Japanese Industrial Relations in an International Business Environment

MASAO NAKAMURA

ABSTRACT

The Japanese industrial relations system is considered to be one of the main factors responsible for the success in the last few decades of Japanese business firms. This raises the question of how transferable these practices are to foreign settings. The article discusses stylized facts concerning Japanese industrial relations practices and the benefits and the problems associated with them. Attention is paid to the implications of these practices on certain public policy issues, including the Japanese Equal Employment Opportunity Law. Attention is also paid to the implications of these practices for the development, adoption, and transfer of production technologies. With regard to the transferability of these practices, the operations both of Japanese firms in and out of Japan and of foreign firms in Japan and overseas, are examined. The degree to which foreign firms have implemented Japanese-style production management and associated industrial relations practices overseas is a crude indicator of the degree of transferability of the system.

JAPANESE INDUSTRIAL RELATIONS PRACTICES

In Japan, firm managers are constrained by "three sacred treasures" of industrial relations: lifetime (or long-term) employment, the nenko (length-of-service reward) wage system, and enterprise unionism.[1] These three industrial relations practices are observed primarily in regard to the kinds of jobs that have traditionally been filled by prime-aged men. Many women, older workers, and foreign workers work in jobs where this is not the case.

Benefits Associated with Japanese Industrial Relations Practices

Certain benefits are commonly attributed to each of the three distinguishing features of Japanese industrial relations practices. These can be summarized as follows:

Lifetime Employment

1. Because firms and employees can count on long-term employment relationships, both are willing to invest in employees' human capital. More

Masao Nakamura • Faculty of Business, University of Alberta, Edmonton, Alberta, Canada T6G 2R6.

North American Journal of Economics & Finance, 4(2):225–251
ISSN 1062-9408

money is spent on on-the-job and on formal job-related educational training in Japan than in North America;
2. Long-term employment allows firms to use job rotations to develop workers' multi-task skills and to expose workers to different aspects of business and production operations. There are few job classifications. As a consequence, firms can deploy personnel flexibly and effectively; and
3. New productivity-enhancing technologies can be introduced with minimal worker concern about job losses.

Nenko (length-of-service) Wage System Rewards

1. Workers are assessed based on their career advancements. Hence, workers have more incentive to perform in the long-run; and
2. Workers are assessed by many supervisors over a long period of time throughout their careers. Hence, there is less room for incorrect judgments in personnel decisions (e.g., promotions).

Enterprise Unionism

1. Because of the long-term commitments to a firm by workers, enterprise unions can demand a fair share of firm profit more effectively than otherwise;
2. Full-time positions at enterprise unions are often part of career tracks for potential managers of firms. Firms are able to share information on firm performance, problems, and opportunities with enterprise unions; and
3. Because of the information sharing and feelings of trust and shared objectives fostered by enterprise unionism, workers and managers alike accept rollbacks of bonus payments in tough times without threats to leave or morale deterioration of the sort that endangers production efficiency and product quality.

Success Stories

Evidence of the benefits of the Japanese industrial relations system is largely anecdotal. The nature of this evidence is most easily conveyed by examining some of these success stories.

In the automobile industry, for example, Toyota perfected its production system (sometimes called the just-in-time [JIT], or Kanban, production system) by the early 1970s and then disseminated it to other Japanese competitors by the late 1970s. Two important aspects of the Toyota production system are: (1) in-process inventories are minimized by the use of JIT inventory management, which requires that all needed parts and/or semi-products are delivered to where they are needed as they are needed in the quantities needed; and (2) production flow is set up so that cars of various specifications are produced in sequence according to demand fluctuations. It is often the case that two successive cars produced on a production line are of different types.

The JIT inventory management, which was implemented by Toyota and also by its parts suppliers, requires close-to-zero rates of defects in all stages of the production

process in order for the system to run smoothly. Towards this end, production line workers actively participate, often in teams, in solving local production problems. Separate repair and maintenance positions have been eliminated. This cooperation is possible because the workers are familiar with many aspects of the production process and view cooperation in production management as essential for their own long-term goals. (The extent of successful implementation of JIT differs among industries; see Nakamura and Nakamura [1989]).

The multi-task capabilities of workers are relied on in combining production of cars of different types. Producing a passenger car of type A followed by, say, a station wagon of type B on the same production line requires retooling press machines in a very short time. Workers skilled in a variety of tasks make it possible[2] to design a production line where cars of different types are produced in accord with the time-varying demand distributions for these types of cars. Flexible manufacturing of this sort contributes to high capacity utilization rates which, in turn, lead to high productivity gains compared to their North American counterparts (Fuss and Waverman 1990).

Job rotations and on-the-job training combined with long-term employment security allow firms and workers to make long-run investments in workers' human capital; it can take as long as ten years of experience to master some skills. Fewer job classifications are conducive to the multi-skill development of workers. Table 1 shows the smaller numbers of job classifications for Japanese auto plants operating in the United States compared to the traditional Big Three plants.[3] A substantial amount of research and development took place in Japanese auto plants to design production facilities that fully utilize multi-task production workers. The resulting advances in Japanese automobile production technologies are reflected in the technology trade figures for manufacturing industries shown in Table 2. In 1990, the Japanese auto industry exported technology worth 88,901 million yen (41,534 million yen to North America; 32,881 million yen to Asia), which substantially exceeded the amount of imported technology which was worth 7,560 million yen (2,882 million yen from North America and 4,557 million yen from Europe).

Japanese firms do not lay off workers except under extreme circumstances. Figure 1

TABLE 1. Worker Job Classifications—Auto Industry

	Number of Job Classifications (job types)
Honda (U.S.A.)	3 (team leader 1, production 1, maintenance 1)
Mazda (U.S.A.)	2 (production 1, maintenance 1)
Nissan (U.S.A.)	4 (production leader 1, production technician 1, maintenance leader 1, maintenance technician
NUMMI (Toyota-General Motors)[a]	4 (production 1, maintenance 3)
Chrysler	82[b]
Ford	91[b]
GM	95[b]

Notes: [a]New United Motor Manufacturing, Inc.
[b]Traditional assembly plants.
Source: U.S. General Accounting Office, (1988).

TABLE 2. Japanese Technology Trade by Industry and Country (million yen)

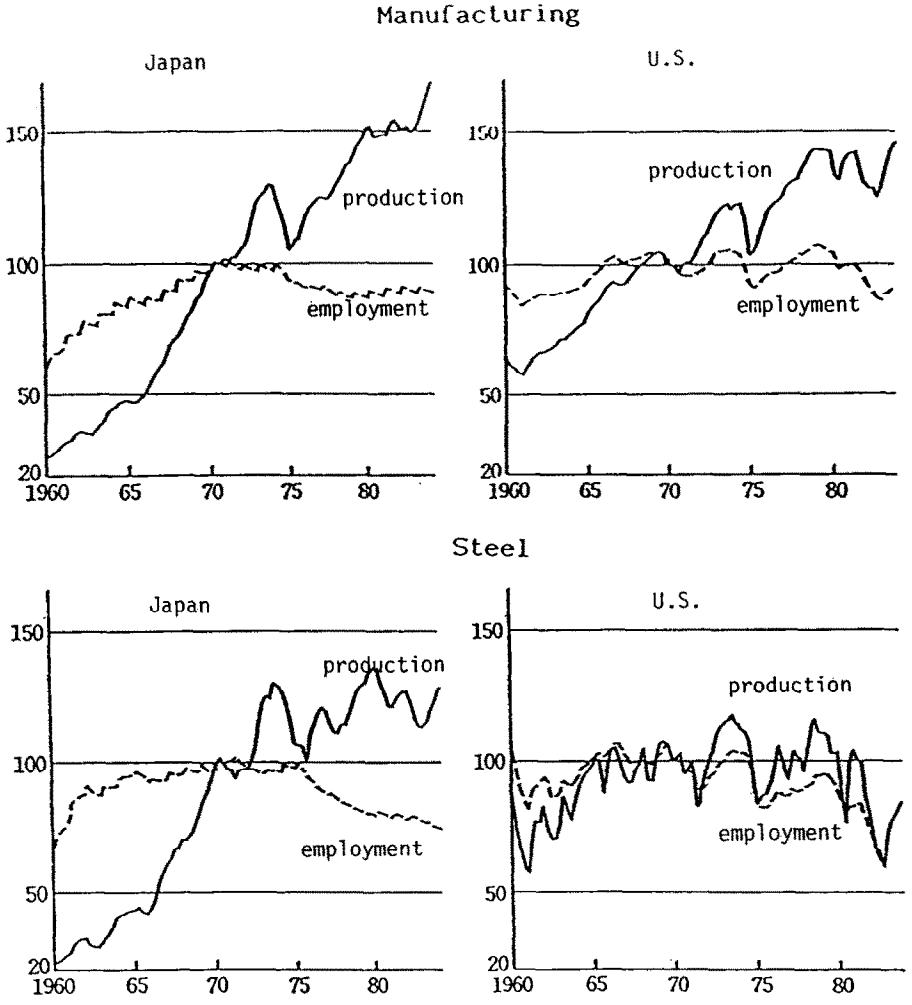
	Receipts							*Payments*			
	Total	*Asia*	*West Asia*	*North America*	*South America*	*Europe*	*Other*	*Total*	*North America*	*Europe*	*Other*
All industries	339,352	153,319	1,919	108,120	2,949	61,466	11,540	371,907	257,871	112,762	1,273
Agriculture/Foresting/Fishing	x[a]	x	—[a]	—	x	—	x	11	11	—	—
Mining	824	565	—	x	—	140	—	655	—	665	—
Construction	16,949	12,548	394	384	633	97	2,893	1,794	372	1,159	262
Manufacturing	320,707	139,578	1,509	107,461	2,291	61,227	8,460	368,284	256,569	110,706	1,009
food	8,044	2,577	—	3,216	x	2,004	x	8,629	2,789	5,836	x
textile	3,944	2,961	—	148	x	733	x	4,722	572	4,131	x
pulp/paper	993	196	—	386	x	352	—	464	414	x	—
printing	537	134	x	266	x	62	x	2,625	2,223	402	x
chemicals	58,173	16,600	624	24,727	180	15,716	326	54,043	32,983	20,974	86
general/fibre	27,683	13,724	620	6,765	174	6,227	173	21,036	13,064	7,918	x
oil/paint	3,792	1,698	—	1,608	x	442	43	3,590	2,566	1,024	x
pharmaceutical	24,971	287	4	15,981	3	8,676	20	22,514	11,088	11,394	x

