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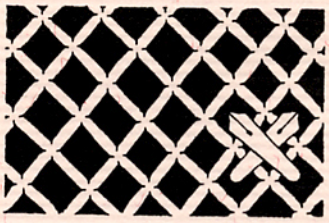

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Labor Market Trends and Policies in Japan after 1990: A Review of Recent Studies and Policy Evaluation

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1. Introduction

The Japanese government has introduced public accesses of their own evaluations for selected policies from 2001. According to Government Policy Evaluations Act, both the central and the local government should report every aspect of policies[1]. The methodology of policy evaluations is still tentative, but at least, some information on evaluation of the policy effectiveness can be available, otherwise only limited or no information had been opened.

The Japanese economic performance was notorious, as it is often called "the lost decade(s)". When I was committed in forecasting the Japanese labor market conducted by the then Ministry of Labour in 1992, the assigned GDP growth rate pa for the following decade was 3 per cent. This was the most authoritative figure by the Economic Council of the Economic Planning Agency. As a result, the unemployment rate in 2002 by our forecast was 2.2 per cent.[2] This figure was obtained by artificially introduced extremely high rate of technical progress, if not, the market would be in severe labor shortage. Actually, the three per cent GDP growth achieved only in a single year 1996, and the unemployment rate was 5.37 per cent in 2002. This suggests that even two years after the corruption of the stock prices and the land prices the authority had an optimistic view on the future Japanese economy. The authority's view was that sometime in future everything would return as in the late 1980s, and the recession was in short run.

In fact, the recovery has not happened for a decade, and now ordinary Japanese people think that it will never be occurred. Still some of us are dreaming that the assets prices will increase up again without any severe restructuring; then heavy non-performing loan shall become huge assets. At the same time, the Japanese labor market will experience significant labor shortages because of aging, as some experts often say. But I must add, labor shortages are due to our previous forecast, which has not yet been updated. At the moment, youth labor market is not short, judging from higher unemployment rate than before and from zero or negative growth of wage rate for fresh persons with no experience[3].

This review attempts to survey recent researches on economic impacts of the Japanese government employment policy under deflationary period. It will contain four parts: (1) a brief description of the recent performance of the Japanese labor market, (2) explanation of legal reforms during the period, (3) case study for employment performances, (4) discussion of the impacts of the policy interventions to

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[1] In my interpretation of the act, the policies include (a) the policy that is a whole system to achieve a certain goal, (b) the measure that include a set of activities performing a policy, and (c) the administrative activity that is fundamental unit of a measure. http://www.soumu.go.jp/hyouka/030406_23_eng.html

[2] Koyo-seisaku-kenkyukai ed. [1992].

[3] Even for large-scale company with more than 1,000 regular workers and equity of 500million yen and more, wage of fresh persons educated junior college and occupational school grew at –0.2% for technical jobs and at -0.1% for office jobs in 2002, initial wages for university graduates grew negatively at -0.2% for office jobs and –0.4% for technical jobs in 2002. Youth unemployment rates are 12.0% for those at the age of 15-17, 16.7% for those at the age of 18-19, 12.8% for those at the age of 20-24, and 7.4% for those at the ages of 25-29 in March 2003. Youth unemployment rate was less than 5% in March 1993.

labor markets and production market.

The other issues such as "Employment at Will and Prohibition of the Abuse of Dismissal" are discussed in Sugeno [2002], but not discussed here. Recently, revision of the labor standard law introduced the clear statement for prohibition of employer's dismissal right to abuse. Sugeno [2002] points out that employers tends to be more cautious to employ full-time workers because the authority clearly requires for strict conditions of employer's dismissal for full-time workers. This may cause the labor market to inflexible, and decrease employment opportunity for younger applicants.

1. An Overview of the Japanese Labor Market in the deflationary period

The deflation is one of the most significant characteristics of the Japanese macro economic condition after 1990. Table 1 shows the behaviors of three representative price indices in this period, the consumer price index, the GDP deflator, and the wholesale price index. The most sensitive price index of three is the wholesale price index, which reports closest to the producer price, i.e. the commodity price just after forwarding from factory. Since 1991, except for 1997, the rate of annual change of the wholesale price index (WPI) has been negative[4]. The GDP deflator has decreased since 1995, also except for 1997. And finally, the consumer price index (CPI) has declined in 1995 and started to decline continuously from 1999.

