the-job and off-the-job training, offered by the firm to improve their human capital value.

The last element deserves some additional explanation. People frequently say that the Japanese employment system is a life-time employment system. A better

characterization, however, would be a life-time training system. Usually Japanese firm provides very intensive and comprehensive training program throughout the entire period of workers' employment. To make continuous Kaizen effective and long-term employment system profitable, Japanese firm organizes intensive training and re-training programs to upgrade skills and enhance productivity continuously, far exceeding the ordinary level of training observed in the Western countries.

There are some costs and disadvantages associated with this long-term employment system. In particular, it is difficult to adjust the employment level quickly to downturns in market demand. Facing economic downturns, the Japanese firm usually reduces the workforce in the following manner: 1) reduce temporary workers, 2) decrease subcontracted work, 3) reduce work-hours as a form of work-sharing, 4) encourage early retirement with special benefit, and 5) conduct layoffs or dismissals only in an acute crisis, after exhausting all other possible measures, and with understanding of the union.

Another cost of the system is that it is extremely difficult to bring about acquisitions and mergers. Since employees are so closely associated with the firm, sale of the firm bears the sense of buying and selling people, with implications of immorality and social irresponsibility. A merger raises nearly unsolvable problems by combining two differently-committed workforces.

As a result, the Japanese economy suffers because mergers are very difficult to bring about in fragmented industries with facilities that are not world-scale. In addition, since mergers are difficult, the only way to diversify businesses is through internal growth or an internal diversification effort.

In any event, even though the long-term employment system has its own costs, the overall benefits seem to outweigh the costs in Japan.

II. Incentive System

Now we will discuss the incentive system which supports long-term employment and guarantees the workers' commitment to hard work in the decentralized work organization. In other words, we will examine what makes people stay long-term at

the same firm and what makes people work hard to develop firm-specific skills and the cooperative attitude needed for the effective operation of the horizontal and decentralized work organization.

The incentive system in Japanese firm contains three elements: (1) the wage system; (2) the promotion policy; and (3) a lump sum payment at the time of separation(Taishokukin).

The employees in the long-term employment system, blue collar as well as white collar, are paid a monthly salary and biannual bonuses. An hourly wage rate is applied only to part-time jobs.

Total compensation consists of contractual pay, various allowances, and biannual bonuses. Contractual pay consists of basic pay, merit pay, and job-related pay. Among these three types of pay, basic pay is the largest one and increases as the duration of employment or seniority at the firm increases.

In a typical Japanese firm, individual merit does play a certain role in determining individual compensation. But seniority plays dominantly significant role in wage determination. Therefore, as a general characterization, it is safe to call the Japanese compensation system a seniority-based wage system.

The seniority-based wage system is economically rational especially in the context of the internal labor market and the long-term (or life-time) employment practice.

Workers stay with the same firm over a long period of time, learning and accumulating firm-specific contextual skills and knowledge. Consequently, the average worker's worth to the firm keeps increasing as the duration of service becomes longer. Thus, seniority-based wages can be interpreted as temporal allowances for the workers' steadily rising productivity.

The seniority-based wage does serve as an effective incentive scheme to internalize human resources. To make long-term employment and the workers' commitment a rational proposition, this system tends to underpay young workers and overpay older workers, compared to their productivity. During the early years of employment, the firm accumulates debts vis-a-vis younger workers, and repays the debts with a premium when they are older.

From the workers' perspective, seniority in the firm is a nontransferable asset because if they move to a different firm, they will have no seniority in the other firm. The value of this nontransferable asset keeps increasing over time, if they stay

with the same firm. Thus, it is economically rational for the workers to follow the long-term employment practice.

Compared to the wage system, the promotion policy reveals more of the discretionary power of management. Even though collective bargaining normally specifies the maximum and minimum speeds of promotion from each grade to the next, the individual merit assessment has more weight in the promotion decision than in wage decision.

One empirical study, conducted at Hitachi Manufacturing Co., in the early 1970s, showed that the high flyer reached the rank 1 blue collar job at the age of 36 or 37, while the plodder arrived at the same rank at age of 55.³⁾

As a result, a considerable disparity may develop over time in the total monthly salary among workers. Therefore, the individual wage can be diversified according to the promotion decision based on merit assessment by management.

Under the long-term employment practice and the seniority-based wage system, it is not easy to discipline workers. However, it is this degree of freedom associated with the promotion policy that provides management with discretionary power to control workers.