other	1,726	891	—	374	—	371	89	6,902	6,265	637	—
petroleum/coal products	246	30	—	x	x	200	x	3,300	1,600	1,699	x
plastic	1,129	422	—	380	—	316	x	2,247	1,596	646	x
rubber	5,093	2,800	x	1,136	x	537	x	4,483	1,948	2,534	x
pottery	11,860	9,115	x	1,118	98	1,212	262	3,909	2,686	1,223	—
iron/steel	9,424	1,471	188	2,953	235	3,636	940	6,489	2,092	4,231	x
non-ferrous metals	7,239	4,300	—	2,244	x	459	x	13,890	3,977	9,913	—
metals	2,418	1,755	x	485	—	111	66	2,364	571	1,732	x
machinery	14,364	5,077	x	5,097	42	3,813	328	30,533	20,057	10,379	97
electrical machinery	97,017	55,679	207	19,990	692	19,499	949	159,869	128,543	30,988	338
electrical tools	29,350	11,367	x	7,175	479	3,840	288	37,427	28,463	8,964	—
electronics	67,667	38,312	x	12,815	213	15,659	662	122,442	100,080	22,024	338
transportation machinery	92,014	33,893	82	42,085	363	10,187	5,404	52,314	39,458	12,735	x
auto	88,901	32,881	x	41,534	361	8,754	5,363	7,560	2,882	4,557	x
other	3,112	1,012	x	551	2	1,433	41	44,754	36,576	8,178	x
precision	4,322	816	—	1,621	—	1,884	x	11,389	10,699	682	8
other	3,890	1,750	—	1,605	x	505	27	7,014	4,361	2,551	x
Transportation/Communications/ Public Works	826	581	x	156	x	x	x	1,154	919	233	x

Note: [a] x denotes cells with fewer than 4 cases for which the disclosure of monetary figures is prohibited.
— denotes no cases.

Source: Science and Technology Agency (1992).

shows the employment and production indexes for U.S. and Japanese manufacturing and steel industries for the period 1960-1985. The U.S. employment indexes follow the production indexes more closely than the Japanese employment indexes. Job security helps workers to accept new production technologies. This may partially explain why Japanese factories are now equipped with large numbers of industrial robots relative to their Western counterparts. In 1989, the estimated numbers of operating industrial robots (excluding fixed sequence robots) were: 219,700 for Japan, 37,000 for the United States, 22,395 for (West) Germany, 7,063 for France, 7,463 for Sweden, and 5,908 for the United Kingdom.



Source: Shimada (1986). The employment index for Japan is for regular workers while the employment index for the United States is for production workers (1972 = 100). Neither is seasonally adjusted. The production indexes for both Japan and the United States are seasonally adjusted (1972 = 100).

Figure 1. **Production and Employment Indexes**

Mechanisms for Adjusting the Wage Bill

Of course, Japanese firms, like the firms of other nations, must deal with business cycle fluctuations. In downturns (recessions), Japanese firms need ways of adjusting the total wage bill without layoffs. These methods include wage adjustments, adjustments of hours through overtime work and non-regular-worker employment, and the flexible deployment of the workforce.

Wage Adjustments

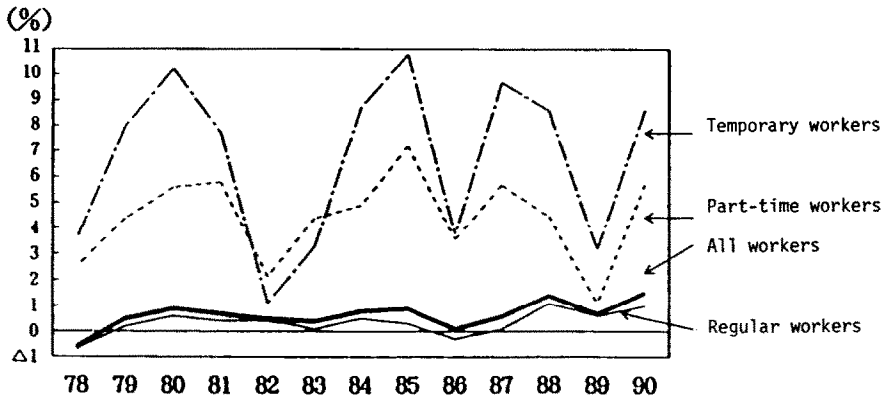
Japanese workers receive regular monthly (fixed contract) earnings as well as bonus payments. The amounts of the bonuses are not prespecified but generally range between four to six months' worth of regular contract earnings. The amounts of regular wages and bonus payments are both decided annually in negotiations between firms and labor unions: regular wages are settled in the spring offensive (usually held in the March-April period), and bonus payments are negotiated somewhat later but before summer. Both regular wage and bonus pay settlements at the firm level reflect, among other things, the general economic conditions and specific firm performance for the previous 12 months. By this means, a firm's total wage bill adjusts reasonably frequently to the firm's changing economic fortunes.

It is of interest to note that the Japanese labor code prohibits a labor contract extending beyond one year. The annual wage adjustments in Japan conform to this labor law. In contrast, the lengths of union wage contracts in Canada and the United States are as long as five years, with the average being around two-and-a-half years. With standard cost-of-living-adjustment (COLA) clauses, these long-term contracts act to secure the purchasing power of workers' wages, but at the potential cost of employment security.[4]

Unlike bonuses in North America, which are mostly paid to managers and executives, bonuses are used as part of the compensation package for most Japanese workers regardless of their rank, age, or sex. The relative proportions of bonuses to total annual pay increase as worker qualifications rise, suggesting that the bonus fractions are correlated with the amounts of managerial and difficult-to-observe tasks involved in workers' jobs. (See Nakamura and Hübler [1992] for empirical evidence on this.) Year-to-year changes are much greater for bonuses than for regular wages. In this way, business fluctuation risk is shared between firms without resorting to employment layoffs. (See Nakamura and Nakamura [1991] for a discussion of risk sharing aspects of bonus payments.) Firms also use bonuses as short-run incentive schemes for individual workers and groups of workers, through the allocation mechanisms for individual workers. Bonuses are by no means the only incentive scheme used by firms.[5]

Adjustments of Overtime Hours and Non-regular-worker Employment

More so than in North American firms, overtime hours for regular workers are used to meet changes in demand conditions. (This may be partly because the legal overtime wage premiums are about 25%, half of the North American rate.) Because regular workers' employment is protected to a large extent, adjustments in a firm's wage bill may also require the layoff of non-regular workers, such as part-time workers. When demand conditions improve, firms will first use increased overtime and part-time worker hours to meet the increased demand. New regular workers will be hired when additional



Source: Japan, Economic Planning Agency (1992). *Note*: Net hiring divided by employment.

Figure 2. **Change in Employment by Type of Worker**

increases in overtime and part-time hours are not feasible or would not be profitable (Figure 2).

Flexible Deployment of Workforce

When facing business downturns, Japanese firms deploy workers in the areas where they are needed most. Geographical relocations and changes in work tasks may be required. For example, in September 1992, Mazda moved about 100 young workers from their head office to Mazda dealerships all over Japan in response to a continuing decline in domestic sales of Mazda cars.[6] The deployment of a firm's workers across production and sales jobs, or to other related or even unrelated firms, is not unusual in serious business downturns.