Along with the deflation, import demand has been increased from 1980 onward, as shown in Table 2. From demand side, the period is divided into two phases in 1990s: in early 1990s the contribution of private capital formation for equipments was negative, and the public capital formation has decreased in late 1990s. In early 1990s, The Japanese government tried to pump up domestic demand using conventional measure such as construction. The government deficits soured up and at last the GDP growth rate was 3% positive in 1996, and then the government introduced 2% tax increase. But in 1997 the Japanese economy experienced bankruptcies of one of the major banks and the major security companies. This was the most symbolic event that showed the government and the central bank had no more helped troubled banks and companies. The growth expectation for the Japanese economy has never returned positive since then.

As shown in Table 2, residential construction has decreased in long period, and the result was decline of construction industry. The figures of Table 3 are real GDP growth rate by industry sector. Construction has been negative throughout 1990s and after. But it was construction that absorbed unemployment due to increase of the government public investment. This situation is clearly expressed in Table 4, the regional unemployment rate.

Employment of Hokkaido and Kyushu are heavily depend on public expenditure, especially, public spending on road and the other construction. For these two regions, unemployment rates increased

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[4] There was 2% increase of the consumption tax in 1997. The price for 1997 reflects the tax increase, which raises purchase prices basically at every stage of transaction. There are some exemptions, such as export prices, and transactions for very small retailing shops of which annual turnover is less than 10 million yen.

sharply in 2000 compared with those in 1995. Cutting public investment in the late 1990s resulted increase of unemployment rates in Hokkaido and Kyushu districts.

GDP growth rate for the manufacturing industry reflects exports to foreign countries under exchange rate fluctuations. Before mid 1996, strong yen promoted foreign direct investment and rapidly increased imports from East Asian countries. In 1998, the economic crisis of East Asia negatively affected the Japanese manufacturing company, on the one hand, because of extreme loss of foreign assets, and on the other hand, Japan decreased exports of parts supply for the South East Asia. Therefore, employment demand in the manufacturing industry has been affected from two sides: foreign direct investment reduces domestic employment, and parts supply for production in abroad increases domestic demand for employment. But at the same time, gradually the center of production has shifted from the South East Asia to China. As a result, employment in the manufacturing industry decreased for these periods as shown in Figure 1.

Contrary to everyday news of troubles in the Japan's bank and the other financial organizations such as insurance companies, the GDP growth rates for the financial and insurance industry exhibit largely positive in Table 3. This is partly due to extremely rapid growth of consumer financing firms or loan sharks. Employment has not changed significantly for these years. And undergraduate students still want to work in financial sectors when they graduate, mainly because salary of the financial sectors is much higher than that of the manufacturing sectors for university graduates.

Business situation for the retail and wholesale industries was severer than before, however, in these industries employees has grown by 1,360,000 persons during 1990-2001. This volume of increased employees exceeds the total employed persons in the general machinery industry 1,290,000 persons.

Furthermore employees have increased in the service industry, which amounts to 5,165,000 persons. This increased number of employees in the service industry is almost the same as the number of employed in the construction industry 5,458,000 persons. Even in the deflationary period, these industries have shown strong demand for employment, and absorbed employees from the manufacturing industry that lost 2,060,000 persons during the same period. It should be noted that some of the increased numbers of employment in the service industry are caused by enterprises classified to the service industry from the manufacturing industry. It is said that many manufacturing enterprises stop domestic production and started to deal with manufacturing products as a wholesale or an import company. But the precise extent of this reclassification effect is not yet investigated.

Nevertheless, Figure 2 shows the Japanese UV (Unemployment-Vacancy) curve during 1963-2001. In the long run, after 1990 the Japanese labor market has been entering into strong demand deficiency, although it has shown slight increase of miss match unemployment that is shifts along with 45 degree line. Phillips curve of Figure 3 shows the same trend during the same period. Current situation is at right bottom of the figure, which presents low wage increase and high unemployment rate, the textbook depression.

Unemployment rates by age and gender in Figure 4 also present significant increase for overall generation and for both genders. Unemployment rates for younger male (below 25 years old) and older male (above 50 years old) have increased a little faster than average, still its U shape has been unchanged

as before.

All these macro economic indicators in Japan show depression from 1990, which with as low interest rate as zero, increase of unemployment for all ages and genders, low wage increase, and deflation. The huge government deficit with aging society and the heavy non-performing loans threatens people's expectations for the future. As a result, the consumer expenditure grows almost nothing, except for expensive branded commodities and everything related to health. It is worth to stress that employment in the service industry and the retail and wholesale industry has increased in spite of the macro economic downward pressure with deflation. I will describe what has happened in the labor market policy during this period in the next section.