As an incentive system of Kaisha, the compensation paid at the time of separation (Taishokukin) has special meaning of service, but the amount also depends on whether the separation is for private or company reasons. The latter includes mandatory retirement and discharges.

Data shows that the amount paid to college graduates in blue-collar jobs who separate after 10, 20, and 30 years of service for private reasons was equivalent to 5.1, 15.9, 31.6 months of contractual salary at the time of separation. But separation payment went up 37.9 months in the case of mandatory retirement after 32 years of service.⁴⁾

Since the separation payment rises sharply with years of service, the mid-career separation implied a great financial penalty.

Thus, in general, voluntary separation is greatly discouraged by the separation payment system, unless the employee possesses special skills that are badly needed

3) Masahiko Aoki, *Information, Incentives, and Bargaining in the Japanese Economy*, Cambridge University Press (1988), pp.94~98.

4) *Ibid.*, p.58.

elsewhere.

From the employers' perspective, precise information about the quality of mid-career job seekers is hard to come by, so employers tend to rely on internal promotion based on the long-term assessment of their own employees. Thus, mid-career mobility does not generally provide better opportunities in Japan.

One comparative economic study⁵⁾ reveals that if a Japanese male employee works for a large firm for 27 years, his earnings are likely to be almost three and a half times his initial earnings in real terms. But if he changes jobs at that time, his tenure would not be counted and his earnings would be a little less than half of what he currently gets.

On the other hand, if an American male employee works for one large firm for 30 years, his earnings would only be doubled. If he separates from the firm at this point, only a quarter of his earnings would be sacrificed.

In sum, the seniority-based wage system and separation payments contribute strongly to the formation of an internal labor market and encourage the worker's long-term commitment to the firm.

Theoretically speaking, every large business organization, to include the Japanese firm, faces the following two fundamental incentive problems. They are : 1) the moral hazard problem, and 2) the adverse selection problem.

The moral hazard problem refers to how the firm can provide incentives to discourage individual employees from shirking work under conditions where imperfect monitoring exists.

The adverse selection problem means how the firm selects the "right" employees from many candidates, where asymmetric information exists regarding the attributes of workers.

As already pointed out, the Japanese firm heavily relies on on-the-job skills, knowledge sharing and team work for building its competitive edge. So it needs highly motivated workers with a long-term commitment and willingness to work cooperatively with others.

What is the major mechanism for deterring employees from shirking in Japanese

5) M. Hasimoto and J. Raisian, "Employment Tenure and Earning Profiles in Japan and the U.S.", *American Economic Review* (Sep. 1985), pp.271~305.

incentive system? How does the firm discourage quitting for those who have acquired substantial on-the-job skills?

Firstly, the heavy costs of mid-career separation prevent workers from shirking and quitting. As previously mentioned mid-career separation involves a high financial cost because of losing seniority and lowered separation payment.

Furthermore, the fact that the job changers were separated from the internal promotion ladder in mid-career may suggest to potential employers that they did not perform satisfactorily in their previous job. Because of this "bad reputation effect", they may end up with a bad job rather than a good one.

The costs of mid-career separation, therefore, function as a device for enforcing discipline upon workers and preventing them from shirking and early quitting.

Secondly, discretionary promotion policy can directly deter the workers' shirking and it also functions as a strong incentive device for promoting "learning by doing" and more vigorous on-the-job training. The promotion policy can make not only substantial life-time earning differentials, but also results in a de facto discharge in case of bad performance. Thus, it is a relatively strong device in disciplining workers and inducing them to work hard toward improving their contextual skill and knowledge.

The next issue is how the Japanese firm handles the adverse selection problem. In other words, how does the firm select the right employees from many candidates? Two mechanisms seem to work in Japan. The first mechanism is related to the coexistence of two types of employment contracts and the second is related to the promotion policy.

Broadly speaking two types of labor market or labor contract exist in Japan. The first type gives high rewards to workers with high productivity once they have proven themselves but severely penalizes those with low productivity. They usually offer higher initial wage, but provide low job severity. Such jobs are found more frequently in the service industries as well as many western multinational corporations.

The other type does not pay high rewards to high productivity, but does not penalize low productivity that severely. They usually offer lower initial wage, but more generous regular pay increases with more job security. Such jobs are found mostly in the manufacturing industries.

Suppose workers face two types of labor contract. Workers are induced to reveal information about their attributes and abilities through their choices of labor contract.