One enabling factor for flexible deployment of the Japanese workforce is that wages are usually assigned to individual workers rather than to the specific tasks that workers perform. This explains why wage differentials by job task or firm size at initial appointment are small in Japan compared to those in the United States (Shimada 1981). However, wages rise steeply in Japan as workers accumulate experience.

Problems Associated with Japanese Industrial Relations Practices

Because of their industrial relations policies, personnel development in Japanese firms is carried out primarily through internal labor market policies. Managers and workers are expected to cooperate to develop employee skills through job rotations, on-the-job training, and formal employer-supplied training. This is the case not only for production (blue-collar) workers but also for office (white-collar) workers. This implies, among other things, that those who do not appear able to satisfy the firms' expectation for long-term skill development for any reason are not likely to be hired for firms' future key positions. This system is believed to have helped Japan achieve the national goal of macro economic growth, with the rewards of this growth being shared by workers, shareholders, and other stakeholders of firms. Now that this macro goal has been largely achieved, however, some fear that cooperation between employers and workers may begin to erode. Diversions in their respective goals could manifest themselves in a num-

ber of ways, including: conflicts between male workers (the traditional permanent workers) and women (the main secondary source of labor) as related to equitable employment opportunities; the growing number of workers who want to change jobs; and the problems engendered by Japanese firms' internationalization. In the rest of this section, I discuss the first two of these potential problems. The issues related to internationalization are discussed in the second section.

Female Workers

High-paying jobs are generally available only to those workers with long seniority who have been given increasingly challenging assignments. It is expected that women will have intermittent career patterns to allow for child bearing and rearing. As a consequence, female workers interested in pursuing demanding careers are likely to be subject to statistical discrimination by employers. (See Nakamura and Nakamura [1985a, 1985b, 1985c, 1992] for discussion of related issues for U.S. and Canadian female workers, and evidence that individual work histories are a valuable source of information on the degree of career attachment; this insight could help reduce statistical discrimination in Japan as well as in North America.)

There has been little improvement in the workplace situation of women in Japan compared with North America.[7] In response to the Japanese Equal Employment Opportunity Law enacted in 1986, it is true that some large Japanese firms did open their general managerial career paths to female university graduates. With rare exceptions, these career paths were only available to men before 1986. Yet, most women still do not choose this option. They continue to choose career paths that do not require geographic relocations and that lead to positions as lower-rank managers or specialists. If this current trend continues, most upper-level managerial positions in Japanese firms will continue to be occupied by men and the gap between male and female wages will continue to widen (Shinozuka 1987), contrary to what was hoped for in enacting the Equal Employment Opportunity Law. Furthermore, this law has no enforcement provisions. In implementing major hiring cutbacks in 1992, firms openly chose to offer a reduced proportion of the available positions to women in comparison with previous years. The cutbacks for women were particularly severe for the general managerial career paths. Many view this as evidence of the continuing marginal position of women in the Japanese workforce (Shitamori 1992).[8]

Goldin (1988) reports that, before the 1950s, many U.S. firms had rules requiring female workers to resign at the time of marriage or the first birth. As labor supply tightened during the 1950s, such employment practices began to disappear. Because of expected labor shortages, some speculate that Japanese firms may also begin to aggressively recruit female workers.[9] As of yet, however, there is no rush in Japan to adopt North American equal employment policies for women.

Secondary Labor Markets

It is customary for most Japanese firms to hire workers at the time they graduate from school. While Japanese firms do hire workers at later stages in their careers, the fractions of workers hired in mid-career are quite small compared with North American practices. Furthermore, as Table 3 shows, the probabilities of male workers changing their jobs are considerably smaller for Japan than for the United States. This data

TABLE 3. Job Separation Rates for Men by Age—United States and Japan

Age	*Years of Schooling*	*United States*	*Japan*
20	12	.385	.115
25	12	.300	.082
35	9	.178	.061
35	12	.171	.041
35	16	.148	.027
45	12	.095	.033
50	12	.078	.042
55	12	.074	.006

Source: Calculated by Higuchi (1991, p. 36) using the Panel Study of Income Dynamics 1978-81 data for white males (for the United States) and the 1979 Japanese Employment Structure Data for men (for Japan).

TABLE 4. Proportions of Workers by Number of Years of Tenure (%) — United States and Japan

		Tenure		
Year		*0–5*	*5⁺–10*	*10⁺*
		Men, 25-34		
United States	1963	62.2	26.9	10.8
	1973	68.6	23.9	7.5
Japan	1982	29.2	32.9	38.0
		Men, 35-44		
United States	1963	38.9	20.5	40.7
	1973	41.8	22.7	35.4
Japan	1982	12.4	12.7	74.9
		Men[a]		
United States	1979	50.0[b]	19.4[c]	30.6[d]
Japan	1979	29.4[b]	22.2[c]	48.4[d]
		Women, 25-34		
United States	1963	74.8	16.1	9.1
	1973	77.7	17.3	4.9
Japan	1982	50.5	30.5	19.0
		Women, 35-44		
United States	1963	60.7	19.7	19.4
	1973	62.5	20.0	17.4
Japan	1982	40.5	21.0	38.5

Notes: [a]Male workers employed in private industries.
[b]Years of tenure 0–4.
[c]Years of tenure 4+–9.
[d]Years of tenure 9+.

Source: Higuchi (1991).

implies that secondary labor markets in Japan are relatively thin compared with the primary labor market for new graduates. These patterns are consistent with the longer lengths of service with single employers observed for Japanese workers compared with U.S. workers (see Table 4).

An obvious implication of the thin secondary labor market in Japan is that it is difficult, if not impossible, for workers to adjust their employment to changes in their own tastes, preferences, qualifications, and personal life-cycle planning without substantial wage loss. Also, training not provided or encouraged by the employer may not be rewarded within a firm's internal labor market. Yet, workers who have obtained additional education or training on their own may not be able to find other positions either where their efforts would be rewarded.

The lack of an adequate secondary labor market is a particularly serious problem for Japanese women who often have to drop out of regular career positions to have children. Table 5 shows that the separation rates for female workers under age 44 relative to their male counterparts are much higher for Japan than for the United States. These women have great difficulty locating new jobs with pay commensurate with their qualifications.

As a result, it is difficult, for example, for Japanese married women to accumulate sufficient work experience. We see from Table 6 that:

1. The proportions of continuing and intermittent workers among currently employed married women are similar for both the United States and Japan (where continuing workers are defined as those who have held work without having experienced being out of work for more than one year, and intermittent workers as those who have experienced being out of work for more than one year); and
2. The years of work for intermittent married female workers are much higher for the United States than for Japan while the years of work for continuing married female workers are similar for U.S. white women and Japanese women.

The lack of adequate secondary labor markets in Japan for intermittent female workers is a likely cause of point 2 above. The lack of sufficient experience with a specific

TABLE 5. Job Separation Rates (percents): U.S. and Japanese Workers

	United States (1977)		*Japan (1977)*		*Japan (1987)*	
	men	*women*	*men*	*women*	*men*	*women*
18/15-24[a]	36.4	33.8	8.8	17.8	19.5	23.4
25-34	18.6	20.2	4.3	18.8	7.1	20.8
35-44	12.2	15.0	2.5	8.5	4.2	11.6
45-54	8.2	11.8	1.9	6.8	4.0	9.0
55-59/64[b]	8.9	9.7	4.4	10.3	9.5	12.9
All[c]	17.3	19.7	4.6	13.3	7.0	15.5

Notes: [a]15-24 for Japan (1977, 1987).
[b]55-64 for Japan (1977).
[c]18-59 for United States; 15-64 for Japan (1977).

Source: Haber, Lamus, and Green (1983); Higuchi (1991, p. 248).

TABLE 6. Currently Employed Married Women's Attachment to the Labor Market: Japan (1982) and United States (1975)

	Japan				*United States*	
	All	*Junior High*	*Senior High*	*College/ University*	*White*	*Black*
Type of Attachment to the Labor Market (% distribution)						
Continuing work[a]	41.1%	30.0%	41.6%	59.5%	35.6%	42.4%
Intermittent work[b]	58.9	70.0	58.4	40.4	64.4	57.6
Average Years of Work						
Continuing work	11.1	11.6	11.3	10.9	12.2	15.7
Intermittent work	7.6	8.2	7.0	8.1	13.9	15.1

Notes: [a]Continuing workers are those who have held work without experiencing being out of work for more than one year.
[b]Intermettent workers are those who have experienced being out of work for more than one year.
Source: For Japan, Ministry of Labour (1992b); for United States, Corcoran (1979, p. 223); Higuchi (1991).