2. The Employment Policy Reforms and Adaptations to the Labor Market

The employment policy in Japan consists of four major bodies/systems.[5] (1) Supporting system for adjustment of labor demand and supply, (2) Security system for unemployed persons, (3) System for employment stability and promotion, (4) System for development of worker's job ability. The employment policy reforms have been in all these four aspects from 1990, and some of them include new enactments, and the others revise the existing labor laws. Ministry of Health, Labour and Welfare (MHLW) has started to evaluate their policies according to the above categories, which are closely connected with both the labor law system and the organization of MHLW. Following Sugeno [2002], I will introduce briefly the main reforms in the four categories.

(1) Supporting system for adjustment of labor demand and supply

There are three aspects of the reform in this category. First of all, the systems relate to the job centre or the public employment security office (Shokugyo-antei-sho, recently they say Hello Work). As Japan had accepted ILO 96 treaty (1949) and the Employment Security Act (1947) prohibited employment exchange service with fee, only the public employment security office was able to find and advice job for people.[6] After 1997 ILO introduced more flexible scheme for job matching service, Japan ratified ILO 181 treaty in 1999. The Employment Security Act was reformed in 1999, and has carried out since 2000. The revised Employment Security Act permits to do job matching services with fee except for harbor transportation workers and construction workers (Subsection 11 of Section 32). It looks like significant deregulation of the service, but in fact all who want to do job matching service with fee and without fee except for school must get permission from the Minister of MHLW and be instructed and supervised by the government (Section 5).[7] As a result, the number of placement agencies has not increased dramatically, even though the Act permits employment exchange service for office workers from 1997.[8]

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[5] Sugeno [2002].

[6] The exceptions are trade unions for supplying workers without fee and schools for finding jobs without fee.

[7] According to Kojima [2000].

[8] See Kojima [2000].

As Kojima [2000] and Yashiro [1999] point, one of the reasons for this institutional reform was based on the fact that the number of persons who found their jobs through the public employment security office was declining and the other job search methods such as through the magazine and the other advertisement obtained increasing popularity. But in fact, as shown in Table 5, the number of persons using the public employment security office has dramatically increased from 1995 to 2000. This is because more job seekers after 1995 than before had eligibility to receive unemployment benefit, which requires at least 6 months contribution for unemployment insurance. The job seeker must register at the public employment security office and must consult with the officer at least one a month, in order to obtain unemployment benefit. Whether the public employment security office is an active measure for finding job or not depends on the unemployment insurance system.

Nakamura [2000] examines the function of the public employment security office, whether it actually is more efficient to find the job for seekers than the private exchange services. His findings are following three points: the public employment security office matches job applicants and company with lower earnings than the other methods. The wage decline before and after unemployment is larger in the public employment security office than the private services. No difference of promotion and wage increase after finding job has been found, whether an applicant uses the public or the private employment services. He also describes the negative correlation between the number of job seekers using the public employment security office and the labor market tightness. But his estimation does not control the eligibility of unemployment insurance.

Secondly, the Employment Security Act had prohibited commissioning of labor recruitment, but the revised Act permits it and to recruit from outside commuting range. After the revision, an employer can recruit directly by an advertisement or a letter from anywhere in Japan. On the other hand, commissioning of labor recruitment is still restricted by the authority.

Thirdly, the revision on temporary help agencies has been introduced. At the same time, the Worker Dispatching Law has been enacted in 1986 and twice revised in 1996 and 1999. Table 4 shows the process of the deregulation on the Worker Dispatching Law. The Employment Security Act prohibited private employment exchange service business, and private worker dispatching businesses. But there were a few exceptional jobs such as nurse, who can be employed by a private temporary help agencies. Manufacturing industry has many subcontractors, which in fact have the similar function as the temporary help agency. On the contrary, service industry does not have multi-strata subcontractors, but demands increasingly for temporary jobs in software development and other office work. Responding these needs from businesses, the Ministry of Labour enacted the Worker Dispatching Law and revised the Employment Security Act in 1985. At first, 16 categories of jobs had been applicable for temporary help agency, but in the 1996 revision the Ministry extended the applicable jobs to 26 types, and in the 1999 revision the Ministry abolished the regulation on job type, all jobs can be dispatched by temporary help agencies except three types of jobs. An important condition of dispatching is on the duration that must be less than 1 year. If the duration of a dispatched worker exceeds one year, the employer (not the temporary help agency) must hire the dispatched worker as a regular worker, if she/he wants. This restriction is related to the Ministry's effort to introduce equal treatment between full-time