Applicants hoping to enter the second type of labor market reveal themselves to be of the type who are willing to endure long training with lower wage but prefer life time commitment.

Thus, the coexistence of two types of labor market or labor contracts function as a “self-selection” mechanism to cope with the adverse selection problem.

In addition, the workers performance record after entry will definitely reveal further information on workers’ attributes and abilities. Therefore, the promotion policy related to the salary ranking hierarchy can play a role as a “sorting mechanism” to further reduce the adverse selection dilemma.

Last but not least is the incentive issue of how to make workers cooperative with each other in knowledge and skill sharing. Usually workers are engaged in two types of work efforts : work that increases one’s own output and work that increases someone else’s output.

Let us suppose that there are cases in which shifting some degree of effort toward helping others would increase others’ output more than decrease one’s own output. In such cases, it is efficient for workers to help each other because helping each other can create larger pie rather than expressing mutual indifference. Such cases tend to prevail in Japanese firms which rely heavily on knowledge and skill sharing for technological improvement.

Then the question is how to promote helping each other to speed up the Kaizen. The answer to this important incentive question can be found in the characteristics of a salary ranking hierarchy.

In Japan, basic pay of monthly salary rises by a certain prefixed amount once or twice a year. It is called a semi-automatic “base-up.” This so-called base-up constitutes a salary ranking hierarchy.

This salary ranking hierarchy is different from a so-called rank-order tournament.⁶⁾ In a rank-order tournament, a predetermined number of slots is set up for each rank and employees are ordered according to their relative performance.

6) E. Lazear and S. Rosen, “Rank order Tournament as Optimum Labor Contract”, *Journal of Political Economy* (1981), pp.814~864.

In contrast, there is no predetermined number of slots in a salary ranking hierarchy. If an employee meets a particular standard of performance, then he may be promoted to one rank above in almost semi-automatic fashion. So, in a salary ranking hierarchy, workers perceive that there is always room at the top for a good performer.

If the salary ranking hierarchy is a competitive type (i.e. rank-order tournament), there is no incentive for individuals to help someone else because it reduces one's own output and thereby hurts one's own chances for promotion.

Fortunately a salary ranking hierarchy is not a competitive type, so it does not discourage helping each other. However, that does not necessarily mean that a salary hierarchy encourages cooperative behavior among employees. A non-competitive salary ranking hierarchy is a necessary condition, but not a sufficient condition for helping each other.

A principle of reciprocity should develop to encourage cooperative behavior. Only when my help is reciprocated by the other's help, an efficient mix of efforts for one's own work and efforts for helping others can occur.

The principle of reciprocity is intentionally promoted by management. The Japanese management wants this principle to be established firmly on the workplace, in human relations and in corporate culture. So they deliberately value the attribute of helping others very highly in the performance assessment and the decision of promotion.

In conclusion, the non-competitive character of a salary ranking hierarchy combined with the culture of reciprocity in the workplace functions as an incentive system in Kaisha to promote cooperative efforts for sharing knowledge and skills.

III. Enterprise Unionism

Together with the long-term (quasi-permanent) employment system and seniority-based wages, the enterprise union is commonly cited as one of the "three pillars" of Japanese-style management. An enterprise union includes all employees of the firm with no differentiation as to skills or job category. Blue collar and white

collar workers join the same union.

Collective bargaining takes place at the enterprise level. Union officers are all employees of the firm, not professional labor activists brought in from the outside. During their tenure they are paid by the union but typically retain employee status within the firm. When an employee is promoted to a management position, he ceases to be a union member.

Union fees are collected from the members by the enterprise union directly and a part of the revenue is contributed to a national federation of labor(industrial union) to which the union belongs, in contrast to the American experience, where the centralized industrial union first collects fees from members scattered among different firms within the industry and then distributes them back to local units.

The enterprise union is financially independent, and even though it maintains organizational contact with industrial unions, its decision making is very much autonomous and decentralized at the firm level.

Since the union is organized at each enterprise in such fashion there is a potential conflict between "company consciousness" and "union consciousness." If the latter supersedes the former, the union becomes militant. If the former supersedes the latter, union becomes cooperative.

An enterprise union tends to focus more on such issues as promotion, transfer, and redundancy, all of which are in one way or the other related to the skill formation of individual worker. Skill formation is of prime importance to the interest of rank-and-file workers because it ultimately affects their individual life-time earnings.

Promotion is movement from a lower grade job to an upper-grade job in a career based on skill formation. Transfer is a deviation from one career line to another, which may result in the loss of acquired skills. Redundancy is a breakdown of skill formation.

