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Structural Changes in Japan's Labor Market and Its Attraction of Foreign Migrant Workers*

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Abstract

Unlike most European labor importing countries, Japan was chosen by migrant workers as one of the major destination countries not in the 1960s but in 1980s. Employment indicators point to two boom periods, one in the late 1960s and the other in the late 1980s, when the labor market was outstandingly tight. The conditions in the labor market during these two periods were broadly similar as both showed a marked rise in the rate of growth of employment and real wages. But there was an apparent difference in their patterns of labor shortages. In the recent boom period, the labor shortages were sectorally, occupationally and regionally distinct. The revealed labor imbalances were neither simply transitional nor frictional but deeply rooted in the structural changes of the labor market which occurred during the last few decades.

The aim of this paper is to explain these structural changes that have taken place in Japan's labor market in the last thirty plus years with special emphasis on the factors that attract foreign migrant workers.

I. Introduction

In the early 1960s many European countries launched foreign labor schemes through bilateral agreements with Mediterranean labor-surplus countries to fill the huge number of vacancies that occurred due to favorable economic growth. In Japan the 1960s were also a period of tight labor markets under conditions of high economic growth. Interestingly, Japan distinguished itself from many European labor-importing countries by achieving economic growth without attracting foreign migrant workers. It was not in the 1960s but in the 1980s when foreign workers looked at Japan as a destination country.

International migration flows are determined by both pull and push factors. Labor-importing countries do not open the doors to foreign migrant workers simply

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for humanitarian reasons. A Government's policy to agree to the presence of foreign migrant workers or to open the door to them generally is usually a reflection of large and persistent labor vacancies that natives tend not to fill. The conditions that necessitated Japan's labor market to employ foreign workers are of considerable interest.

The aim of this paper is four-fold: first, to establish the special features of recent labor market developments by comparing Japan's last two boom periods; second, to examine the factors which have brought about a substantial transformation of the labor market in the course of economic and social development; third, to demonstrate the structural attributes of the distinct labor imbalances that have arisen as a result of the malfunctioning of the labor adjustment mechanism; and, finally, to argue that it is indispensable to employ foreign workers to fill such vacancies as nationals are reluctant to occupy.

II. "Izanagi" and "Heisei" Booms — Two Tight Labor Market Periods

When one discusses the structural labor market changes in recent decades, it is pertinent to begin the argument with an overview of the long-term labor balance. Figure 1 illustrates the trends of two employment indicators: the "active opening ratio" and the unemployment rate. The active opening ratio is the ratio of active openings to active job applications. It reflects the tightness of labor market.

Two periods can be distinguished in Japan's postwar economic history when the

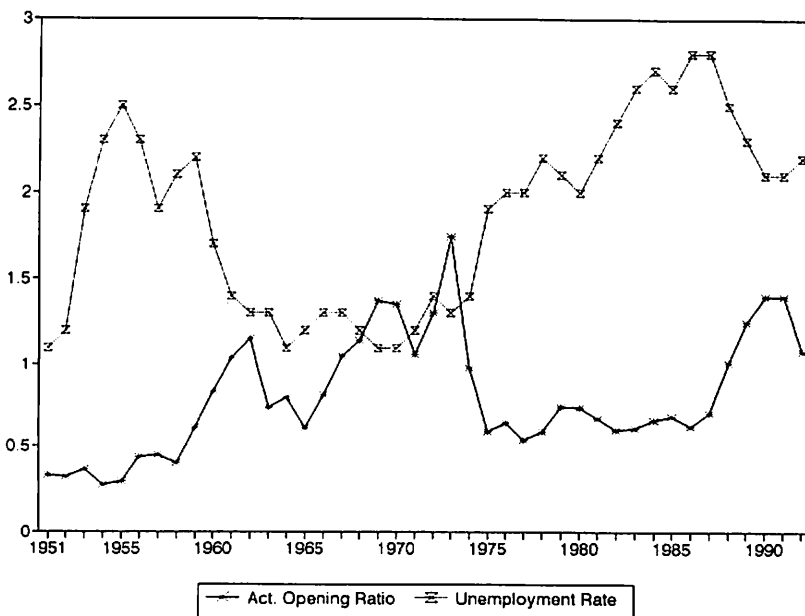


Figure 1 Trend of Employment Indicators

Source: Statistics Bureau, Management and Coordination Agency "Labour Force Survey", Ministry of Labour, *Annual Reprt on Labour Market*.

economy experienced a severe shortage of labor. The first developed during the so-called "Izanagi" boom which started in the latter half of 1965 and lasted 57 months until the mid-1970. The second had its beginnings during the economic upswing of the "Heisei" boom which began in late 1986 and continued 53 months until the beginning of 1991.

These two periods are commonly characterized by their conspicuously high rate of economic growth. The Izanagi boom, prior to the abrupt downward swing caused by the first oil crisis, marked the end of the high economic growth period. The Heisei boom corresponded to the abnormally brisk economy under the so-called "bubble economy". They share a common aspect in the sense that the high final demand, boosted by the increase in income from speculative transactions in the stock market and real estate which were fueled by an oversupply of liquidity, lead to a general intensification of the growth of the real economy. Yet the two boom periods contrast markedly in many respects.

(1) Changes in Labor Supply

As the considerable difference in the employment elasticity of GNP (0.13 in 1965-70 and 0.32 in 1986-91) suggests, the two economic booms occurred under substantially different labor supply conditions. While the increase in the labor force in the Izanagi boom amounted to 4.4 million persons, the corresponding figure for the Heisei boom exceeded it by almost one million (see Table 1). It is noteworthy that the Heisei boom is associated with a more abundant labor supply than its former counterpart. A comparison of the sources of labor supply in these two periods helps to establish the specific features inherent in the Heisei boom.

Rapidly growing industries managed to attract labor sufficient to satisfy their demand through the employment of, for example, new graduates, labor drawn from other industries and sectors, and through the mobilization of in-active persons such as women and older workers who had already left the work force. These supply sources can be classified into two major categories: net addition of labor and reallocation of labor from other industries or economic sectors. New graduates who after finishing school are first-time labor market entrants and the mobilization of economically in-active persons form the first category. The redeployed work force from declining or less productive industries to leading industries constitutes another source of labor, although not a net addition to the size of labor force.

Table 1 throws light on the quantities of these labor supply sources in the two periods. Although some sources overlap, the two sets of figures give an indication of the manner of their functions. What makes these two booms interesting is the pronounced difference in the way the labor market adjusted to the labor needs.

New graduates were the largest supply source of labor in both periods. The overall growth in the labor force, however, is overstated by not taking into account the massive withdrawal from the labor market of women for reasons of marriage and rearing children. It was a lucky accident for the Japanese economy that graduation and entrance into the labor market of the first and second generation of the baby boom population coincided with both periods of economic growth. The second generation, however, was smaller in size by about 2 million compared with its predecessor in the Izanagi period.

Table 1 Labor Supply During Two Respective Periods

	(1965-70)	(1986-91)
Increase in labor force	4,430,000	5,420,000
<Addition to labor force>		
New graduates	9,040,000	6,970,000
Employed women	1,490,000	2,880,000
Employed older workers (65 years and over)	90,000	890,000
<Labor transfers>		
Employed in agriculture and forestry	- 2,460,000	- 730,000
Self-employed and family workers in non-agriculture	570,000	- 530,000

Source: *Japan Statistical Yearbook*, Statistics Bureau, Management and Coordination Agency.

Furthermore, in the 1960s Japan still had a comparatively large reservoir of labor in agriculture which provided much of the flexibility in the labor market. Leading industries enjoyed an abundant labor supply from this industry in the Izanagi boom period. Having exhausted the sector's core workers, however, agriculture could not effectively ensure the same inter-sectoral reallocation of labor in the Heisei boom period. Due to the ageing of the agricultural population, its seasonal workers no longer functioned as a safety valve for other industries. The diminishing labor supply from this source needed to be compensated by other workers during the Heisei boom period.

The Heisei boom was significantly distinguished from the Izanagi period in terms of the magnitude of mobilizing the economically in-active population. For example, as regards women engaged in primary industry, it was not until around 1970 that they became recognized as an effective source of labor. The number of women employed in non-agricultural industries, 1.56 million in 1970, greatly increased in subsequent years to 2.07 million in 1985 and 2.33 million in 1990. The growing labor force participation rates since the 1970s, despite a decreasing presence in agriculture on the one hand and notable advancement in educational enrollment on the other, reflect women's extensive involvement in the labor market: women's labor participation rates grew by 4.0 per cent during the 1970s and by 3.2 per cent during the 1980s.