TABLE 7. Proportions of Female Workers by Occupation (1985)

Occupation	*United States*	*Germany*[a]	*Japan*
Managerial/administrative	32.8%[b]	16.7%	8.8%
Technical/science	52.1	43.5	40.1
Clerical	80.7	66.1	57.3
Sales	41.3	55.6	36.7
Service	63.8	77.6	62.9
Crime prevention/security	13.2	5.0	2.6
Agriculture/forestry/fishing	15.9	44.8	45.7
Transportation/communication	13.7	11.2	5.4
Machining, mining, manufacturing operators, laborer	19.2	17.5	30.1
All	44.1	38.4	38.9

Notes: [a]Former West Germany
[b]Fraction (%) of female workers in each occupation.
Source: Japan, Ministry of Labour (1993).

employer also explains the small fraction of Japanese female workers in managerial and administrative positions relative to their German and U.S. counterparts (Table 7).

INTERNATIONALIZATION AND JAPANESE INDUSTRIAL RELATIONS PRACTICES

No discussion of contemporary Japanese industrial relations practices can be complete without at least a brief consideration of historical origins. For those interested in transplanting Japanese industrial relations practices overseas, the origins of these practices in Japan are obviously relevant. So, too, are the industrial relations practices of the Japanese subsidiaries of North American firms and the North American subsidiaries of

Japanese firms. The next sub sections review these practices, followed by a closer look at the experiences of overseas operations of Japanese automakers.

Historical Background

Many of the Japanese who visited the United States after the Meiji Restoration (1868) were impressed by the diligence of U.S. workers. The experience in the United States of a former Karo (the chief retainer of a Daimyo, a feudal lord) from Nihonmatsu, Fukushima, provides an interesting example of this. His purposes in coming to the United States were to acquire the technological knowledge needed to establish a modern textile industry in Japan and to learn more about the trade of silk products between Japan and the United States. He stayed on the U.S. East Coast for five years, studying both modern technology and business methods. After returning to Japan, he set up a large textile mill as well as a direct foreign trade route for the export of his textile products to the United States.

He sent home more than 150 letters during his five-year stay in the United States. According to these letters, he was particularly impressed by how hardworking Americans were. He stated, for example: "In New York everybody walks very fast, takes off only one day a week on Sunday, and works very hard from morning till night; I love Japan, a beautiful and wonderful country, but I must conclude, after having given much thought to this issue, that Japan is so poor because the Japanese are lazy. The Japanese take too much time off work, drinking tea and eating Dango or something. Japan will never become wealthy so long as the Japanese continue behaving this way. Japan should learn the spirit of diligence from America" (Shimomura 1991).

The low levels of Japanese workers' efforts in manufacturing, mining, and other industries continued from the late-19th century to the late 1940s, after World War II. Weulersse (cited in Amako 1992, p. 10), a Frenchman who visited Japan at the beginning of this century, observed that "Japanese workers are basically lazy. It seems beyond the Japanese workers' ability to work hard. . . . Japanese workers do not handle raw materials carefully and waste them. The notion of treating machines and tools with care, which every European worker has, does not seem to be shared by Japanese workers."

Fruin (1983) noted:

> The study of Kikkoman reveals, and studies of other large Japanese companies confirm, that before the 1920s and 1930s Japanese industrial workers were not especially loyal, hard-working, or dedicated. The creation of new material and psychological incentives for motivating workers—many under the guise of "family" commitment—since then has resulted in the gradual formation of a committed and productive labor force (pp. 9-10).
>
> Six years of rivalry between union and company [Kikkoman] were punctuated by several episodes of violence and strike activity, the worst occurring in 1923 and 1927-28. The latter proved to be the longest, and one of the largest and most expensive strikes in prewar Japan. The 218-day strike resulted in the discharge of 1,000 workers, the union's total destruction locally and general discredit nationally, and the emergence of a new pattern of industrial relations in Noda.
>
> Traditional systems of manufacturing and of industrial organization based on the household model were replaced by a Western-inspired system of manufacturing, though not of industrial relations. Rather than Western-style unions, political parties, and industrial relations, the system of employment

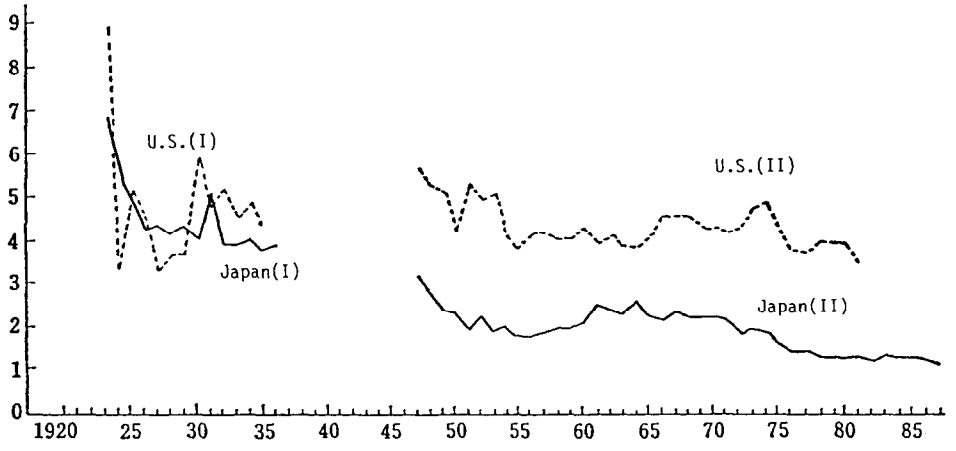
> was characterized by so-called lifetime employment, seniority-based compensation, internal (intracorporate) as opposed to external (intercorporate) labor markets, within-enterprise training, formal channels of mediation for labor-management dispute resolution, and a spirit of accord between workers and managers as well as between the company and the community. This pattern was repeated elsewhere in the country as other companies also attempted to adjust to changing economic and technological conditions after World War I (p. 209).

These anecdotal observations are quite consistent with Japanese labor statistics. For example, until the late 1930s, the quit rates for Japanese workers were comparable to those observed for U.S. workers. The quit rates for U.S. workers remained at the 1930s level through the 1980s, while Japanese workers' quit rates gradually came down after World War II (see Figure 3).

What caused the low quality of Japanese workers' labor services in the late 19th and the first half of the 20th centuries seems very clear: poor industrial relations practices. These poor industrial relations practices included no job security, liberal firings/layoffs (e.g., 569,000 workers were laid off in 1930), oppressive management, union bashing, low wages, and long working hours. These management practices did not help win workers' confidence in firms' objectives and did lower workers' morale. Firm managers gradually learned from innumerable labor disputes and strikes that job security of some sort, together with good industrial relations, would be needed for accumulating the production skills required for smooth firm operations. What we regard as contemporary Japanese industrial relations practices came to be more widely adopted only after the early 1950s (Taira 1970; Tsurumi 1978; Saxonhouse 1976).

Foreign Firms' Operations in Japan

In order to assess the transferability of Japanese industrial relations practices, we will first look at personnel management practices of Japanese subsidiaries of U.S. and other



Source: Higuchi (1991, p. 37). The data for U.S.(I) and U.S.(II) are from the *Historical Statistics of the United States* and *Monthly Labour Review*, respectively. The data for Japan(I) and Japan(II) are from *Nihon Rodo Undoshi Shiryo* (Vol. 10, Table II-60) and *Monthly Labor Statistics Survey*.

Figure 3. **Monthly Separation Rates (%)**

foreign firms. Successful U.S. and European firm operations in Japan are highly profitable compared to indigenous Japanese firms (Nakamura 1991a; Nakamura and Yeung forthcoming). Hence, their personnel management practices are of considerable interest.

Foreign firms whose operations in Japan are relatively new are at a disadvantage in recruiting new graduates, since new graduates tend to prefer larger, more established firms. Many foreign firms consider it a serious problem to secure qualified personnel in Japan (Toyo Keizai 1990), but this is also the case for new indigenous Japanese firms. For well-established foreign-affiliated firms, recruiting is less of a problem. Table 8 shows the numbers of new hires, by worker type, for some foreign firms' operations in Japan. Manufacturing firms tend to hire mostly new graduates while firms in the service and finance sectors hire relatively larger numbers of mid-career workers.

Foreign firms' subsidiaries can be attractive to certain types of Japanese job seekers, including Japanese managers who are asked to leave their (Japanese) employers voluntarily in their 40s and early 50s (some regard this phenomenon as a problem with Japanese industrial relations practices in a low-growth era), those in mismatched positions at Japanese firms, and female workers. Noting that few women are found in research and managerial positions in Japanese firms and that little change has taken place in this

TABLE 8. Newly-Hired Workers at Foreign Firms' Operations in Japan — 1990

Foreign Firm Operation (year established; percent foreign ownership; number of employees)	*New Graduates*		
	Men	*Women*	*Mid-career*
IBM Japan (1937; 100; 23,019)[a]	1,000	300	400
Nippon Roussell (1959; 80; 260)	554	190	45
Nihon Unisys (1958; 33.3; 4,656)	386	111	60
Fuji Xerox (1962; 50; 13,353)	315	80	0
McDonald's (Japan) (1971; 50; 2,970)	151	17	206
Nihon Digital Equipment (1982; 100; 3,100)	350	0	0
Nippon Glaxo (1953; 50; 1,370)	76	46	21
NCR Japan (1920; 70; 4,254)	82	40	23
American Family Life Insurance (1974; 100; 1,200)	44	83	50
Berlitz School of Languages (Japan) (1980; 100; 1,000)	0	2	250
American Express (____; 100; 730)	100	0	200

Note: [a]These figures are for 1989.