Since all of these issues arise from events specific to a plant or an enterprise, an industrial union can not effectively handle them. Therefore, the enterprise union plays a major role in these issues.

On the other hand, the industrial union lays a more active role in wage issues, the general change in wage level. Only in this regard, there are striking similarities between the U. S. and Japan.

Aside from collective bargaining, the enterprise union performs a joint consultation function.

One study showed that more than 90% of large firms(employing 1,000 or more workers) with unions had joint consultation committees; even among small firms(employing 100-299 workers), the corresponding figure is 70%.

A variety of functions are performed through joint consultation. It works as an important regular channel through which union officials and management share information of mutual concern and discuss various managerial policies. In the joint consultation meeting union officials are regularly briefed and consulted by management about important business decisions and their implementation(e.g. layoffs, relocation of factory) as well as the firm's general state of business. The firm's business situation is regularly reported at the meeting and workers complaints are channelled at the meeting.

There is little doubt that through the machinery of collective bargaining and joint consultation, Japanese unions do in fact exercise a considerable voice in management.

Theoretically speaking, there is another important role performed by the enterprise union in Japan, that is, to prevent employers from shirking and to complete a long-term(quasi-lifetime) employment contract.

We may characterize the Japanese labor market for long-term employment as follows. It mediates the transaction of potential lifetime employment subject to the implicit understanding that the employment relationship may be terminated before mandatory retirement age if the need arises on either side.

The firm, offers potential employees an identical starting salary. The current pay structure provides general information regarding pay schedules for potential job applicants. Potential job applicants use this information to form general expectations regarding lifetime opportunities at the firm. If the general expectation exceeds their reservation level, they will consider a career in the firm.

The firm evaluates candidates according to their educational credentials and other available information. If their credentials match the firm's requirement, a contract of quasi-permanent employment is agreed upon. The important point is that this match does not yet specify the terms of employment in the future. In that sense, the long-term employment of life-time employment contract is fundamentally incomplete. The revision of the pay schedule and speed of promotion have to be determined

sequentially or successively as events evolve.

The main mechanism to close this incomplete employment contract is collective bargaining between the union and management. In other words, the incomplete contract has to be supplemented by sequential bargaining internal to the firm.

What is the nature of this sequential internal bargaining? Job security and advancement opportunities depend not only on the general state of the business environment, but also on the managerial policy.

However, bargaining over managerial policy is beyond individual's capability. Because of the high cost of quitting in Kaisha, the threat of quit, can not be an effective and credible means to put pressure on the firm.

Yet the labor union, the body of employees as a whole, has considerable potential bargaining power over managerial policy matters. Therefore, one of the most important roles the enterprise union plays is closing the incomplete quasi permanent-employment contract by sequential bargaining over the period of life-time employment.

This closing process of the contract can be interpreted also as an attempt by the employees to monitor possible shirking by the employers. Employer's shirking can take place when the seniority-based wage system and high amount of separation pay induces employers to lay off senior workers before retirement age to save short-term labor costs.

In the process of closing an incomplete contract through collective bargaining, the enterprise union works hard to build a consensus among different groups of workers to gain full support from all members, both blue-collar and white-collar, as well as to develop union demands in a more consolidated form.

Beside above reason, there is another special institutional reason why Japanese union is more anxious for consensus building of all members. In the U.S., even though rival unions can exist, only the union which gets majority support through official balloting administered by the National Labor Relation Board can enjoy the exclusive right to represent labor and to bargain with management. In the U.S., what the union officials care most about is the preference of the average voter, not the consensus of all members, because only the preference of average voters influence the voting outcome.

In Japan, however, once a union is organized as an independent organization, it

has the right to bargain with management, no matter how small its membership may be. Thus, theoretically, it is possible for the employees to be represented separately by rival unions.

Majority support does not guarantee exclusive representation rights, as is the case in the U.S. Thus, union leadership must rely on consensus building to gain the support of all workers. Otherwise, the neglected minority may lead to the formation of a rival organization to represent minority interests. Therefore, the leadership of the enterprise union makes great efforts to balance between the interests of different groups, blue-collar and white-collar, senior and junior, male and female, and so on.

Because of the importance of this consensus-building effort, the leaders of union should be employees of the firm who are on leave temporarily from the payroll, rather than professional organizers from outside of the firm.