The re-activation of aged workers who had already left the work force is another potential source of labor supply. Table 1 gives the increase of the employed who are 65 years or older in terms of a statistical proxy. Reflecting the rapid ageing of the working population as a whole, this group showed an amazing increase in the Heisei boom period.

Self-employed and family workers also exhibited striking changes in terms of labor transfer during both periods. While this group accounted for 570,000 workers during the former period, a substantial shift occurred from the self-employed to wage

earners in the recent boom period.

(2) Structural Change in Labor Demand

The two boom periods also display a notable difference as regards the pattern of labor demand.

First, as the trend of employment indicators in Figure 1 demonstrates, the Izanagi boom lasted over a longer period and the labor market was tighter than during the recent boom. Put differently, the existing labor force was more fully employed in the 1960s and early 1970s. One should take note here that the use of foreign workers emerged in response to the comparatively less tight labor market of the Heisei economic expansion.

Second, the pattern of labor demand differs between the 1960s and the recent boom as regards the size of enterprises. Figure 2 demonstrates a striking result in this regard, although the data available unfortunately do not go back as far as the 1960s. Obvious discrepancies in the magnitude of labor shortages by firm size (measured by average new vacancies in this figure) show a different pattern between the early 1970s and the recent boom. While the labor shortage was quite ubiquitous and affected all companies during the first boom, it became predominant in smaller-scale companies in the period of the recent economic upsurge.

The vacancy rate (calculated as the proportion of average monthly new openings in the total number of regular employees) presents an amazing contrast by firm size. The 1973 ratio for firms with 1,000 and more employees was 23.6, but for companies

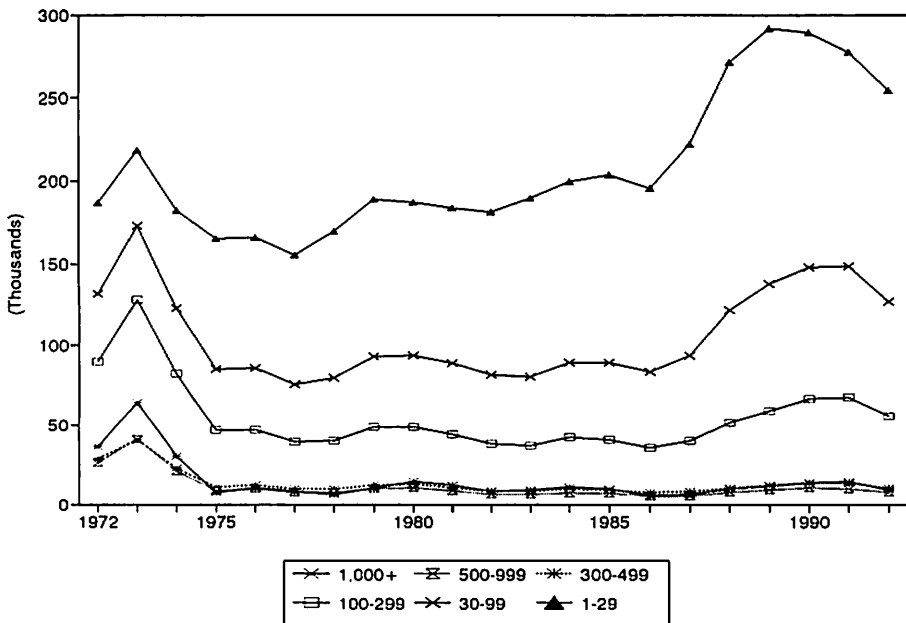


Figure 2 Vacancy Trends by Firm Size (Monthly Averages)

Source: Ministry of Labour, *Annual Report on Labour Market*.

with less than 30 employees it was 10.8. The corresponding figures for 1990 were 6.1 and 9.5, respectively. This pronounced reversal indicates that, despite the tightening of the labor market, large-size firms could successfully attract sufficient labor during the recent boom, whereas small firms could not.

(3) Differentiated Increase of Labor Productivity

There is also a notable distinction in labor productivity between the two booms. Japan's economy experienced an unprecedented, continuous and rapid increase of labor productivity in the Izanagi boom. Surveyed industries recorded a striking surge of 86.9 per cent during 1965 to 1970 compared with 46.3 and 30.4 per cent in the first half of the 1960s and 1970s, respectively. Despite the intense economic activity of the Heisei boom, labor productivity did not display any conspicuous increase.

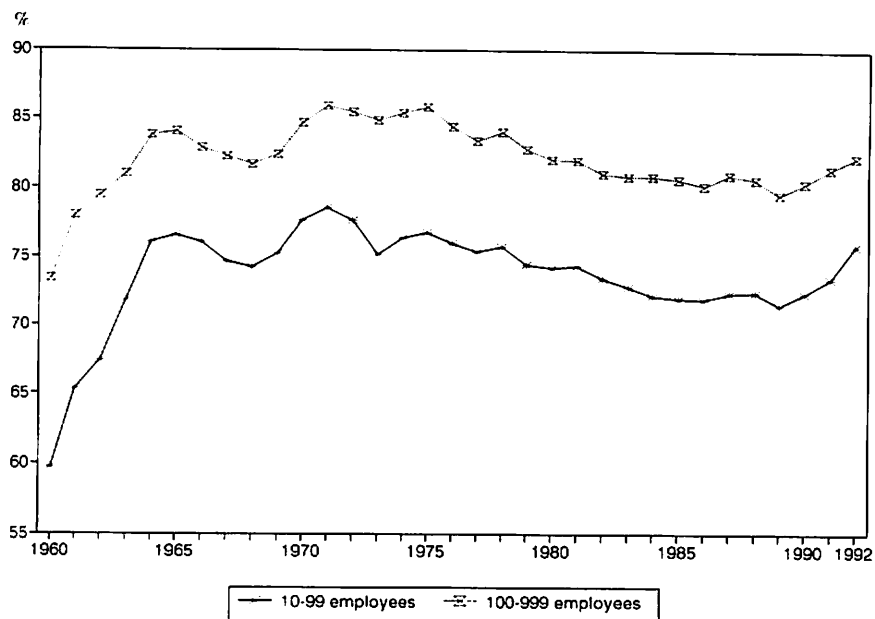
The phenomenal upsurge of labor productivity during the Izanagi boom is accounted for by a series of extensive measures taken by firms to cope with expanding labor needs at a stage when previous main supply sources, for example, the excess labor in agriculture and the timely appearance of newly graduated youths of the baby boom generation, were about to lose their preeminence. This period corresponds to a period of dramatic transition of the leading industries, which shifted out of labor-intensive light industries into capital-intensive heavy or chemical industries.

Almost 2.8 times as much capital (in 1985 prices) was invested in incorporated enterprises in the Heisei boom compared with the preceding boom. The expansion of investments in the recent boom, however, seems to have been less effective in terms of reducing labor needs compared with the Izanagi period. Two reasons inherent in recent economic developments are responsible for the lower labor-saving effect of investment. First, highly robotized and automatized capital-intensive manufacturing industries render extremely costly further steps to retrench labor and thereby to increase labor productivity. Second, non-production sectors such as services, wholesale/retail trade and restaurants, are highly labor intensive and thus score lower on labor productivity. The recent expansion of these labor intensive tertiary industries tends to halt the increase of labor productivity measured over the economy as a whole.

III. Contraction of Wage Differentials During the Two Booms

It can be seen that wage differentials among economic sectors tend to become smaller in a tightening labor market. Figure 3, which illustrates the long-term trend of wage differentials by firm size, seems to support this observation. Huge wage gaps existed between large and small-scale companies at the onset of the high economic growth period due to the prevalent labor supply and the substantial gap in productivity among sectors. The wage differentials remarkably contracted during the first half of 1960s and once again during the Izanagi boom after a temporary widening in the mid 1960s.

Contraction of wage gaps in this period had proceeded in two ways. First, while the starting salaries for new graduates had increased annually 3-6 per cent in the



**Figure 3 Trends of Wage Differentials by Firm Size
(1,000 employees over=100)**

Source: Ministry of Labour, "Basic Sarvey on Wage Structure".

latter half of the 1950s, they showed a striking upswing of 13-18 per cent in the 1960s (Ujihara, 1989, p.30). With growing labor demand, companies craving for a share in the allotment of new graduates were forced to provide higher starting salaries than their competitors. Small-scale firms, where working conditions are generally less favorable than in larger firms, needed to raise their wages sufficiently to attract new recruits. Consequently, the starting salaries that were paid under some secondary subcontracts exceeded, more often than not, that of primary ones (JIL, 1963, p.22). Soaring starting salaries then gave rise to an overall increase of young workers' wages irrespective of the firm size. The narrowing of wage gaps during the high economic growth periods was most obvious among young workers.