Source: Nihon Jitsugyo (1992, p. 27) and Toyo Keizai (1990).

regard because of inflexible industrial relations practices, Maurer (1989) recommended that U.S. firms should take advantage of female and other skilled workers bumped out of the Japanese system. There is considerable anecdotal evidence that this is in fact happening.

Except for their recruitment of mid-career workers, many established North American firms' subsidiaries in Japan (both fully owned and jointly owned with Japanese firms) have largely adopted Japanese employment practices. For example, for many years now, IBM Japan has been paying bonuses which, on average, are about six months' worth of regular monthly pay. Many other North American-affiliated firms also pay bonuses. Life-time (or long-term) employment is the norm at the Japanese subsidiaries of many foreign firms, including IBM and Fuji Xerox. However, the public perception, real or imaginary, is that layoffs are possible at foreign firms' subsidiaries.[10]

Compared to indigenous Japanese firms, well-established foreign firms' subsidiaries offer very attractive work hours and more paid vacation days. At Mobil Sekiyu, a fully owned subsidiary of Mobil Corporation, the average annual hours of work and the number of days of actually claimed paid vacation for recent years are about 1790 hours and 17.6 days, respectively. The comparable numbers for IBM Japan are 1923 hours and 18.3 days. In contrast, for Japanese manufacturing industries, the average figures are 2078.4 hours and 9.3 days (Japan, Ministry of Labor 1992a, 1992b). Workers at Japanese firms are not likely, in the near future at least, to be able to enjoy the hours of work and vacation time provided by North American or European subsidiaries, despite the push by the Japanese Ministry of Labor for reduced hours of work and increased paid vacation days.

Japanese Firms' Overseas Subsidiaries

Japanese direct investments overseas increased dramatically in the 1980s (Nakamura 1991b). It is interesting to see whether and to what extent current Japanese management and production methods have been adopted by North American, European, and other foreign subsidiaries of Japanese firms, and what types of problems have been encountered. There are a number of aspects of Japanese overseas operations that might limit the full transplantation of Japanese practices. For instance, Japanese subsidiaries' operations are generally small in size relative to the parent firms' operations. Certain practices (e.g., large-scale job rotations) may not be feasible because of size constraints. Second, Japanese firms' overseas subsidiaries are generally new compared to their indigenous counterparts. Of course, this also makes it impossible, in many cases, to examine the long-term effectiveness of the labor relations practices of these subsidiaries.

Japanese manufacturers began to move certain production operations to Asia in the late 1960s. Efforts were made to make overseas factories more capital intensive than their Japanese counterparts in order to compensate for the lack of skilled labor.[11] Nevertheless, Japanese companies poured in resources to try to transplant their production technologies and human resource development and management practices to Asia. These Japanese companies recognized that products carrying their brand names must be of acceptable quality to avoid damage to their corporate reputations.

Tsurumi (1976, pp. 194-199) conducted a field study during 1972-1974 of 75 Japanese firms that operated manufacturing subsidiaries in South Korea, Hong Kong, Taiwan, Thailand, Singapore, Malaysia, Indonesia, West Germany, Italy, Canada, and the

United States. He found that these firms followed certain rules (to varying degrees) in implementing the transfer of their production technologies. According to Tsurumi, these rules included:

1. *The creation of a little Japan:* certain institutional arrangements such as the color and design of worker uniforms, company-subsidized cafeterias, and recreational programs are transplanted, almost as is, from the Japanese source (parent plant) to the overseas plant(s). Japanese plant managers believe these arrangements to be essential for creating the right atmosphere to inspire employees' dedication to their production work.
2. *Construction of a new plant:* Japanese firms prefer, wherever possible, to transfer their own institution-related technologies into an "unspoiled (greenfield)" environment rather than into a "spoiled" one. They also prefer new plant locations away from the existing industrialized areas where indigenous working habits are well established.
3. *Parent-plant training of foreign workers:* Japanese parent firms invite foreign nationals who are designated future plant managers, supervisors and engineers, as well as a nucleus of production workers, to their source plants in Japan for three to twelve months for in-plant training. The worker-trainees are then expected to act as pacesetters in the transplants. Japanese parent firms have proved very willing to invest time and money in order to expose their foreign workers to the production culture of Japanese source plant operations.
4. *Blending Japanese and foreign workers:* In preparing to open overseas production facilities, Japanese parent firms send Japanese managers and skilled workers. These parent firm personnel try to involve as many local employees as possible in installing and testing the production equipment sent from Japan. These local employees will later be officially recognized by the company as instructor-workers and will help train and lead newly hired local workers.

An example of these practices is provided by Kikkoman's transfer of its production technology for organically brewing soy sauce to its plant in Walworth, Wisconsin. When that plant started to operate in 1973, Kikkoman sent 15 of its employees to Wisconsin to work with 40 American employees. Similarly, when Nippon Miniature Bearing (NMB) acquired a plant in Chatworth, California, in 1971, the company sent a team of five male and female production workers from its parent plant in Karuizawa. These Japanese workers were strategically mingled with American workers in key production operations including assembly lines, product quality testing, and polishing of parts where manual handling of products was essential. In this particular case, the parent firm, NMB, benefitted by learning and adopting various U.S. production methods that resulted in substantial gains in productivity in the firm's Japanese operations (Tsurumi 1976, p. 111).

It is remarkable that the basic rules that Tsurumi observed almost two decades ago still seem to be practiced at many Japanese transplants. For example, based on his interviews at six Japanese firms' subsidiaries in Thailand, Malaysia, and Singapore in 1987, Kishida (1992) concluded that these subsidiaries: (1) encourage long-term employment;

(2) try to avoid layoffs as much as possible, even if laying off workers is feasible; and (3) when layoffs become necessary, those workers closer to retirement rather than younger workers are laid off first. Kishida also found, however, that: (1) promotions are not primarily based on seniority, a practice often found in Japan for lower- and middle-level managers; (2) workers are recruited as needs for labor arise, with no system for hiring new graduates at a single time of year as in Japan; and (3) because of low levels of technical skills and/or the lack of team orientation, job rotations and quality circle movements are difficult, if not impossible, to introduce.

Technology-based Japanese transplants require long-term employees who are willing and able to master difficult production technologies. In Asia, the degree of success in this regard seems rather modest. For example, in order to increase the local content, Minolta Malaysia sends to Japan more than 10 local workers every year for technical training, at a cost of about one million yen per worker, but only half these trainees remain with Minolta after they return to Malaysia. This is because of an extremely high demand for workers who were trained in Japan. Other Japanese firms' experiences are similar, in this respect, to Minolta's.[12] The impact of lost trainees is a burden on Japanese firms operating in Asia. However, the effects on the local economies in terms of technology transfer are believed to be very positive.

Auto Industry

In the 1980s, Japanese automakers have made significant investments in production facilities in the United States, Canada, and Europe, for economic as well as political reasons, including voluntary export restraints and foreign pressure for direct investment. In 1991, the numbers of workers who were employed in the United States, Canada, and Europe by auto assembly and auto parts plants owned fully or partly by Japanese companies were, respectively, 49,034 (1,500); 7,723 (82); and 23,586 (261), where the figures in parentheses are the numbers of Japanese workers sent by the (Japanese) parent firms (Toyo Keizai 1992). Historically speaking, these Japanese auto firms' foreign direct investments were not as large as the Big Three's direct investments in Canada, Europe and elsewhere, but they were larger than the investments of the European automakers in the United States and Canada.

The Japanese automakers' initial reluctance to invest heavily in the United States was based on the notion that it would be difficult to successfully operate the type of production system used in Japan. This notion was supported by historical examples of the difficulty of transplanting auto production management skills overseas, including examples of difficulties encountered by firms of countries other than Japan. For example, Ford could not successfully implement what it regarded as an efficient U.S. mass production system at its U.K. plant during the World War I period, even though it sent many U.S. engineers to the United Kingdom to help teach local workers. The plant subsequently reverted to the traditional production management found in many U.K. factories. An example such as this, illustrating the difficulty of transplanting management skills between two countries sharing the same cultural and language background, makes it clear that Japanese automakers had good reason to worry. It was felt that, without care concerning production management skills, Japanese auto transplants in North America could lose their competitive edge against the Big Three.