To be good leaders, these employees should develop personal networks within the firm. However, management also needs good leadership. So, it is quite interesting to note that former officials of the enterprise union often enjoy a high chance of being selected to the board of the firm.

According to a survey conducted by Nikkeiren(The Japanese Management Association) in 1978, out of 6,457 directors of 352 firms, 1,012(15.7%) directors were former members of executive committee of their enterprise unions. Nearly one out of six executives has been leader of enterprise union.⁷⁾

There has been a popular argument with respect to Japanese enterprise unionism. That is, they are weak in exercising their voice. Since "employee consciousness" tends to dominate "union consciousness" under the life-time employment system, enterprise unions are not aggressive in conducting strikes, and are too cooperative and submissive in determining wages and other working conditions.

This popular argument is wrong. The labor movement in Japan has exercised substantial influence on the wage movement as well as on the development of managerial practice and policy. The labor movement used to be not only vocal but militant during most of the 1950s and its militancy peaked at the 300 day Mitsui Miike Mining strike in 1960. Since the first oil shock in 1974, Japanese unionism has

7) Se-Il Park, "Zenhu Ilbon Rodong Undong Kyung Ze Chui Sungrip Kwachung(Post-War Economic Unionism in Japanese Labor Movement)", Korea Labor Institute (1991), p.144.

become more integrated into firms.

However, it does not necessarily mean that the voice of the workers has been weakened. On the contrary, the voice of the workers in management policy has become de facto stronger and more influential. The only difference after 1974 was the mechanism which channelled the workers' voice into the managerial decision making process. The mechanism became more internalized into the firm.

All possible mechanisms, such as the labor-management joint consultation committee, formal and informal talks with union leaders and regular consulting with rank-and-file workers have been intensively utilized for channelling the workers' voice into the decision making process.

Last but not least, enterprise unionism has contributed greatly to the continuous technological improvement of the Japanese production system.

The Kaizen can be effectively carried out only when the following two conditions are met : the workers actively participate in the Kaizen process and the workers are empowered and become strong enough to speak of their true ideas and complaints.

If workers are unsure whether they will be discharged due to Kaizen, whether they will be penalized due to honest complaints about improvement, they will neither actively participate in the Kaizen nor speak out true opinions.

However, the workers can become empowered only when effective unions exist to protect workers' interests and rights. In this sense, enterprise unionism, though not active in industrial strikes but very effective in making management listen to workers' voice, has contributed greatly to the Kaizen process.

IV. Corporate Governance

The exceptional performance of Japanese firm results from a mixture of Japanese style production organization, the employment system, and corporate governance. Japanese firm has unique corporate governance, which is quite different from that of Europe or the U.S.

For example, in the U.S. the board of directors represents the interests of the shareholders. Many directors are named to the board from outside and the board is

expected to monitor management including the chief executive of the company.

The shareholders, in the U.S., are expected to receive a significant share of the profits in the form of dividend payments. Most companies view a dividend payout rate of about 50 percent of corporate earnings as appropriate. The size of dividends are taken to be a sign of successful operations and competent management. The stock price is strongly influenced by the rate and level of dividends paid.

In order to ensure that management works for the interests of the shareholders, various profit-related compensation plans, such as stock-options, have been provided to management. As stock markets tend to be highly sensitive to trends in earnings per stock share, management has a strong motive to maintain a steady improvement in earnings. A trend of falling earnings lowers the stock price, which lowers not only the reputation of management, but also the value of stock options and other profit-related compensation programs. Management is expected to maintain earnings trends and provide increasing rewards to shareholders.

In short, the major feature of U.S. corporate governance can be described as an alliance of senior management and shareholders to maximize their own benefits in other words, to maximize profit.

In contrast to this pattern of the U.S., the common stock shareholders of the Japanese firm are more in the position of a preferred shareholder in a U.S. company. Having made a risky investment, the shareholder is entitled to a return, on that investment. Therefore, dividends are paid, but not as a percent of earnings rather as a percent of the par value of the stocks.

The dividend yields as a percent of the market value of Japanese stocks are low, typically only one to two percent. Nevertheless, it is critically important that the dividend to be paid must meet the investor's average expectation. Thus sometimes a company which is in financial trouble should borrow to cover dividend payments.

Yet, once the shareholder's claim that a return on his investment is met, the shareholder does not try to voice further in corporate affairs.

The board of directors consists almost entirely of inside members. They are those who have moved up through the internal labor market from the bottom, namely career employees in a quasi-permanent contract. Therefore, the management is inclined to defend the interest of career employees.