Wage differentials narrowed also through a change in workers' employment status during the Izanagi period. In the initial stage of high economic growth, many workers were employed as temporary workers and, due to the expanding labor demand, many of their employment contract was renewed continuously. But they were discriminated against relative to regular workers not only by the amount of wage paid but in terms of various fringe benefits. The tight labor market provided temporary workers with an excellent chance of improving their employment status. To attain the improved hiring conditions that included stability of employment and a higher wage, many temporary workers changed their status. Consequently, their job mobility contributed to the narrowing of the existing wage gap.

As Figure 3 demonstrates, a conspicuous contraction of wage differentials in the 1960s and early 1970s was followed by almost two decades of a gradual widening that reflected the slack labor market. In the late 1980s, the new narrowing reversed that trend in Japan's economy.

The economic growth of the Heisei boom generated an amazing increase in labor

demand. The higher starting salaries paid to new graduates, which influenced other categories' wage levels, pushed up the whole wage hierarchy in enterprise as well as in macro-economic terms. The starting salary in smaller companies often exceeded the level paid in larger companies. In the manufacturing industry, for example, companies with more than 1,000 regular employees increased starting salaries for male upper secondary school graduates by 29.0 per cent in the seven years after 1985. Corresponding figures for medium-size (100-999) and small-size (10-99) firms were 30.2 and 32.3 per cent, respectively. During the recent economic boom, wage reversal became much more common, even in comparison with the Izanagi boom period, indicating intense competition among firms to fill the many existing vacancies.

The rising labor demand in the Heisei boom narrowed the wage differentials not only among regular workers but also between regular and non-regular workers. Hourly wages paid to women part-time workers in the Tokyo area are an example: payments in manufacturing and wholesale/retail trade or restaurants jumped by 36.6 and 40.4 per cent during the seven years after 1985, whereas the corresponding figures for regular female employees in establishments with 30 and more employees were 31.2 and 33.9 per cent, respectively. Discrepancies in the rate of wage increases became especially remarkable after 1990.

IV. Structural Change in the Labor Market and Distinct Labor Mismatches

(1) Transformation of Labor Demand under Economic Restructuring

Natural resources and energy-dependent heavy or chemical industries which had led high economic growth in the 1960s and early 1970s were replaced by high value-added, low energy and low resource-consuming industries, including new types of service industries which in turn have supported the new moderate growth path after the oil shock. Such restructuring of the economy has transformed the nature of labor demand as well.

Facing persistent pressure to cut running costs, enterprises have externalized less profitable or labor-intensive subsidiaries and supplementary activities such as transportation, building maintenance, janitorial services and data processing. These developments have led to retrenchment in big businesses while creating new employment opportunities in service areas, known as "business service" industries.

The diversified consumption demand of a well-off society generated another set of business opportunities. The period of high economic growth coincided with the period of urbanization of Japanese society. An urbanized life style and the expanded involvement of housewives in the labor market externalized many household services. This conditioned the development of new types of personal services. Retail trade and restaurants adjusted to the emerged demand under the new life style.

The emerging new businesses were generally labor intensive. That is why they could effectively absorb labor during the post oil-shock period when many other industries reduced their demand for labor. For example, the manufacturing industry added only 1.6 million to its labor force during the 15 years after 1975, whereas

employment in services and wholesale/retail trade and restaurants grew by 5.4 and 2.9 million, respectively. Many new businesses are more likely to be small-size establishments (Ujihara, 1989, p.317). A slight increase of small and medium-size companies in their share of total employment since 1975 seems to reflect such a development.

These new businesses require much manual labor. At the same time, a variety of professional services can be performed only by persons with special occupational qualifications. Many services require a wide range of very different and quite heterogeneous skills that are at a much higher level than the relatively few basic skills demanded of a typical assembly-line worker.

The massive employment of non-regular workers also has a relatively long history. In the initial stage of the high economic growth in the 1960s, businesses in the manufacturing sector employed large numbers of temporary workers to cope with the rapidly expanding labor needs. Many of the workers, however, were promoted to regular employees during the overheated economy of around 1970.

One of the characteristics of Japan's labor market in the post oil-shock period was a dramatic increase in non-regular employment. With the low economic growth during this period, companies were forced to review their previous employment practices. Under the prevailing uncertainty and persistent threat of losing competitive superiority in the world market, they introduced various measures to curtail labor costs. Less costly casual workers, such as housewives and working students, replaced regular workers on a large scale in many firms and some dispatched workers began to share the same jobs side by side with regular employees. Emerging new businesses in the service industry, along with retail trade and restaurants, typically had an exceptionally high dependence on non-regular workers.

(2) Advanced Educational Attainment and its Impact on Labor Placement

The placement of new graduates has always been an important source of labor. Thus not only the total supply but the quality of the labor may significantly affect the labor market. One of the most remarkable changes in the quality of new graduates since the 1960s is their advancing educational attainment. While enrollment in the upper secondary schools stayed at 57.7 per cent in 1960, it has risen to 90.8 per cent after two decades of dramatic progress. Advancement to higher education (junior college, university and post graduate schools) progressed strongly in comparison with upper secondary schools. Consequently, the supply of lower secondary school graduates became almost negligible, accounting for only 3 per cent of the total supply in the post oil-shock period (see Figure 4).

The advancement in educational attainment of new graduates has significant implications as regards the qualitative improvement of the labor supply, not only through the supply of well- educated applicants who are sufficiently qualified to adapt themselves to the latest technologies, but also through their occupational preferences that are conditioned by the level of educational attainment. Especially the latter has an outstanding importance when one considers the segmentation of the labor market and the attraction of foreign unskilled workers.

"Societies attach a social value or prestige to different kinds of jobs" (Böhning, 1994, p.20). The Social Stratification and Social Mobility Survey documents an

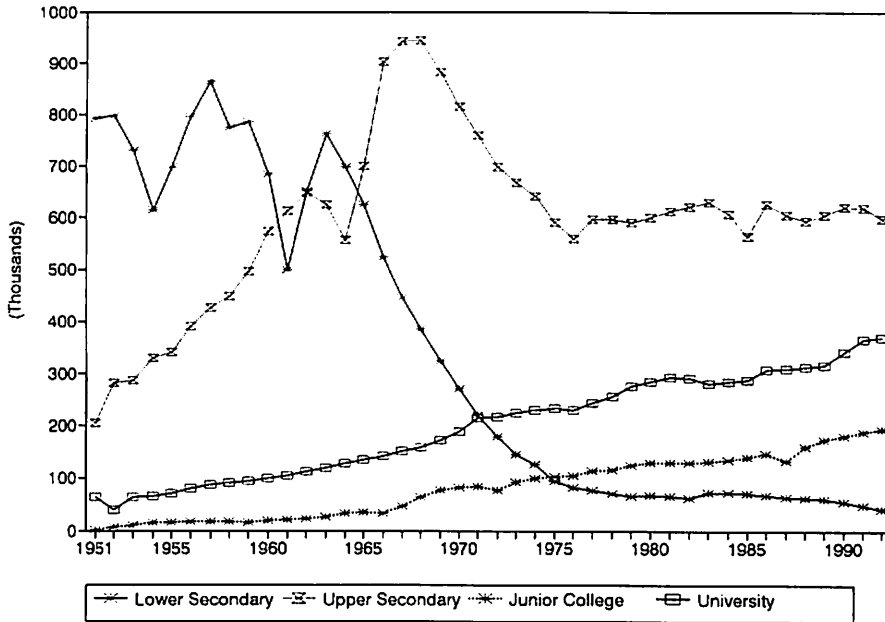


Figure 4 Employment of New School Graduates
 Source: Ministry of Education, "School Basic Survey".

intimate correlation between occupational prestige and educational attainment. According to the survey, respondents prefer their children's future jobs to be in professional, technical and managerial occupations such as medical doctors, engineers, professors and high government officials who enjoy much prestige. Semi-skilled jobs such as lathe workers, printers and drivers reputedly have low prestige. The report summarizes the hierarchical order of occupational prestige as follows: professional → managerial → clerical → sales → skilled → semi-skilled jobs (Tominaga, 1979, pp.422-423). With regard to the existing hierarchical order in occupational preference, the advancing educational attainment not only of oneself but also of one's parents influences the children's future jobs: manual labor becomes a distant possibility (Tominaga, 1979, pp.316-317). Low prestige jobs are more likely to be accepted by target workers—such as students, certain housewives or workers past retirement age, "because they intend to work only for a while in them or because the job's lack of prestige or of career prospects does not worry them as they expect not to be associated with that kind of work for ever" (Böhning, 1994, p.20).