Japanese auto industry subsidiaries share the following four basic characteristics:

1. ***Job classifications.*** In order to implement team work concepts and the flexible deployment of personnel, these transplants have opted for fewer job classifications than the standard Big Three plants (Table 1). Most supervisors and managerial staff are local, and many have been trained in the parent firms' factories. The relatively few personnel sent by the Japanese parent firms are expected to assist local personnel (see Table 9).

2. ***Factory design.*** Most Japanese transplant factories produce about 200,000-250,000 cars of small to medium size. This scale of production is considered sufficient to reap scale economies. The complete design of a transplant factory is often a copy of what is called the "mother factory" in Japan. In some cases, however, the subsidiaries have production facilities and use technologies that represent substantial improvements over the mother factory. A transplant factory's general purpose machineries are purchased from U.S. firms. However, specialized press and other machineries, including robots, tend to be imported from Japan. Many of these machineries and tools are adjusted or redesigned to suit U.S. workers.

3. ***Maintenance.*** Japanese experiences suggest that, as the degree of automation increases, capacity utilization rates will fall because of increased machine and robot trouble. The Japanese approach to this problem is to prevent machine failures by emphasizing preventive maintenance. It is reported that, to a large extent, transplants still rely on the maintenance workers sent by the Japanese parent firms because of the difficulty of training U.S. maintenance workers.[13]

4. ***Hiring.*** Transplants often employ young, qualified employees from large applicant pools. So far, they are either nonunion or have been able to enjoy substantial concessions from unions regarding union rules. Because of their greenfield approach and advanced factory design, Japanese transplants seem to enjoy considerable advantages over Big Three plants.

TABLE 9. Number of Employees Sent by Japanese Parent Firms to U.S. Transplants

	Total Employment	*Workers from Japan*
Honda	4,242	199
Mazda	3,500	70
Nissan	3,190	13
Subaru/Isuzu	3,200	50
Toyota	3,000	50
Mitsubishi/Chrysler (Diamond Star)	2,900	50
Toyota/GM (NUMMI)	2,500	35
VW	2,500	34[a]

Note: [a]Workers sent by the German parent firm. (VW no longer operates production facilities in the United States.)

Source: U.S. General Accounting Office (1988).

5. ***Job rotations, teamwork, and on-the-job training.*** In order to achieve flexible deployment and efficient utilization of human resources, job rotations and team work are often implemented at transplants. Hourly job rotations and rotating four different job tasks a day are not uncommon practices. Despite the drastic departure of these practices from traditional single-task situations, it has been found that American workers adapt quite well. The only observable difference between U.S. and Japanese workers seems to be how they react when non-routine (abnormal) incidents take place.[14] On-the-job training is effectively achieved by job rotations and teamwork. Japanese transplants provide more on-the-job training than their U.S. counterparts.[15] (See Suzuki [1991, pp. 140-143] for a detailed description of on-the-job training at the transplants.)

Japanese automakers have spent substantial amounts of resources to make their North American operations successful. Both their employees' absenteeism (2 ~ 3%) and job separation rates (below 5%) are well under the rates for Big Three plants in the same geographical regions. Their productivity measures also seem high compared to the Big Three's (Krafcik 1988). Nevertheless, their heavy dependence on on-the-job training, close communication among workers, and less dependence on job manuals might cause the Japanese production system to fail to function once the personnel sent by Japanese parent firms leave the plants (White and Trevor 1983, ch. 5;, Suzuki 1991, ch. 3). For these and other reasons involving general union and labor movements and cultural differences, the long-term verdict on the Japanese transplants' performances is still uncertain.

PROSPECTS FOR THE FUTURE: CONCLUDING REMARKS

We have seen that Japanese manufacturers spend large amounts of personnel time and other resources to transfer their production technologies and associated industrial relations practices to their overseas operations. To the extent that Japanese parent firms possess superior technologies for producing products for which demand is strong, transferring these production technologies to overseas plants on a greenfield often succeeds. Foreign production workers often appreciate many of the industrial relations practices implemented by Japanese subsidiaries.

However, in contrast to blue-collar workers, office (or white-collar) workers (including managerial staff) at Japanese subsidiaries are much less complimentary about the way Japanese expatriates run their offices (see Tsurumi 1978, p. 112, 1992, p. 128; Amako 1992).) Local managers, in particular, are often dissatisfied with many aspects of the Japanese management practices. The primary reason for this seems to be that there is no visible proof that the Japanese office management style is superior to the indigenous (e.g., North American or European) style that local white-collar workers are accustomed to. Unlike production workers, who can often be convinced of the usefulness of the Japanese production management methods by their direct exposure to high quality products coming out of production lines, office workers are not usually surrounded by superior outputs of Japanese expatriate managers.

Furthermore, job rotations of Japanese managers involving executive positions in subsidiary operations make sense from the perspectives of the Japanese parent firms and for the career development of the Japanese managers in the long run, but make little sense to local managers. Another difficulty, particularly in North America, of Japanese style

human resource management is the treatment of female workers. It is estimated that virtually all of the Japanese operations in Canada and the United States have experienced legal suits or other types of personnel management problems with respect to relations with female workers (Tsurumi 1992, pp. 172-193).[16] Given the slow speed with which many Japanese firms are proceeding to provide more upper-level employment opportunities for Japanese women, it is difficult to envisage that Japanese managers sent by the Japanese parent firms to their North American subsidiaries will have the necessary insights for dealing with this problem. It is also unclear how much of the responsibility for human resource management the Japanese managers are willing to delegate to local managers.[17]

Another interesting observation is that Japanese manufacturers have learned from successful U.S. approaches to production problems, but many Japanese firms, if not all, show little indication of having learned from the greater experience of U.S. firms in dealing with female workers and gender issues. Many U.S. firms' subsidiaries in Japan provide better advancement opportunities to women than Japanese firms do. Among Japanese firms, there is some empirical evidence that the ones that provide women with on-the-job training, job rotations, and internal promotion possibilities similar to men's also pay women wages that are more comparable to men's (Higuchi 1991, pp. 266-267). The extent of wage discrimination by gender in Japanese corporations is shown in Table 10.

Another problem with Japanese industrial relations practices is the rigidity that long-term job security imposes on a firm's personnel management options, particularly once a firm has reached a size where not much growth can be expected. There is an implicit understanding that most workers will be promoted over time to higher positions. Yet, after a firm stops growing, there are only fixed numbers of higher-level managerial positions.

Unlike North American firms where seniority protects workers, senior workers in Japan are often expected to leave employment after a certain age. For example, more than half of large Japanese firms with at least 3,000 employees expect to see their managerial-level workers leave voluntarily for outside jobs, usually with considerable reductions in pay, before their mandatory retirement ages. Such job changes often take place before workers reach the age of 50 (Japan, Ministry of Labor 1987, p. 5). These practices, prevalent among large Japanese firms, are part of lifetime job security as implemented in Japan and resemble North American firms' downsizing activities. Japanese firms do, however, find second jobs for most of their retiring workers, who might otherwise have difficulty locating positions because of their ages and the lack of secondary labor markets.[18]

TABLE 10. Male-Female Wage Differentials (Male = 100)

	Japan	*United States*	*United Kingdom*	*France*	*West Germany*	*Sweden*
1960	46	66	61	64	65	72
1970	54	65	61	67	69	84
1980	54	66	79	71	72	90

Source: Mincer (1985).

International Perspective

Some aspects of what are regarded as Japanese industrial relations practices have been implemented in certain U.S. companies, often independently of Japanese experiences. For example, IBM, a union-free firm, had been practicing a so-called "full employment" (no-layoffs) policy until recently. When downsizing was needed, IBM traditionally resorted to voluntary buyouts and early-retirement programs.[19]

Delta Airlines, essentially a nonunion firm, is another company with a no-layoffs policy. Delta also has a policy of job rotation. Internal promotions are the norm for all positions, including top executives. (The only exceptions are pilots and medical personnel.) It is well known that during the 1973 oil crisis, Delta's surplus personnel, including 200 pilots and 400 flight attendants, were assigned to loading cargo, cleaning airplanes, selling tickets, and making reservations (Montanari, Morgan, and Bracker 1990). Job security, and resulting high employee morale, are the consequences of good relations between Delta management and Delta employees. These practices have been in effect at Delta for more than 50 years, much longer than at many Japanese firms.