worker and dispatched workers, though it does not include enforcement. The number of registered temporary help agency workers increased after 1995, from 600,000 in 1995 to 1,070,000 in 1999.[9] Before 1995 the number fluctuates between 500 thousands and 700 thousands, but during 1995-2000, it has increased by 490,000. The growth of the temporary help agency was conspicuous comparing with the other businesses, however Kojima [2000] and Yashiro [1999] pointed out that the business is far from mature in Japan. Nonetheless, executives from the temporary help agencies are growing their voices in the government council.

(2) Security system for unemployed persons

Unemployment insurance is the major measure for this scheme. According to the Employment Insurance Act, the unemployment benefits scheme includes the benefits (a) for unemployed job seekers, (b) for employment promotion, (c) for supporting education and training, (d) for continuation of employment.

The unemployment benefits for job seekers consist of four types of benefits, the basic benefit, the benefit for acquiring skill, the benefit for housing rent, and the sick benefit. The basic benefit is the main income insurance for unemployed job seekers. Terms and conditions of the basic benefit have been reformed three times from 1990. Table 6 illustrates these reforms for the general insured except part-time worker's insurance. The major changes are as follows: in the 1995 reform, the benefit duration for older persons in their age of 60s is extended by 30-60 days, because of the difficulty to find a job for older people. In the 2001 reform, the benefit duration is extended for persons in their age of 45-59 years old, but is shortened for older persons in their age of 60-64 years old. And the duration becomes different from voluntary unemployed (quitted persons) to involuntary unemployed (dismissed persons).

The benefits for employment promotion consists of four subsidies, re-employment allowance (contingency payment for a success in finding job significantly shorter than the benefit expiration), benefit for disable persons applying regular employment, cost assistance for moving home if an applicant finds the job through the public employment security office, and transport cost assistance for seeking activity at large area when the public employment security office introduces a job of remote area.

The benefit for supporting education and training introduced in 1998, and is clearly correlated with increase of job applicants through the public employment security office. The benefit is the only outplacement policy for those who spent for education or training during unemployment. Job seeker can receive maximum amount 300,000 yen (Jan 1, 2001 – April 30, 2003) or 200,000 yen (before Jan 1, 2001, or from May 1, 2003) under the eligibility of contributing unemployment insurance for at least 3 years, if the seeker has been educated or trained at school qualified and listed by the authority. The public

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[9] The number of registered temporary help agency workers is not actually the number of workers who has a job. The registration number is reported in the Ministry of Health, Labour and Welfare, *Reports on the worker dispatching businesses*, 2000. The number of actually working as a temporary help agency worker is around 257,000, and 163,000 in 1992 reported in Statistics Bureau, *Employment Status Survey*.

employment security office qualifies the eligibility of the benefit and controls the other procedures on the benefit.

The benefit for continuation of employment consists of that for elderly persons employed at 65 years old and older and for employees who take child leave and return their job.

The most serious recent problem in the unemployment insurance scheme is short of its fund. At the end of 1993FY, outstanding of the unemployment insurance fund was 4.7 trillion yen, but it would expect to be 140 billion at the end of 2002FY. They say that all the fund is to be exhausted in 2003FY, because the revenue about was 2.4 trillion yen in 2001FY, the expenditure was 2.7 trillion yen and the deficit was 350 billion yen after the revised budget.

Ohkusa [2001] examines the working condition difference after finding job between job seekers with unemployment benefit and without unemployment benefit. The result shows that the recipient gets job of lower wages and of smaller size company than the non-recipient, though the recipient gets higher job status without moving home than the non-recipient. Kohara [2002] confirms that extension of unemployment insurance expiration increases unemployment rate. In Japan, Shimada et al. [1981] and Tachibanaki [1984] found the same effect in 1970s. Combining her result with Ohkusa's result, Kohara concludes the extension of unemployment benefit especially in terms of duration is inefficient, because the long recipient of unemployment benefit is not one who is the most urgent job seeker.