Figure 5 illustrates working persons' educational attainment by industry. Education, medical and professional services, government, finance and insurance show a higher percentage of employed persons with greater educational qualifications, whereas in primary industries, textile mill products and transportation or communication the workers' educational attainment is relatively low. The distribution by level of educational attainment demonstrates a marked correspondence to the hierarchical order of occupational prestige revealed by the Social Stratification and Social Mobility Survey.

Table 2 shows the job placement of new graduates (column A) next to the proportion of employed by industry (column B).

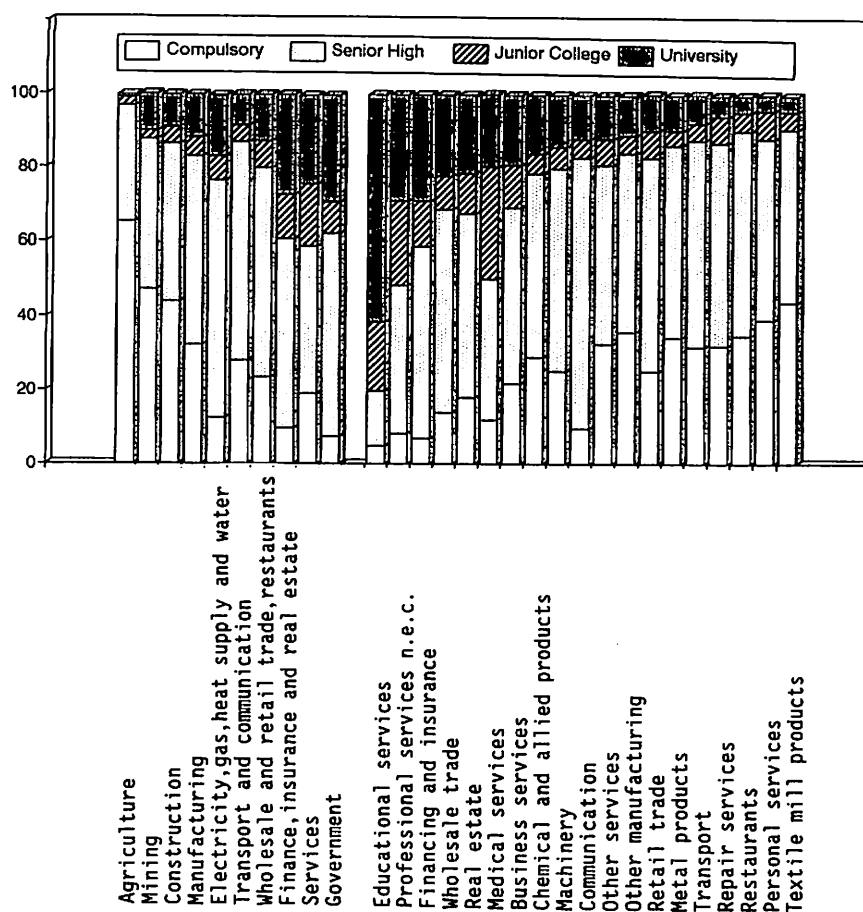


Figure 5 Working Persons by Industry and Educational Background

Source: Statistics Bureau, Management and Coordination Agency, "1987 Employment Status Survey".

Table 2 Job Placement of New Graduates by Industry

	(in 1990)		
	(A) new graduates	(B) employed by industry	A-B
Agriculture, forestry, fishery	0.5%	6.5%	- 6.0%
Mining	0.1	0.1	0.0
Construction	4.9	9.4	- 4.5
Manufacturing	33.1	24.1	9.0
Electricity, gas, water supply	1.0	0.5	0.5
Transportation and communication	3.5	6.0	- 2.5
Wholesale/retail trade, restaurants	19.6	22.6	- 3.0
Finance, insurance, real estate	8.5	4.1	4.4
Services	26.7	22.3	4.4
Government	6.3	3.1	3.2

Note: Figures in column (B) are from the 1990 Population Census.

Source: *School Basic Survey Report*, Minister's Secretariat, Ministry of Education.

The profile of new graduates' placement is quite different from the existing employment pattern. Manufacturing, finance, insurance and real estate, services and government successfully attracted disproportionate large numbers of new graduates compared with the stock of the employed in each sector. By contrast, primary industry, construction, wholesale and retail trade, restaurants, transportation and communication are under-supplied with new graduates.

Two factors are responsible for this: the new graduates' occupational preference and the development of particular sectors. As for the first, growing educational attainments influence new graduates' job finding in a twofold way. Although a longing for highly prestigious jobs is universal, the struggle to attain such jobs is especially intense among highly educated people because they can afford to be more choosy than others in realizing their job aspiration. However, whether they can attain their occupational aspiration or not depends on the number of vacancies. The rise and fall of industries during economic restructuring is often reflected in the job opportunities to which new graduates are attracted. Expanding industries can generally provide more favorable employment conditions and thus successfully attract young labor, while declining industries tend to be shunned by new labor market entrants.

According to Table 3, the pattern of new graduates' occupational profile differs by growing educational attainment. Graduates with a lower educational background are more likely to find their jobs in manufacturing, wholesale/retail trade and restaurants, whereas highly educated graduates tend to find jobs in industries such as finance, insurance, real estate, services and government.

Table 3, reflecting a gradual transition toward a post-industrial society, also illustrates a significant shift from secondary to tertiary industry in the occupational preferences of new graduates, irrespective of their educational level. Highly educated people avoid manufacturing more and more. They have turned to jobs in finance, insurance and real estate during the last two and half decades. The advancing economy and the restructuring that goes with it provide rich working opportunities

Table 3 New Graduates' Job Placement by Industry and Educational Attainment
(in 1965,1990)

	Lower secondary		Upper secondary		High	
	1965	1990	1965	1990	1965	1990
Agriculture, forestry, fishery	7.3%	1.7%	3.6%	0.5%	0.5%	0.2%
Mining	0.1	58.1	0.2	0.1	0.2	0.1
Construction	4.3		3.3	4.7	4.3	4.7
Manufacturing	62.0		36.4	37.7	29.9	26.4
Electricity, gas, water	0.4	37.7	0.9	1.1	0.6	0.7
Transportation, communication	2.9		7.4	3.9	3.5	3.2
Wh./re. trade, restaurants	7.9		24.0	24.5	14.7	14.6
Fin., insu., real estate	0.1	37.7	9.2	4.1	8.2	14.2
Services	11.6		6.7	17.7	25.0	28.6
Government	0.3		6.1	5.7	5.6	6.5

Source: *School Basic Survey Report*, Minister's Secretariat, Ministry of Education.

for highly educated persons.

Placements of upper secondary school graduates and highly educated persons in wholesale or retail trade and restaurants remained unchanged during the period concerned. By contrast, there was a marked increase not only of highly educated persons but also of upper secondary school graduates in services. Both sectors are usually labor intensive and require large numbers of unskilled labor to provide various services. While traditional businesses are left aside by new entrants, the rapidly expanding new businesses are not only attractive for highly educated youngsters but also secure the employment of less educated ones.

Unfortunately, a more detailed breakdown of the industries is not available to the author. Other empirical information such as rankings of occupational popularity sometimes indicate a detailed pattern of students' occupational preferences. Preference gaps exist not only across sectors but also within sectors. For instance, transportation is an example, where airline companies with high wages and seemingly elegant work enjoy wide popularity among university graduates, whereas taxi or lorry drivers are viewed as unfavorable jobs by students due to the demanding nature of the work. Railway companies seem to be placed in the middle with a wide dispersion of popularity. Occupations can be similarly diverse. Clerical and highly technical staff who are supposed to be future managerial and technology development personnel in big businesses enjoy a high reputation among university graduates, whereas many direct service-providing jobs merely attract upper secondary school graduates. The real estate industry also enjoys what one could call a bifurcated reputation. While big businesses are highly popular among university graduates, small real estate firms on the street seldom find enough new graduates.

According to a survey carried out in 1989 by the Ministry of Labour, while 22.3 per cent of new graduates from senior high school (upper secondary) found their jobs in small-scale firms with 5-29 regular employees and 24.2 per cent in large ones with 1,000 and more employees, corresponding figures for university graduates were 9.6 and 41.2 per cent, respectively. This survey shows a clear positive correlation between the advancement of educational attainment and graduates' preference for placement in larger companies.