At the same time, it is important to note that there is no specific representation of

shareholders interests on the board. As noted above, dividends are paid as a percent of the par value of the shares in Japan. This has very important implications. It means that a highly profitable company can meet its dividends requirements with only a small percent of its total earnings. Most of its earnings can be available for reinvestment in the future. For example, in 1984 Matsushita Electric Industry paid out less than ten percent of its earnings as dividends, retaining the rest for reinvestment.

With the shareholder in the position of the investor rather than the controller, and with dividends not important to share price, Japanese management is freed from the pressure of the shareholders as is the case with U.S. organizations. In that sense, Japanese firms have effectively succeeded in removing the classic capitalist control.

The impetus for the removal of the classic capitalist control was provided by the postwar reforms directed by the Occupation. Especially the dissolution of the Zaibatsu and the purge of the prewar and wartime business leaders was a turning point.

During 1946 to 1949, 83 companies were designated as holding companies and co-families were designated as Zaibatsu families. And most of the shares held by the holding companies and Zaibatsu families were transferred to the Holding Companies Liquidation Commission. The total value of the shares transferred reached about two-fifth of the total value of stock outstanding at that time.

In the absence of an open stock exchange, the Security Liquidation Coordination Council sold them. The council gave the first opportunity to purchase the liquidated shares to company employees and then local residents. Also the council did not allow any individual to acquire more than 1 percent of any company.

As a result, 29.3 percent of the employees in the affected companies purchased 38 percent of the total shares sold. By 1950, individual holdings reached nearly 70 percent of the total outstanding stock. Thus, family control, which controlled many companies through holding companies, was effectively removed.

Parallel to the Zaibatsu dissolution, the General Headquarters of the Occupation purged wartime officers of 200 important companies and banned all members of the ten Zaibatsu families and high ranking directors of 240 Zaibatsu-related companies from assuming directorships of related companies for 10 years. More than 3,600 business leaders were expelled from the business community.

The dispersal of share ownership through the Zaibatsu dissolution and the replacement of previous managers by relatively young managers were a “managerial revolution from above.” After these reforms, the new breed of technocratic managers in the ex-Zaibatsu companies and the newly emerging aggressive founder-managers, who became successful during the turmoil following the war, took over the leadership of the Japanese economy and business community.

The successful founder-managers were generally more technically innovative and growth-oriented than the career managers in the ex-Zaibatsu companies, who tended to be more prudent about entering new business.

Interestingly enough, the new founder-managers never attempted to develop controlling families of the old Zaibatsu-type, partly due to the anti-monopoly law of 1947 which outlawed holding companies outright and partly due to their public-minded philosophy.

They wanted to be managers of an ever-growing organization rather than to be men of great wealth. Thus many of them voluntarily decreased their relative shares in the stock of their own companies by developing employee stock ownership plans, making new equity issues available to the public, and so on. Thus, not only did the career managers in the ex-Zaibatsu company become free from classic capitalist control but the founder-managers were also freed from the classic capitalist’s mentality.

So the representative Japanese manager was not the classic manager who single-mindedly pursued maximization of profit and taking wages as given in the external labor market. Rather, he tried to coordinate managerial policy decisions with wage and employment decisions in such a way as to strike a balance between the interests of shareholders and employees. This tendency was especially strong in the case of career managers, but to a less degree in founder-managers.

Based upon the above facts, Masahiko Aoki characterized Japanese corporate governance as follows:

“The body of employees is, together with the body of shareholders, explicitly or implicitly, recognized as a constituent of the firm, and its interests are considered in the formation of managerial policy. Management acts as a mediator in the policy making process, striking a balance between the interests of shareholders and those of employees. The enterprise union functions as a substructure of the firm and

represents employees in the decision-making process.”⁸⁾

He called this characterization the “ cooperative managerialism model.”

In neo-classical economics, the firm is identified with the entrepreneur who performs the dual functions of control and risk taking. In the Western world, an entrepreneur is usually taken to mean the shareholders. Shareholders exercise ultimate control over corporate affairs by selecting managers. They also take risk by accepting uncertain residual income of the firm after the payment of contractual rewards to other factors of production, such as wage, rent, interest, etc.

Thus, in the Western world, employees are not considered to be members of the firm, and are only the counterpart of an employment contract. Aoki's argument is that the Western model does not apply to Japanese firms.