Worthington Industries, a Columbus, Ohio, steel-processing company, practices a bonus system of the sort found in Japan. The wages of its production workers, most of whom are nonunion, consist of a base salary and a cash bonus equal to a fixed percentage of the company's operating profits. The bonus constitutes 40% to 50% of the worker's total pay. If the company earns no profit, the workers receive only their base salaries.[20]

In 1958, Lincoln Electric Company, the world's largest manufacturer of welding machines and a nonunion company, formalized its lifetime employment policy, which had already been in effect for many years (Sharplin 1987). No layoffs have taken place at Lincoln since World War II. Considerable portions of the incomes of Lincoln employees come from bonuses. The average bonus fell significantly from $20,759 in 1981, to $13,998 in 1982 and to $8,557 in 1983, as a recession hit the U.S. economy. During the severe recession period 1982-1983, 50 factory workers volunteered to join sales teams to market a new Lincoln welder designed for automobile body shops and small machine shops. Some other aspects of management practices at Lincoln also resemble those at Japanese firms. For example, management has the authority to transfer workers, as well as to assign workers to overtime or short time, as required. Internal promotions are the norm, and all hiring is for entry-level positions. There are no executive perquisites such as special offices, washrooms, lunch rooms, or parking spaces.

Many attributes of Japanese industrial relations and management policies that are based on the philosophy of shared goals are practiced at firms such as Texas Instruments, Dow Chemical, and Hewlett-Packard. It is undeniable that companies such as IBM, Lincoln, and Delta Airlines which adopted Japanese-like policies many years ago are industry leaders. It would be interesting to examine how U.S. firms with stated no-layoff policies have fared in dealing with business downturns and downsizing because it may shed some light on the prospects for the future of Japanese industrial relations. Following a business downturn in 1992, Hewlett Packard and Digital Equipment reportedly abandoned their no-layoff traditions and made large cutbacks in personnel.[21] IBM also implemented layoffs, even though its former chairman John Akers believed that "layoffs change the culture of a company completely. The relationship between the

enterprise and the individual changes forever, and boy, I don't want that change if we can avoid it."[22] (Yet, Akers also noted in the 1992 IBM annual report, "If further significant reductions are required, we will reassess full employment and do what is best for IBM.")

The presence of a limited number of successful U.S. firms that have implemented some Japanese-style management practices, as well as the successful transplantation of Japanese production technology to North American and European settings, seems to suggest that more widespread adoption of Japanese management and industrial relations practices and production management methods might prove feasible and profitable in North America. On technology transfer, Shimada (1988, p. 270) advises Japanese manufacturing firms to: (1) ascertain those aspects of their production technologies which are essential to their competitiveness and yet independent of market and cultural conditions, and (2) study methods for transferring them to overseas production units in an organizationally effective manner.

The Japanese Business System and Internationalization

Japanese industrial relations practices form an integral part of the Japanese business system, which emphasizes long-term business relationships among workers, firms, and financial institutions. I have discussed risk-sharing and incentive mechanisms underlying Japanese industrial relations practices, and have also pointed out serious effects of these practices on the external labor market.

Another important aspect of the Japanese business system is that up to 70% of the outstanding shares of Japanese listed firms are held by stable shareholders (e.g., banks and other financial institutions, and other firms). Because of this practice, it is unlikely that a large-scale hostile takeover takes place in Japan. It has also allowed both Japanese firms and workers to invest in workers' firm-specific skills in the long run. (Note that a hostile takeover [or a threat of it] might make such an investment in human capital worthless.) The Japanese stable shareholding, however, has resulted in the lack of a meaningful open market for corporate control and the infringement of individual shareholders' rights.

The Japanese business system is an internally consistent system in equilibrium in the sense that a part of the system cannot be changed for the better without changing the whole system. In response to the increasing international content of the Japanese economy and the resulting international pressure, the Japanese Ministry of Labor (1992a) and Keidanren (1993), the Japan Federation of Economic Organizations, called for a fundamental change in the Japanese business system. It is unclear yet, however, what kind of change should (or will) take place to bring the present system to a new improved equilibrium.

Acknowledgment: Earlier versions of this article were presented at the 1992 Annual Meeting of the Japan Studies Association of Canada at Carleton University, Ottawa, October 16-18, 1992, and at the Sixth Annual Meeting of the Association of Japanese Business Studies in New York, January 8-10, 1993. The author thanks two anonymous referees for their helpful comments on earlier versions of the paper. Research reported in this article was in part supported by the Social Sciences and Humanities Research Council of Canada, a Xerox Faculty Fellowship, and the Centre for International Business Studies at the University of Alberta.

NOTES

1. These industrial relations practices form an integral part of the Japanese business system, which emphasizes long-term business relationships. Such relationships are generally accompanied by risk-sharing and incentive mechanisms as is discussed below. They also stress bargaining in the internal labor market over transactions in the external labor market. See, for example, Nakamura (1991c) and papers discussed there for alternative theories for Japanese industrial relations.

2. Toyota succeeded in shortening the setup time for an 800-ton punch press for the hood and fender from 2-3 hours in 1954 to 15 minutes in 1965 and to 3 minutes in 1970. (The usual setup time in the United States in 1970 ranged from several hours to a day.) A new Nissan plant in Kyushu produces different models (Sunny, Pulser, Sylvia, Safari, etc.) on the same assembly line. The models being produced can be changed at any time (Mitsuhashi 1992).

3. The numbers of job classifications are small in manufacturing industries other than the auto industry, too. For example, there are only 9 job classes in the technician job category at Hitachi, Ltd., a major electrical machinery producer, whereas there are typically more than 100 blue-collar job titles at comparable unionized companies in the United States (Aoki 1988, p. 97).

4. Facing potential firm bankruptcies in 1992, some labor unions in Canada agreed to wage rollbacks in the middle of long-term contracts, despite the COLA clauses.

5. Incentives are generated not only by bonus assessments but also by annual promotions and regular wage raises.

6. *Nihon Keizai, Shimbun,* July 26, 1992.

7. The practical problems faced by female workers include: the tax treatment of female spouses' contributions to government pension accounts, which is quite unfavorable compared to that of men; and the cost of child care, which is not income tax deductible.

8. It is of interest to note, however, that over time, Japanese firms have hired relatively constant numbers of new female university graduates in science and engineering even though the number of positions available to new female university graduates outside technology areas is much greater than in technology areas (*Nihon Keizai Shimbun,* June 19, 1992).

9. Some automakers (e.g., Toyota, Fuji Heavy Industries, and Hino) regularly employ female production workers, but some others (e.g., Honda and Mitsubishi Motor) do not believe female production workers can be efficiently deployed in their multi-shift production facilities because of the Japanese Labor Code prohibiting women from working during certain night shifts.

10. For example, Kodak Japan announced in June 1992 that they were seeking 200 workers, including managers and executives of age 45 or older, to voluntarily quit the firm by September 1992. Those who accept this offer were to be given increased amounts of retirement pay as well as positions at other firms. While this move is part of the downsizing Kodak is engaged in globally, the conditions offered to induce voluntary retirement are similar to the conditions offered by indigenous Japanese firms under similar circumstances.

11. Host countries may also have political reasons for wanting to have factories equipped with advanced machineries (Tsurumi 1976).

12. *Nihon Keizai Shimbun, June 3, 1992.*

13. Suzuki (1991, pp. 126-127) cites three reasons for this difficulty: the relatively weak industrial base found in the area where transplants were built, the lack of maintenance personnel who are knowledgeable across the standard U.S. maintenance job classifications (maintenance in mechanics, electrical engineering, etc.), and the lack of the notion of preventive maintenance.

14. It is usual that just-in-time production systems often require minor nonroutine repairs and adjustments. Shimada (1988, pp. 140-143) reported that in a Japanese plant, the production worker who identifies the need for repair from observing defective products on the production line gets personally involved with the required repair work. Such a practice has not yet become prevalent in a U.S. manufacturing plant.

15. White and Trevor (1983) also reported that 60% of the workers (84% of supervisors and

52% of ordinary workers) at Japanese firms' operations in the United Kingdom receive on-the-job training from Japanese workers sent by the parent firms. Only 11% of the workers at other non-Japanese foreign operations receive this sort of training. For the United States, Higuchi (1991) also reported that more workers at Japanese firms' operations receive on-the-job training than those at U.S. firms' operations (24.4% for Japan versus 13.5% for the United States).

16. Similar situations appear to exist with respect to workers from minority groups. With the enactment in July 1992 of the new Americans with Disabilities Act, further personnel management problems with respect to disabled workers may arise at Japanese firms' subsidiaries in the United States. Some speculate that the treatment of workers with AIDS is also a potential personnel management problem for Japanese firms.

17. It should be pointed out, however, that some Japanese firms are spending considerable amounts of resources to provide their workers assigned to their North American operations with training in the management of human resources and how to delegate management responsibilities.

18. Given the problems associated with long-term employment practices in Japan, the Ministry of Labor recently proposed that Japanese firms reassess the current practice of long-term employment (Japan, Ministry of Labor 1992a). It predicted that more developed secondary labor markets, with wage structures based on current market wages, and more active deployment of female workers and older workers would emerge in the 1990s and that the current long-term employment practices would prove inadequate for coping with these changes in the labor market and expected labor shortages.