(3) Distinct Labor Mismatches and the Malfunctioning of the Wage Allocation Mechanism

(i) "3D" jobs and "undesired" jobs

It is widely believed that low wages increasingly repel native workers and lead employers to look for foreign workers in their place. Small-size firms have, on average, the lowest wages and are thus likely to be the largest employers of foreigners. The wage dimension of this hypothesis could be challenged by the perceived contraction of wage differentials by firm size during the tight labor market conditions of the Heisei boom. However, disaggregated occupational data indicate that both contraction and widening of wage differentials took place during the Heisei boom. The occupations involved tell an interesting story.

The annexed Table 1 lists the top and bottom 20 occupations in terms of the level of wage paid to men workers in 1986, calculated with data from 66 selected

occupations. Although manufacturing is somewhat over-represented, the occupations are indicative of both similar and contrasting jobs in the recovery as well as of differential access to them by foreign workers.

The high wage group involves some jobs such as metal fusing, iron and steel tempering or metal moulding, which benefited also from comparably high wage increase. One may assume that the large number of unfilled vacancies in these occupations put pressure on the already high wage levels. These are actually occupations where foreign workers are frequently employed, legally or illegally, on a massive scale.

These occupations had previously been filled by native men workers with a low educational background. The kind of skills that they acquired on the job was useful to them as well as to new entrants. The drying up of new entrants made these jobs dependent on older workers, with the result that chronic and persistent vacancies emerged. What is specific to these vacancies is that they are more and more shunned by native youths. This is due not so much to low wages, because these jobs are fairly well paid in absolute terms, but due to the "3D" nature of the jobs. A survey carried out by the People's Finance Corporation Research Institute documents that among small-size firms there are quite a few that are not working on the margins of profitability. These comparatively well-performing firms are expanding businesses which are rather likely to have to hire foreign workers to benefit from the opportunities of the market (Inagami, et al, 1992, p.90).

Meanwhile many occupations which belong to the low wage group do not attract labor in sufficient numbers although these occupations have less of a "3D" nature. They are mostly labor intensive and at a low level of labor productivity. Because of the low wages paid, labor needs had to be met partially through target workers. These occupations have failed to attract the necessary labor not only because they pay low wages but offer no prospect of giving rise to better-paying jobs. They tend to be avoided by young workers because they cannot see how to move up the job-cum-wage ladder. Böhning has categorized these bottom-wage and dead-end jobs as "undesired jobs" (Böhning, 1994, p.20).

(ii) disproportionate sufficiency of labor needs by industry and occupation

The annexed Table 2 elucidates the labor sufficiency ratio and its recent change in industries and some selected occupations in the manufacturing and construction industries. Under the tightening labor market during the six years starting 1985, the labor sufficiency ratio has declined in industries as a whole by 15 per cent. The decline was most conspicuous in industries such as construction, manufacturing and transportation. Although the change in this period is less remarkable in finance and insurance industries, (i.e. high paid sectors that are generally regarded as favorable jobs), even these industries had a larger number of unfilled vacancies in 1991 due to the outstanding growth occurring during the bubble economy.

A breakdown by occupation in this table also shows an overall downturn of the ratio as well as tremendous disparities among occupations. Although only one fourth of the needed automobile assemblers could be retained in 1989, that occupation still enjoyed a comparably abundant supply of labor. In contrast, the automobile industry suffered from a scarcity of sheet-metal workers and welders, who perform an

indispensable task in that industry. A low sufficiency ratio for wood pattern makers, carpenters, plumbers and construction machine operators points to the fact that the difficulties in labor procurement were serious and widespread in the construction industry. A conspicuous decrease in the labor sufficiency ratio in civil construction (paving workers) and transportation (warehouse workers), whose firms enjoyed a relatively satisfactory sufficiency ratio prior to the Heisei boom period under the then less tight labor market, suggests a rapid diffusion of labor shortages to these industries.

A survey carried out by the Ministry of Labour in 1990 demonstrated the varied nature of prevalent labor shortages. Some of the mismatches it revealed are merely transitional but most of them seem to be of a structural nature.

The survey result in the annexed Table 3 quantify the number of unfilled vacancies. They were especially high for blue-collar workers and various machine operators in the manufacturing, construction and transportation industries. Besides the traditional service supply, rapid expansion of new business services together with the extensive introduction of office automation (OA) in many clerical and managerial jobs has given rise to growing labor needs in the fields of data entry and processing. These vacancies were created and stayed unfilled partly because of the galloping expansion of this type of labor and partly as a result of a delayed response in education to train youths for new technology. Since the limited supply of lower secondary graduates could not fill the enormous number of vacancies in less skilled jobs provided by new businesses, newly trained middle-aged women part-time workers were mobilized to take up some of the slack. In these particular fields, re-activated women can effectively fill labor market gaps. The lagging response of higher education to the actual labor needs created a labor mismatch in standard jobs as well. These labor shortages are transitional, though, in the sense that additional labor in terms of education and (re-)training can be expected to fill the existing vacancies.

Besides such transitional shortages, the same table also includes jobs that were illustrated as high paid jobs in the appended Table 1. Highly educated native youths are reluctant to fill these vacancies on account of the jobs' "3D" nature, despite the fact that most of them are highly paid. This type of labor mismatch became prevalent in some jobs in the recent boom period. It is rather structural in the sense that the absolute level of wages alone is no longer effective to lure needed labor.

(iii) regional maladjustments

The difference in the average active opening ratio of the top and bottom 5 regions (prefectures) calculated from the ratio of active openings to active applications was 3.87 in 1970, whereas the corresponding figure for 1990 was 1.47. These results suggest that the regional disparity of labor imbalance was larger in the former period than in the recent boom. However, prior to the first oil crisis Japan has had a powerful adjustment mechanism in terms of internal migration, which effectively reduced regional labor imbalances. The 1960s were characterized by an outstanding upsurge of internal migration (see Figure 6). The number of long-distance internal migrants, whose main components were newly graduated youths and farmers who moved to find jobs in urban industries, reached the level of 4 million a year during

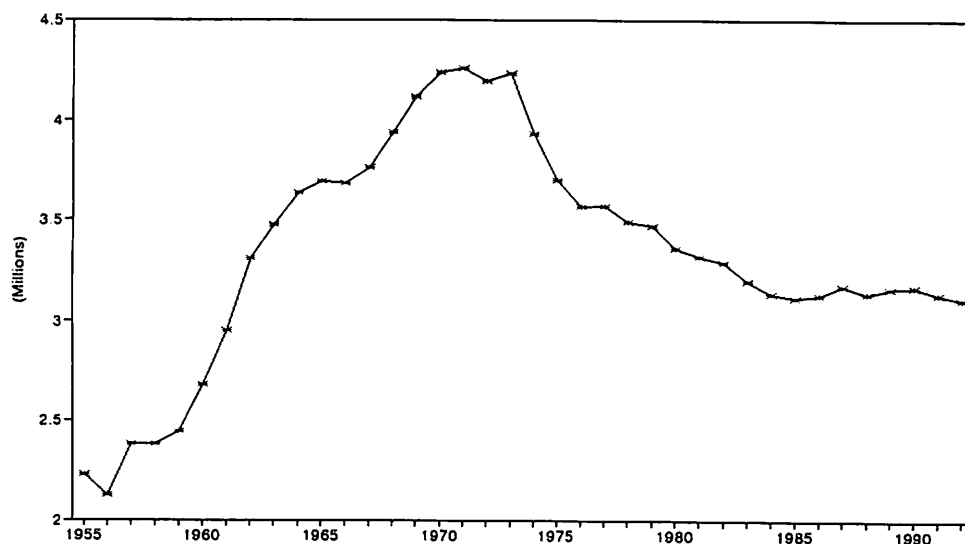


Figure 6 Trend of Internal Migration Flow

Source: Statistics Bureau, Management and Coordination Agency "Internal Migration in Japan Devired from the Basic Resident Registers".

the Izanagi boom (4 per cent of total population).

The number of internal migrants has diminished by more than one million in the decade since 1971, when the number of internal migrants marked a record high of 4.26 million. Interestingly enough, internal migration did not display any notable upsurge even under the remarkable economic expansion of recent years. The internal migration rate calculated from the ratio of inter-prefectural migration to total population has almost halved from 4.08 per cent in 1970 to 2.56 per cent in 1990. Considering the additional fact that the spillover of urban population to surrounding regions due to increased difficulties in obtaining accommodation in metropolitan areas constitutes the major component in recent internal migration flows, internal movements seem to have lost their regional labor adjustment function rather more than the above statistics show. Chronic labor shortages in some regions coexisting with excess labor in others evidence this feature of structural change in Japan's labor market.