(3) System for employment stability and assistance

Along with unemployment and the other benefits, there is an active policy scheme under the Employment Insurance Act. Sugeno [2002] describes the system for employment stability is the center of Japanese employment policies. According to the Employment Insurance Act (Chapter 4), the three schemes have been established from 1989, namely, (a) the employment stability scheme, (b) the human resource development scheme, and (c) the employment welfare scheme, and called as the three employment security schemes. Higuchi [2001] compares the Japanese employment security schemes, France, Germany, the UK and the US. Calculating proportion of the employment policy budget and the public capital formation expenditure over GDP among the countries, he pointed out that Japanese employment policy expenditure was much less than that of France and Germany, but heavier than the UK and the US. But Japanese public capital formation expenditure is extremely larger proportion than that of any other countries.[10]

The budget size of the employment stability scheme is smaller than that of the unemployment insurance. Only employers contribute to his insurance scheme, whereas both employees and employers contribute to the unemployment insurance. In 2002FY, the amount of the budget decreases about 10% from that of the previous years, and it was 310 billion yen for the employment stability scheme, 190 billion yen for the human resource development scheme, and 110 billion yen for the employment welfare scheme.[11]

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[10] Higuchi [2001] Chapter 9, 407-410.

[11] Ministry of Health, Labour and Welfare, http://www.mhlw.go.jp/houdou/2002/07/h0719-6a.html.

The main measure of the employment stability scheme is Koyo-Chousei-Josei-kin the subsidy for employment adjustment, which was Koyo-Chousei-Kyufu-kin of which terminology suggests benefit for a troubled company. The scheme aims to support a company in business suspension proving a half of wages for employees not working.[12] Though it intends to help a temporary troubled company, there are companies that have received for longer than 10 years.[13] It contradicts with an initial attempt to be a preventive measure from short-term increase of unemployment. Reflecting delayed recovery of troubled companies, the scheme gradually changes to job creation from unemployment preventing measure and has introduced the subsidy for supporting labor mobility and the subsidy for promoting career development in 2001.

Chuma et al. [2002] investigates the economic effect of the employment adjustment subsidy, financially supported by Ministry of Health, Labour, and Welfare. Although their research was sponsored by MHLW, their conclusion was negative to support the measure's effectiveness to prevent unemployment. One of the findings is that a company subsidized by this scheme has high bankruptcy rate at 7.4% within two years, comparing 3.8% for a company not subsidized, in both cases that the sample is for companies with 5-10 insured employees.

Kurosawa [2001] surveys the public training programs. She pointed out no empirical study on the economic effectiveness of the public training and the human resource development program in Japan. In the paper, Kurosawa compares the public expenditure for training and human resource development against GDP among the OECD countries. Japan is lowest of all in every respect, such as training for unemployed persons, employees, young trainees, and subsidies for university and occupational schools. Although Japanese data for comparison does not include local government's expenditure, Kurosawa's result is consistent with the comparison by Higuchi [2001]. Nevertheless, both Kurosawa and Higuchi are skeptical about massive public training, because of lack of information, serious lag of acquired technique. Japanese public training program is notorious in spending for substantial buildings, and their loose management, which is often reported by media.

3. The Revision of the Labor Standard Law and Increase of Part-Time Workers

During the deflationary period, the number of part-time workers has increased considerably. Behind this conspicuous trend, the revision of the Labor Standard Law and the reforms of pension and the other social security system have affected the Japanese labor market structure.

Short time workers by *Labour Force Survey* are the employees who work shorter than 35 hours per week. The number of short time workers increased at 5.9% pa in 1970s, at 5.0% pa in 1980s, and 6.4% pa in 1990s. As a result of the rapid growth of short time workers, the part-time ratio of all employed persons has increased from 6.7% in 1970 to 20.0% in 2000.

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[12] The subsidy supplies a half of layoff worker's wage for large scale company, two thirds for medium and small scale company. And it had been two thirds for large scale company, and three fourths for medium and small scale company.

[13] Yashiro [2001]

Table 8 shows a brief summary of the revisions of the Labor Standard Law focused on working hours. Japan introduced shorter scheduled working hours per week, and flexible overtime system, learning from French labor law reforms. Japan has quasi part-time workers who work regularly almost as long as full-time workers, but under more fragile job status and at 40% lower wages. Consequently, the reduction of legal hours worked lessens the difference between full-time workers and part-time. There are many statistical definitions of part-time workers, however, all of them increased significantly.[14]

The increase of part-time workers contributes to decrease of the average hours worked as shown in Table 9. During 1993-2000, the average hours worked reduced 3.2%, in which 47.5% were due to increase of the number of part-timer workers, and 45.4% were from reduction of regular staff's hours worked.