Employees are a legitimate constituent of the Japanese firm and mediation between the interests of the employees and stockholders is the major function of management. So management is not simply an agent of stockholders and the firm is not simply an instrument of stockholders to maximize profit.

Under such circumstances, if the employees make wage concessions, management, through its employment and investment decisions, can provide employees with better job security, improved chances for on-the-job training and career development, in addition to possible capital gains accruing to shareholders.

The trade-off between higher current wage levels and better opportunities for promotion is the basis for the efficient mediation. If management can organize the activities of the firm in such a way as to realize higher growth at lower cost, it can improve employees' opportunities for promotion and increase capital gains for shareholders. This can also enhance the legitimacy and reputation of the manager.

In such a way, the employees think that management in Japanese firms functions as an effective mediator equilibrating the bargaining power of the firm's constituents, namely employees and shareholders.

However, it should be pointed out that there is another historical development which contributed to the formation of such type of corporate governance in Japan, that is, the development of mutual shareholding between companies and financial

8) Masahiko Aoki, “The Japanese Firm in Transition”, Kozo Yamamura and Yasukichi Yasuba(ed.), *The Political Economy of Japan*, Stanford University Press (1987), p.265.

institutions.

The anti-monopoly law of 1947 imposed a 5 percent ceiling on city bank holdings in the stock of any single company, but subsequent legislation raised this ceiling to 10 percent in 1953. Bank holdings in listed companies stood at 9.9 percent in 1949, but increased to more than 20 percent by the end of 1956. Inter-corporate shareholding also increased from 5.6 percent in 1949 to 15.7 percent in 1956. Initially, of course, these banks' shareholdings and inter-corporate shareholding took place through the operation of the Security Liquidation Coordination Council, which sold the shares of Zaibatsu to the public during 1946.⁹⁾

However, there has been a strong tendency since 1946 that a substantial portion of new equity issues of the business cooperation be mutually subscribed to among companies related to each other either through old Zaibatsu connections or through city banks.

A historical event that accelerated mutual shareholding was the liberalization of foreign investment, which started from the early 1960s. Managers who feared possible unfriendly takeovers by foreign investors tried to counteract this threat.

Since, with minor exceptions, a company is barred from acquiring its own stock by the Commercial Code, mutual shareholding has been utilized as a substitute. They called it as "stockholder stabilization operations."

By the end of 1968, shareholding by financial institution had climbed to 30.3 percent of the total outstanding stock of all listed corporations, and shareholdings by other business companies had risen to 21.4 percent.¹⁰⁾

This development has effectively insulated the management of the typical large company from outside takeovers. This has at least two important implications.

First, although there is risk of mismanagement due to the insulation from take over excessive pursuit of top manager's own interests at the expense of shareholders can be limited by other monitoring mechanisms. That is mutual monitoring by the managers themselves.

Besides the monitoring mechanism exercised at the shareholders' meeting, regular meetings of the presidents' club(Sha Cho Kai) of the corporate group provide

9) Ibid., p.272.

10) Ibid., p.273.

additional mutual monitoring channels to help prevent the wrong-doings of top managers who are insulated from takeover threats.

Second, the insulation from takeover has an unintended effect of mitigating the pressure on managers to maximize share price. The mitigating effect encourages, in a sense, the possibility of a gentlemen's agreement between labor and management of working together for the rapid growth of the firm.

As pointed out earlier, once an internal labor market develops, employees can benefit from better opportunities for promotion and job security within the firm. It is better for them to reach some explicit and implicit accord with management in regard to the choice of a combination of wage and managerial policy variables (for example, promotion speed).

To have such a choice, the agreed-upon managerial variables for the rapid growth of the firm should not be changed unilaterally. Management may be tempted to make such a change if it is under strong pressure to maximize the short-term share price because once wages are fixed, there is normally room to enhance the share price of a company by manipulating managerial variables.

If management does so and the union knows it, the union will press for higher wages to compensate for management's choice of an undesirable combination of managerial variables, such as lower employment and lower growth of the firm.

This suggests that unless stock market pressure for short-term share-price maximization is removed, the union's trust in the managerial choice of combination of wage and promotion possibility (growth of firm) can not be attained.

In other words, less pressure for share price maximization liberates management from working solely for the interest of shareholders, and provides room for effective cooperation between labor and management.