The price mechanism beloved by neo-classical economists had worked fairly effectively in mobilizing and allocating labor resources in the former period. Its functioning, however, was considerably weakened in terms of adjusting various labor imbalances in the recent boom. Adjustment disability in today's Japan has incurred distinct sectoral, occupational and regional labor shortages.

V. Attraction of Migrant Workers in Segmented Labor Markets

(1) Possible Measures to Alleviate Labor Shortage

Employment indicators show a conspicuous tightening of the labor market in the Heisei boom, especially in the four years since 1986. As the trend of overtime working

shows, the initial reaction to cope with the expanding labor needs was the more extensive use of employed laborers. The supply of laborers, however, had already reached its limit as early as 1987, after two years of notable rise, suggesting that overtime could no longer function as an effective measure to meet the shortages. An increase in labor productivity, especially in the machinery industry, although incomparable in its dimensions to that recorded in the Izanagi boom period, highlights the extensive measures taken by firms to curtail labor costs.

When labor demand expands and cannot be met through these measures, additional labor must be procured in some other way. Scrambling for labor, of course, brings about an overall upsurge of wages. Still, the rise in wages is not necessarily enough to attract Japanese workers in every industry or occupation. It depends both on the acuteness of the labor shortage and the solvency of the industry in question. Thus, wage rises differ significantly among industries, occupations and regions.

There are some other possible measures that companies can use to cope with prevalent labor shortage problems. Table 4 shows a survey result on selected labor saving measures.

The introduction of labor saving machinery in conjunction with the subcontracting of activities gained popularity as measures to curtail labor demand. Large-scale companies favor the externalization of labor-intensive processes by establishing subsidiaries or redeploying production bases abroad. In small-size companies, however, these options seem to be feasible only to a limited extent. Industry data give striking results. Due to the nature of the businesses, transportation, communication, construction and service industries do not have as wide variety of options as manufacturing enjoys.

Options with a high percentage score in the survey, however, do not necessarily receive a high priority in actual business decisions. Especially in the case where future economic prospects are uncertain, business enterprises tend to pursue less risky options.

The mobilization of women for labor market purposes, reflected in a steady

Table 4 Some Selected Measures for Economizing Labor Force

	(M.A.)			
	Subcontract works	Externalize to newly established companies	Redeploy firms abroad	Introduce labor saving machinery
1,000+	45.6%	41.7%	19.6%	79.5%
100-999	41.1	14.2	4.2	66.5
30-99	38.0	6.4	2.3	50.8
Construction	49.1	10.4	0.2	36.2
Manufacturing	46.7	10.1	5.7	73.1
Trans. & comm.	25.2	7.6	1.0	40.8
Wh/re.tr. & restaurants	24.0	9.1	2.1	45.4
Finance & insurance	26.8	26.5	3.4	59.9
Services	39.1	6.0	1.0	45.2

Note: M.A. denotes "multiple choice answers".

Source: *Industry Labour Situation Survey Report*, 1992, Ministry of Labour.

increase in the labor participation rate, has displayed tremendous fluctuations over time due to the changing magnitude of labor demand. There was a sharp rise in women's involvement in the labor market at the final stage of the Heisei boom under conditions of intense labor demand. Similarly, the aged workers demonstrated a remarkable upsurge in their labor participation in 1989-91 accounting for 700,000 laborers out of 890,000 recorded during the Heisei boom. Their expanded labor participation indicates that a conspicuous tightening of the labor market kept the aged workers in the labor market or re-mobilized retired people.

When labor demand expands beyond the scope and manner that the existing or mobilizable work force can satisfy, business enterprises are forced to implement more or less risky measures to cope with that demand, such as labor-saving investments or the externalization of labor-intensive processes, including redeployment offshore.

Small-scale firms, however, whose labor shortages tend to be more severe, are less likely to implement such options. Firstly, they usually have insufficient finance to introduce large labor saving investments. Secondly, due to the lack of information or the specific technology required and, above all, the expected high risks, they hesitate launching themselves into foreign countries. Thirdly, small-scale companies, which form the bottom layers of each industry, cannot afford to subcontract or externalize many parts of their activities. And finally, with regard to new businesses including new types of retail trade and restaurants, which emerged and bloomed with diversified consumers' needs, services are mainly produced and provided only at the particular spot where they are consumed.

This suggests that, despite the potential inherent in various measures to alleviate the pressure of labor shortages, there exist some industries or firms where these measures are hardly applicable. For them, to recruit the necessary labor in some way or other is the only way to solve existing labor shortages. They are forced to look elsewhere under the constraints of a structurally transformed labor market. It was quite natural that these firms would look to engage workers from Asian countries whose people had already had extensive experience in Middle Eastern countries employing migrants.

(2) Attraction of Foreign Workers

At the end of the 1960s when the number of Japanese women called back to the labor market grew until the outbreak of the first oil crisis discouraged it, the introduction of foreign labor emerged as an urgent issue among business circles. A proposal submitted by the Japan Federation of Employers' Association in 1970 clearly recognized foreign workers as one of the most appealing sources of labor supply to solve the then serious labor shortage. They had not only worked out plans to introduce foreign workers but some schemes were partially put into practice. An estimate of the annual net inflow of foreign workers, calculated by the residual method (disembarkation less embarkation), displays a small hump around the Izanagi boom period (see Figure 7). Cumulative net inflows during 1965-73 amount to about 34,000, a negligible size compared with 719,000 laborers who accumulated during the Heisei boom. Just about when the employment of foreigners had become widely accepted the oil crisis totally undermined Japan's economic situation and foreign workers were no longer needed. That is, the oil crisis hit Japan when the

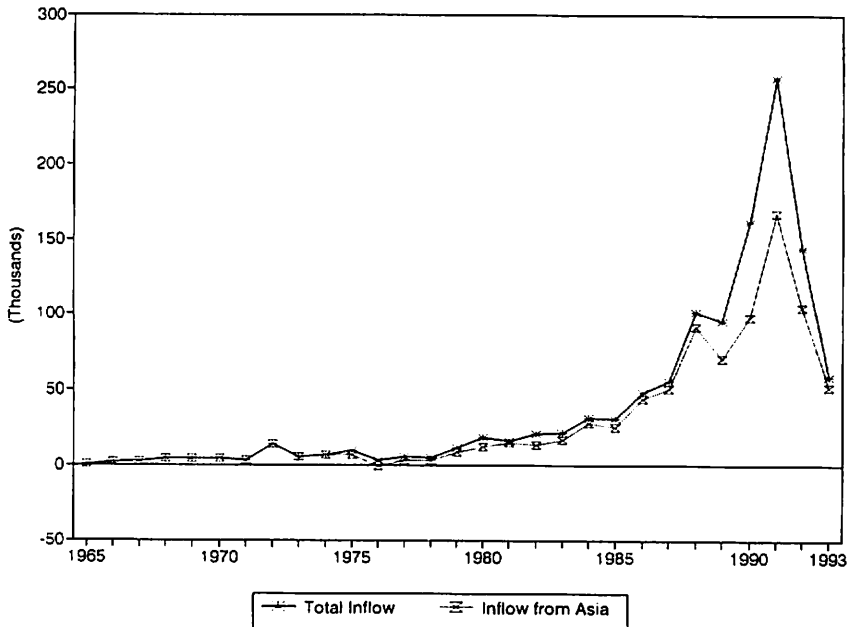


Figure 7 Net Annual Inflow of Foreign Nationals
 Source: Ministry of Justice "Statistical Survey on Legal Migrants".

country was about to opt for the import of foreign labor.

As Figure 7 demonstrates, around 1980 the net annual inflow of foreigners started to show a slight upsurge. The annual net inflow averaged only 3,000 per annum up to 1985 but the flows have substantially increased ever since.

Three different stages can be distinguished in these recent inflows. Asian women mainly from the Philippines and Taiwan comprised the first wave of migrant workers. Unlike in Singapore and Hong Kong, they were recruited for Japan not as housemaids but mainly as hostesses in bars and nightclubs where the filling of vacancies with natives had become progressively difficult. This type of migration continued until today and constitutes a steady stream of migration to Japan. Nevertheless, this inflow was not originally recognized as a foreign migration because of its specific occupational concentration (Chiba, 1994, p.2).