19. In the first six months of 1992, it ran 87 buyout and early retirement programs in 37 countries (*Fortune*, July 27, 1992, p. 53).

20. *Fortune*, May 25, 1987, pp. 26-32.

21. *Globe and Mail*, Toronto, August 4, 1992.

22. *Fortune*, July 27, 1992, p. 53.

REFERENCES

Amako, T. 1992. *Nihonjin no Manager* (Japanese Manager). Osaka: Sogensha.

Aoki, M. 1988. *Information Incentives and Bargaining in the Japanese Economy*. New York: Cambridge University Press.

Corcoran, M.E. 1979. "Work Experience, Labor Force Withdrawals, and Women's Wages: Empirical Results Using the 1976 Panel of Income Dynamics." Pp. 82-93 in *The Labor Market*, edited by B.C. Lloyd, E.S. Andrews, and C.L. Gilroy. New York: Columbia University Press.

Fruin, W.M. 1983. *Kikkoman*. Cambridge: Harvard University Press.

Fuss, M., and L. Waverman. 1990. "The Extent and Sources of Cost and Efficiency Between U.S. and Japanese Motor Vehicle Producers." *Journal of the Japanese and International Economies* 4: 221-238.

Goldin, C. 1988. "Marriage Bars: Discrimination against Married Women Workers, 1920's to 1950's." National Bureau for Economic Research Working Paper No. 2747.

Haber, S.E., E.J. Lamas, and G. Green. 1983. "A New Method for Estimating Job Separation by Sex and Race." *Monthly Labor Review* (June): 11-22.

Higuchi, Y. 1991. *Nihon Keizai to Shugyo Kodo* (Japanese Economy and Employment Behaviour). Tokyo: Toyo Keizai Shimposha.

Japan, Economic Planning Agency. 1992. *Nihon Keizai no Genkyo* (The Status of the Japanese Economy). Tokyo: Government Printing Office.

Japan, Ministry of Labor. 1987. *Nihonteki Koyo Kanko no Henka to Tenbo* (Japanese Employment Practices: Changes and Prospects). Tokyo: Government Printing Office.

Japan, Ministry of Labor. 1992a. *Rodo Hakusho* (White Paper on Labor). Tokyo: Government Printing Office.

Japan, Ministry of Labor. 1992b. *Rodo Tokei Yoran* (Labor Statistics Summary). Tokyo: Government Printing Office.

Japan, Ministry of Labor. 1993. *Rodo Hakusho* (White Paper on Labor). Tokyo: Government Printing Office.

Japan, Science and Technology Agency. 1992. *Indicators of Science and Technology.* Tokyo.

Keidanren. 1993. "International Competitiveness of Japanese Companies Towards the 21st Century." *Keidanren Review of the Japanese Economy.*

Kishida, T. 1992. "Japanese-Affiliated Firms in South East Asia and Management Transfer." Pp. 175-190 in *Nihonteki Keiei to Globalization* (Japanese Management and Globalization), edited by T. Furuhata. Tokyo: Hakuto Shobo.

Krafcik, J.F. 1988. "Triumph of the Lean Production System." *Sloan Management Review* (Fall): 15-26.

Maurer, P.R. 1989. *Nihon Shijo deno Kyoso* (Competing in High-Tech Japan). Tokyo: Simul Press.

Mincer, J. 1985. "Intercountry Comparison of Labor Force Trends and of Related Developments." *Journal of Labour Economics* 3: 1-48.

Mitsuhashi, T. 1992. *Sentan Gijutsu to Nihon Keizai* (Leading-Edge Technology and the Japanese Economy). Tokyo: Iwanami.

Montanari, J.R., C.R. Morgan, and J.S. Bracker. 1990. *Strategic Management: A Choice Approach.* Cleveland: Dryden.

Nakamura, A., and M. Nakamura. 1985a. *The Second Paycheck: A Socio-economic Analysis of Earnings.* New York: Academic Press.

Nakamura, A., and M. Nakamura. 1985b. "Dynamic Models of the Labor Force Behavior of Married Women Which Can Be Estimated Using Limited Amounts of Information." *Journal of Econometrics* 27: 273-298.

Nakamura, A., and M. Nakamura. 1985c. "A Survey of Research on the Work Behavior of Canadian Women." Pp. 17218 in *Royal Commission on the Economic Union and Development Prospects for Canada Report,* Vol. 3: *Work and Pay: The Canadian Labour Market,* edited by C. Riddel. Toronto: University of Toronto Press.

Nakamura, A., and M. Nakamura. 1992. "The Econometrics of Female Labor Supply and Children." *Econometric Reviews* 11: 1-71.

Nakamura, M. 1991a. "Modeling the Performance of U.S. Direct Investment in Japan: Some Empirical Estimates." *Managerial and Decision Economics* 12: 103-121.

Nakamura, M. 1991b. "Japanese Direct Investment in Asia-Pacific and Other Regions: Empirical Analysis Using MITI Survey Data." *International Journal of Production Economics* 25: 219-229.

Nakamura, M. 1991c. "Japanese Firm Behavior: Introduction." *Managerial and Decision Economics* 12: 79-81.

Nakamura, M., and O. Hübler, O. 1992. "Is Variability in Pay Compensated?: Empirical Evidence from Japan, Germany and the U.S.." Working Paper, Faculty of Business, University of Alberta.

Nakamura, M., and A. Nakamura. 1989. "Inventory Management Behavior of American and Japanese Firms." *Journal of Japanese and International Economies* 3: 270-291.

Nakamura, M., and A. Nakamura. 1991. "Risk Behavior and the Determinants of Bonus versus Regular Pay in Japan." *Journal of Japanese and International Economies* 5: 140-159.

Nakamura, M., and B. Yeung. Forthcoming. "On the Determinants of Foreign Ownership Shares: Evidence from U.S. Firms' Joint Ventures in Japan." *Managerial and Decision Economics.*

Nihon Jitsugyo. 1992. *Gaishikei Kigyo no Keiretsu to Seireki Chizu* (Foreign-Affiliated Firms' Groups and Territory Map). Tokyo: Nihon Jitsugyo Sha.

Saxonhouse, G.R. 1976. "Country Girls and Communication Among Competitors in the Japanese Cotton-Spinning Industry." Pp. 81-95 in *Japanese Industrialization and Its Social Consequences,* edited by H. Patrick. University of California Press.

Sharplin, A. 1987. "The Lincoln Electric Company, 1984." Pp. 626-646 in *Strategic Management,* edited by L.L. Byars. New York: Harper and Row.

Shimada, H. 1981. *Earnings Structure and Human Investment.* Keio Economic Observatory Monograph No. 4, Kogakusha, Tokyo.

Shimada, H. 1986. *Rodo Keizaigaku* (Labor Economics). Tokyo: Iwanami.

Shimada, H. 1988. *Humanware no keizaigaku* (The Economics of Humanware). Tokyo: Iwanami.

Shimomura, M. 1991. "Americajin no nihonkan" (The American View of Japan). *Mita Hyoron* (October): 20-24.

Shinozuka, H. 1987. "Josei Rodoshano Career Keisei o Motomete" (Seeking the Career Formation of Female Workers). Pp. 102-153 in *Long-Term Forecasts of Labour Supply and Demand,* issued by the Ministry of Labor. Tokyo: Government Printing Office.

Shitamori, M. 1992. "Kokinho man 5nen: Hataraku Onna no Shiwaasedo" (Five-Year Old Equal Employment Opportunity Law: The Degree of Happiness of Working Women). *Bungei Shunju* (August): 330-338.

Suzuki, N. 1991. *Amerika Shakai nonakano Nikkei Kigyo* (Japan-Affiliated Firms in the American Society). Tokyo: Toyo Keizai Shimposha.

Taira, K. 1970. *Economic Development and the Labor Market in Japan.* New York; Columbia University Press.

Toyo Keizai. 1990. *Kaigai Shinshutsu Kigyo Soran* (Overseas Subsidiaries). Tokyo: Toyo Keizai Shimposha.

Toyo Keizai. 1992. *Kaigai Shinshutsu Kigyo Soran* (Overseas Subsidiaries). Tokyo: Toyo Keizai Shimposha.

Tsurumi Y. 1976. *The Japanese Are Coming: A Multinational Interaction of Firms and Politics.* Cambridge: Ballinger.

Tsurumi, Y. 1978. *Japanese Business: A Research Guide with Annotated Bibliography.* New York: Praeger.

Tsurumi, Y. 1992. *Nihon Kigyo no Higeki* (The Tragedy of Japanese Corporations). Kappa Business Series Tokyo: Kobunsha.

United States, General Accounting Office. 1988. *Report to Congressional Requesters: Foreign Investment, Growing Japanese Presence in the U.S. Auto Industry.* Washington, DC: U.S. Government Printing Office.

White, M., and M. Trevor. 1983. *Under Japanese Management: The Experience of British Workers.* London: Heineman.