In sum, it is not easy to determine who owns Japanese firm. The bulk of stock is held institutionally and mutual stock-holding is extensively practiced. Individual holding plays a relatively insignificant role. Mutual stockholding and insulating the management from unfriendly takeovers mitigates the pressure on management to maximize short-term share price. Thus, these characteristics of ownership have freed management of capitalistic intervention and provided the possibility of a coalition or of effective cooperation between management and labor. This coalition or cooperation between labor and management has undoubtedly created favorable conditions for

successful Kaizen in Japanese firm.

V. Conclusion

So far, we examined the four intra-firm characteristics of Kaisha, which, we think, have greatly contributed to the technological breakthrough and progress of the Japanese economy.

First of all, the Kaisha's workshop organization, characterized by horizontal and consultative coordination, has opened the door toward the continuous improvement in technological progress in Japan.

In western world innovation usually implies abrupt structural changes introduced by few brilliant specialists who are specifically assigned for innovation. However, in Japan innovation usually takes the form of continuous improvement, Kaizen, participated by all workers in skill accumulation and knowledge sharing as well as in joint problem-solving.

It is the horizontal and consultative characteristics of the Kaisha's work organization which encourage knowledge and skill sharing and active participation of workers, through broader job classification, regular job rotation, and team-orientation. Thus, we can safely conclude that the Kaisha's work organization has created the best condition and climate for establishing effective Kaizen.

However, this sharing of knowledge and active participation is impossible when workers are recruited from and frequently released to the external labor market. In such case, workers tend to compete with each other, so they become reluctant to share knowledge and become less active in the Kaizen because the Kaizen may threaten their job security. Thus, Kaizen exercises its full advantages when long term employment is guaranteed and career development is possible through the internal labor market.

The Kaisha's noted internal labor market practice is supported by the Japanese seniority-based wage system in which wage rises as duration of service becomes longer. The seniority-based wage system tends to underpay younger workers and overpay older workers. During the early years of employment the firm accumulates

debts vis-a-vis younger workers and repays the debts with premium when they get older. This characteristic provides a strong incentive for long term employment which is a prerequisite for successful Kaizen.

Under the long term employment practice and the seniority based wage system, it is not easy to discipline workers. Therefore, more discretionary power of management is allowed in the Kaisha's promotion policy. The Kaisha's promotion policy is designed to make employees work harder, while wage policy to make them stay longer.

The enterprise unionism has also contributed greatly to the formation of effective Kaizen. The Kaizen can be successfully implemented only when the workers are empowered and become strong enough to speak their true opinions and complaints without being penalized.

Workers, however, can be empowered only when effective unions exist to protect workers' interest and rights. In this sense, enterprise unions though not very active in industrial strikes, have been very effective in making management listen to workers' voice in Japan.

Under enterprise unionism, all possible mechanism, such as the labor-management joint consultaion committee, formal informal talks with union leaders and regular consulting with rank-and-file workers, have been intensively utilized for channelling the workers' voice into the managerial decision making.

The unique feature of Japanese corporate governance has also created a very favorable condition for the successful Kaizen in Japan.

In the U.S. the board of directors represents the interest of the shareholders. Various profit related compensation schemes, such as stock options, are prepared to ensure that management works for shareholders' interest. But employees are not considered to be members of the firm. They are only the counterpart of employment contract. Thus the major feature of U.S. corporate governance can be described as an alliance of management and shareholders to maximize their own benefits.

In contrast, the management, in Japan, are liberated from working solely for the interest of shareholders and the employees are a legitimate constituent of the firm. Thus the major role of management is to mediate between the interests of employees and shareholders in such a way to strike a balance of interests between them. This unique feature has undoubtedly created more cooperative attitude and

stronger sense of belonging to the firm on the part of employees, thereby generating favorable atmosphere for successful Kaizen.

In sum, the successful Kaizen results from a mixture of Japanese style production organization, the employment and wage system, and corporate governance, and it has been the major means of technological progress in Japanese economy during the past half century.

Japanese economy has been stagnating since early 1990s and is now in the middle of structural transformation. Due to the structural transformation, it is widely said that Japanese labor-management system has been under serious constraints and subjected to change.

However, we think that the fundamentals of Japanese system have not changed and will not change in the foreseeable future. The four major characteristics of the Kaisha, depicted above, are still very appropriate and correct description of the Japanese system currently working. It is partly because the four characteristics are all deeply rooted in the Japanese culture and the culture tends to last longer and does not change so easily, especially when what culture dictates is also economically sound and rational. Thus, the structural change will bring about minor modification but not major change of the Japanese system. The Kaizen will be continuously the primary vehicle of technological advancement in Japanese system.

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