A second, new movement emerged in the later part of the 1980s that was characterized by the massive entry of workers into industrial employment. These migrant workers were mostly single men workers from the P.R. China, the R. Korea, the Philippines, Pakistan, Bangladesh and Thailand who often overstayed their visas to work. They found employment mainly in the manufacturing and construction industries. Jobs such as metal casting and fabrication, plastic moulding, road construction, building construction and demolition provided foreigners with plenty of working opportunities. Iranians should be included in this flow, although they joined the labor market a little later. Clandestine workers usually worked side by side with native non-regular workers in low prestige jobs (Ohtake & Ohkusa, 1993, p.8). The

absorption of foreign workers, foreign clandestine workers among them, reflected the serious and persistent labor shortages in these industries and occupations which had been progressively shunned by new native labor market entrants.

Services, retail trade and restaurants have also provided foreigners with a considerable number of job opportunities. These industries equally suffered from serious labor shortages not so much because of the "3D" nature of the work but mainly because of the rapid expansion of activities, irregular working hours and, above all, because these were "bottom-wage" and "dead-end" jobs (called "undesired jobs" by Böhning, 1994). Although vacancies were partly filled by target workers such as re-activated women and native working students, these jobs were not attractive enough to draw a sufficient number of full-time employees from among the natives because of the unfavorable nature of jobs. Foreign college and pre-college students, mainly from the P.R. China and the R. Korea, filled vacancies in urban labor market such as waiters/waitresses, dishwashers, store clerks, newspaper deliverers and cleaners.

The enforcement of a new immigration law in 1990 marked the onset of the third stage of development in the absorption of foreign labors in Japan. By introducing a severe penalty for illegally employing foreigners, on the one hand, and by legalizing the employment of foreign workers of Japanese descent, on the other, the new immigration system caused foreign workers to appear in Japan both as legals and illegals. The arrival on the scene of the Japanese South Americans, the so-called "Nikkeis", opened up a new category in the labor pool which heretofore was not available. The discrepancy between total inflows and those from Asia in Figure 7 can mainly be attributed to the emergence of Nikkeis, who began arriving from South American countries such as Brazil and Peru in the late 1980s under the prospect of institutional reform. Big businesses, relatively well supplied with native workers, were hesitant to employ illegal workers to satisfy additional labor needs. Through the legalization of one particular stratum of foreign workers the new reform paved the way for big businesses to profit from hiring these foreign workers. Legally entering Nikkeis found employment in large-size automobile assembly plants, auto parts companies and in the electric appliance industries. Clandestine workers in medium-size firms were partly replaced by Nikkei workers. Small-scale enterprises, however, had to rely, as before, on Asian migrant workers.

VI. Concluding Remarks

This paper has argued that labor imbalances of various dimensions during the Heisei boom were not simply transitional or frictional but brought about by structural changes in the labor market. Labor shortages became distinct and differentiated sectorally, occupationally as well as regionally. The coexistence of unfilled vacancies and unrealized placements constitutes a mismatch of labor that is structural in nature. The structural change in the labor market that occurred in the course of recent development has reduced the allocation function and capability of wages to distribute labor resources across industries, occupations and regions effectively.

Japan is now structurally dependent on foreign labor in the long term. The short

term ups and downs will, of course, occasion fluctuations in the number of foreigners to be employed, but they won't dispense with the need for migrant labor.

Japan's economically active population is forecasted to decline rapidly after hitting an all-time high in the late 1990s (Institute, 1992). Due to the accelerated ageing of Japan's population, a labor shortage of approximately 5 million persons is anticipated around the year 2000 even under a relatively moderate economic growth rate (for example, the forecasts presented by the Federation of Economic Organization and Japan Development Bank).

The ongoing demographic process necessitates sustained economic growth because the ageing of the population will occur at an unprecedented rate and the economy must grow sufficiently to afford an appropriate level of social well-being. Japan's ageing society calls for high economic growth which will keep the increase of labor demand at a substantial level. What are the possible measures to fill the emerging gaps being brought about by the absolute decrease of Japan's economically active population?

As for the option to retrench domestic labor demand, one should not expect much either from the further redeployment of production abroad or from labor-saving investments. After a decade of relocation of considerable portions of production abroad, further redeployment of production abroad, if it came about, might threaten to disrupt the existing production system in Japan.

Expected future advancement in labor productivity will also be unlikely to reduce labor shortages. As for the well-developed manufacturing and other production industries, few of the possibilities available in the 1960s for a more efficient use of labor are left to pursue today. Services as well as some other emerging new businesses comprise a major component of labor-intensive processes. Thus their increasing importance in the national economy may contribute to widening the labor gaps instead of narrowing them.

When measures to dampen the growth of labor demand have only a marginal effect, the net additions to the labor supply are of cardinal importance. As Table 1 indicated, one cannot expect much from the slackening traditional labor supply sources such as new graduates and inter-industrial transfers. An extensive mobilization of economically in-active populations, such as women and retired people, is generally accepted as a main component of the native labor supply. The problem is to what extent and in what manner they can satisfy the anticipated labor demand.

Women workers are expected to be the largest potential source of additional indigenous labor. Although their involvement in the labor market heavily fluctuates, reflecting the phases of the business cycle, their labor force participation rate has been steadily increasing in recent decades. If one assumes that the conceivably highest participation rate is around 70 per cent during women's productive years age, which is about 20 per cent higher than the current average participation rate and almost comparable with the situation in the United States, about 7 million women would be added to the labor force during 1995-1999 and a further 2 million in the first decade of the 21 century. Although calculations shown an absolute decrease in Japan's subsequent labor supply, this calculated result is large enough to liquidate the anticipated labor shortage of 5 million around the turn of the century.

However, women's labor participation depends significantly on a country's social and cultural background. Considering that the upsurge recorded in the last two

decades in Japan has brought about a mere 7.3 per cent increase, it is hardly realistic to assume that the determinants which govern the participation in the labor market will alter drastically in a five-year period to reach a level of participation of 70 per cent. At the same time one should note here that women's high participation in the labor market would, a generation later, result in diminished future labor supply insofar as it would entail a declining birth rate.

Even if they could be successfully mobilized, some specific attributes inherent in women's working activities would possibly make such macro figures meaningless. First, under the existing employment system women have re-entered the labor market mostly as non-regular short-time workers. They are unlikely to fill vacancies open mainly as full-time jobs. In most cases jobs provided for re-activated women have working conditions that are substantially different from those they had previously enjoyed, which is one reason why highly educated women are hesitant to re-enter the work force. Second, women workers are more restricted than men in terms of time sharing. Some specific jobs excepted, night work is generally not favored by women workers. And third, women find it difficult to perform intense physical labor.

Older workers are not as striking as women in terms of contribution to the net increment in the labor supply, but their number can also be expected to increase. Given the existing labor participation rate, one can estimate the number of aged workers to be 5.5 million in the year 2000, which exceeds those in 1993 by 1.8 million. Their number is anticipated to increase to 7.0 million by 2010.

The aged population, however, has been a central component of labor mismatch in the course of time. It can supply extra labor even in extremely tight labor markets. Employers, however, have been reluctant to employ older people either because they are relatively expensive compared with young workers or because they are less able to cope with modern technology and the concomitant working conditions (Böhning, 1994). Similar to women workers, their employment possibilities are rather limited, because they cannot perform the intense physical labor characteristic of jobs with labor shortages (Abella, 1994), which is usually performed by young men workers.

Problems lie not simply in the numeric balancing of macroeconomic figures but also in the distinct and differentiated mismatch of labor where young native workers in a well-off society are unwilling to fill the persistent vacancies and where the re-mobilized aged or women workers are unable to take them over. Despite sometimes fairly attractive wages, Japanese youngsters shy away from many jobs because their "3D" nature. Others remain unfilled because the wages are low in absolute terms and the prospect of them being increased is unlikely.

Foreign workers are not as much bothered as Japanese are by the "3D" nature or the lack of social prestige of jobs in the country to which they move. They look to maximize their earnings in spite of the various constraints levied upon their working activities. "3D" jobs in Japan can attract some foreign workers because of the existing wage gaps between host and home countries. Their needs meet the interests of Japan's employers, not only because they are young workers who can fill the vacancies in question, but also because employers can expect a reduction of labor costs. When vacancies occur due to a mismatch of labor, there is a gap that foreign migrant workers can fill to a substantial element whether they are legally present or not.

Finally, the structural changes in the labor market generated in the course of economic development have partially paralyzed the functioning of the wage-labor allocation mechanism. There are some factors anticipated in the future development of the economy suggesting that a more extensive dependence on foreign migrant workers is inevitable. First, because of the limited supply of young native workers and because of the “3D” nature of some jobs, certain occupations have become exclusively dependent upon aged Japanese. As the ageing process continues, this section of the labor market will expand, and employers are bound to look to foreign workers to satisfy their needs. Second, the further expansion of the tertiary sector will in turn expand the number of “undesired jobs” on a scale which native target workers cannot satisfy entirely.

The latest protracted and serious recession has only temporarily slowed the rate at which foreign workers accumulate in Japan. It is inevitable that economic recovery will come and incur yet more “structural” mismatches of labor. Migrants will thus be required and flow into the country. It is high time that a long-term labor policy be designed that adequately takes account of the structural change in the labor market.

References

- Abella, M. (1994), “Labor Shortages and Foreign Workers in Small Firms of the Republic of Korea, report on the ILO/KLI Survey of Small and Medium-Scale Enterprises”; published jointly with Young-bum Park in M.I. Abella, Y.-b. Park and W.R. Böhning, *Adjustments to Labour Shortages and Foreign Workers in the Republic of Korea*, ILO, Geneva, 1994, pp.1-18.
- Böhning, W.R. (1994), “Undesired Jobs and What One Can Do to Fill Them: the Case of the Republic of Korea, report on the ILO/KLI Survey of Small and Medium-Scale Enterprises”; published in M.I. Abella, Y.-b. Park and W.R. Böhning, *Adjustments to Labour Shortages and Foreign Workers in the Republic of Korea*, ILO, Geneva, 1994, pp.19-39.
- Chiba, T. (1994), Problems of Foreign Workers in Contemporary Japan (Japanese), *Bulletin of Japan Statistics Research Institute*, The Japan Statistics Research Institute, Hosei University, Tokyo, No.20.
- Inagami, T, Kuwahara, Y. and The People’s Finance Corporation Research Institute (1992), *The Actual State of Foreign Employment in Small-Size Companies* (gaikokujin rodosha wo senryokuka suru chusyo kigyo), chusyo kigyo research center, Tokyo.
- The Institute of Population Problems, Ministry of Health and Welfare (1992), *Population Projection for Japan: 1991-2090*, Tokyo.
- The Japan Institute of Labor (JIL)(1963), *Labor Market under High Economic Growth Period (I)* (keizai seichoka no rodo shijo I).
- Ohtake, F. and Ohkusa, Y. (1993), Substitutability and Complementarity of Native and Immigrant Workers in Japan (Japanese), *Monthly Journal of the Japan Institute of Labour* (nihon rodo kenkyu zasshi) Vol.35, No.12.
- Tominaga, K. (1979), *Social Stratum of Japan* (nihon no kaiso kozo), Tokyo University Press.

Ujihara, S. (1989), *Japanese Economy and Employment Policy* (nihon keizai to koyo seisaku), Tokyo University Press.

Annex Table 1 Wages and its Trend by Occupation (Men)

[high paid 20 jobs]

bus driver (business)(350.7, 10%), steel-making worker (310.5, 15%), car driver (private)(310.4, 7%), crane man (300.2, 15%), steel rolling and drawing worker (298.9, 16%), metal fusing worker (289.8, 19%), iron and steel tempering worker (288.6, 21%), slinger (283.7, 9%), relief printer (277.3, 11%), general chemical operative (276.3, 11%), chemical analyst (275.5, 13%), glass former (272.7, 12%), non-ferrous metal smelter and pourer (271.8, 13%), paper making worker (271.5, 14%), metal moulder (270.3, 22%), systems engineer (269.9, 11%), automobile assembler (267.4, 21%), type-picker and type-setter (265.7, 14%), pattern forging worker (264.1, 24%), machine inspecting worker (261.4, 17%)

[low paid 20 jobs]

computer operator (231.3, 16%), cook (229.5, 20%), pottery worker, pottery and porcelain (228.3, 15%), paper container maker (228.2, 13%), truck driver (private)(227.7, 15%), salesman of household utensils (227.6, 16%), spinning-loom adjusting worker (224.6, 5%), computer programmer (224.2, 6%), joiner (215.7, 14%), baker and confectioner (215.1, 13%), assembler (communication equipment)(213.7, 16%), radio (television assembler)(211.1, 26%), odd jobber (211.0, 10%), automobile repairman (207.3, 14%), furniture maker (207.3, 12%), sewing machine worker (199.1, 11%), private police guard (190.4, 15%), timber worker (185.5, 16%), building interior cleaner (155.1, 23%), probationer cook (152.2, 21%)

Source: "Basic Survey on Wage Structure," Ministry of Labour.

Note: Figures in parentheses denote monthly contract cash earnings in 1986 in thousand yen and wage increase during 1986-1990 in per cent.

Annex Table 2 Labor Sufficiency Ratio in Industries and in Some Selected Occupations (the lower the percentage, the more acute is the labor shortage; the higher the percentage change figure, the more pronounced was the variation in the sector or occupation concerned)

[INDUSTRIES]	(1985)	(1991)	(change)
All industries	32.5%	17.5%	- 15.0%
Construction	44.6	22.0	- 22.6
Manufacturing	32.6	16.9	- 15.7
Transportation and Communication	29.8	13.6	- 16.2
Wholesale/retail trade and restaurants	25.5	15.4	- 10.1
Finance and insurance	16.1	11.6	- 4.5
Real estate	25.3	18.2	- 7.1
Services	27.9	17.0	- 10.9

[SELECTED OCCUPATIONS]	(1985)	(1991)	(change)
Metal press machine operator	20.9%	13.9%	- 7.0%
Sheet-metal worker	13.4	7.5	- 5.9
Electric welder	16.5	8.0	- 8.5
Gas welder, cutter	17.0	9.3	- 7.7
Assembler (household electric machine)	24.5	18.4	- 6.1
Assembler (electric communication equipment)	28.6	17.8	- 10.8
Automobile assembler	29.6	26.9	- 2.7
Automobile repairman	9.9	5.7	- 4.2
Seafood processing worker	41.9	30.0	- 11.9
Sewing machine worker	22.9	18.9	- 4.0
Furniture maker, joiner	20.7	13.0	- 7.7
Plastic mould worker	25.9	16.9	- 9.0
Painter	15.7	7.5	- 8.2
Packing, baling worker	25.8	16.9	- 8.9
Construction machine operator	22.2	8.4	- 13.8
Carpenter	12.8	5.2	- 7.6
Wood pattern maker	15.4	5.7	- 9.7
Plumber	13.9	6.9	- 7.0
Civil construction, paving worker	37.9	12.8	- 25.1
Warehouse worker	41.0	20.5	- 20.5
Deliverer	26.5	15.5	- 11.0
Cleaner	34.6	17.9	- 16.7

Note: Sufficiency ratios are calculated by the following formulas:

For industries:

$$\text{S.R.} = \frac{\text{total number of placements}}{\text{total new openings for regular employees}} \times 100$$

For occupations:

$$\text{S.R.} = \frac{\text{Placements}}{\text{new openings for regular employees in August}} \times 100$$

Source: Ministry of Labour, "Report on Employment Security".

Annex Table 3 Shortages of Technical Workers (top 15 occupations) in 1990

[number of vacancies in occupation]	(in person)
Purchase clerk and canvasser	309,800
Sales worker	188,700
Passenger and truck driver	173,800
Systems engineer	122,900
Accounting clerk	110,400
Electronic and electric machine apparatus assembler and repairman	108,800
Wood pattern maker	108,100
Word processor and personal computer operator	96,100
Tailor, sewing machine worker	82,800
Construction machine operator	78,800
Machine assembler, repairman	78,700
Draftsman, tracer	78,000
Computer programmer	74,900
Metal machinist	72,200
Plumber	71,600
<hr/>	
[percentage of shortages in occupation]	
Wood pattern maker	58.8%
Reinforcing bar assembler	54.4
Interior decorator, heat insulating worker, window frame builder	53.9
Scaffolding man	48.6
Plumber	40.8
Carpenter	39.7
Crane and hoist operator	36.3
Boiler and steel construction maker	36.0
Systems engineer	34.9
Civil construction surveyor	33.3
Construction machine operator	32.8
Garden designer, gardener	30.5
Computer programmer	30.4
Plating worker	29.8
Sheet-metal worker	29.7

Source: Ministry of Labour, "A Survey on the Supply and Demand of Technical and Other Workers", 1990.