There is the other factor that increases the number of part-time workers. Table 10 illustrates how much the total cost of regular staff workers has increased during 1978-1998. Among others, pensions and health insurances have increased respectively 3.68 times and twice as much as those in 20 years ago. Both pensions and health insurances are public and compulsory. The private pension is not matured enough in Japan, and the private health insurance is like a supplement of life insurance. Part-time workers who are spouse of regular staff worker do not enter independently the public pension scheme or the public health insurance scheme. Institutionally they belong to their spouse's insurance, therefore, there is no contribution for most of part-time workers who are often house wife. They are highly educated and relatively cheaper workers.

We have estimated wage elasticity of labor demand function using Translog cost function for manufacturing and non-manufacturing industries.[15] The estimated equations are the following system:

$$s_i = b_i + \sum_{j=0}^{n} b_{ij} \ln w_j + b_{iX} \ln X \ln w_i + b_{it} \ln w_i + e_i \quad i = 0, \ldots, n$$

$$\ln C_{KL} = \ln C_0 + \sum_{i=0}^{n} b_i \ln w_i + \frac{1}{2} \sum_{i=0}^{n} \sum_{j=0}^{n} b_{ij} \ln w_i \ln w_j$$
$$+ \sum_{i=0}^{n} b_{iX} \ln X \ln w_i + \sum_{i=0}^{n} b_{it} \ln w_i + b_X \ln X + b_{XX} (\ln X)^2 + b_t t + b_{tt} t^2 + e_C$$

$$\sum_{i=0}^{n} b_i = 1$$

s_i is nominal cost share of the i-th input, i=full-time worker, part-time worker, and capital service flow. w_i is nominal unit price of the i-th input. The input price for full-time worker is the average hourly wage including bonus, various allowances, and social security contribution. X is the level of output of real gross output from the National Account. t is time trend, e_i is stochastic error for the i-th share, e_C is for

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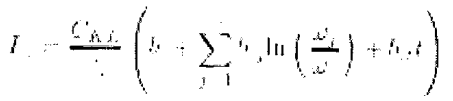
[14] Hayami and Matsuura [2001] illustrates 5 different definitions of part-time workers increased its composition in the total employee from 5-12% to over 20% during 1980-2000.

[15] For detail, see Hayami [2003]. Hayami and Matsuura [2001] estimates labor demand functions for full and part time workers using CES production function.

logarithm of nominal cost for production. The estimation method is maximum likelihood assuming stochastic error distributes multi-dimensional normal distribution with the covariance matrix of seemingly unrelated equation system. Estimation procedure is E-M algorithm.

The labor demand is calculated following equation:



Thus using estimated parameters b_i, b_{ij}, we can calculate own elasticity and cross elasticity of labor demand. Table 11 summaries the wage elasticity using the estimated parameters described in Table 12. Figures 6-7 shows actual and fitted value of labor's share. The own wage elasticity is estimated at very high figure, therefore, 1% of wage increase induces 0.001% reduction of labor demand for full-time worker, and 16% reduction of demand for part-time worker in the manufacturing industry. The two labor inputs are mutually complementary in the manufacturing industry. Increase of full-time wage shifts labor demand function for part-time worker to leftward. On the other hand, in the non-manufacturing (service) industry, as the cross price elasticity is positive, two labor inputs are substitutable. The estimation shows that 1% increase of wage rate of full-time workers increase labor demand schedule for part-time workers at 0.1%.

As these estimations are derived from small sample size, the result may include relatively large estimation error. But at the moment, the estimation is consistent with the casual observation described in Section 2. Increase of the number of part-time and increase of the number of employment in the service industry are due to both increases of relative price of full-time to part-time and to capital service flow. In the manufacturing industry, part-time workers are complementary to full-time workers, but highly substitutable to capital service flow. Therefore, the number of employees in the manufacturing industry has declined over the past decade.

Combining the labor market policy such as the reduction of legal hours worked with the increases of pension contribution and health insurance fee towards an aged society accelerates the Japanese labor market into a part-time society.

4. Production Market Policy that may affect the labor market: the discussions using linked employer-employee linked micro-data

The last section discusses indirect effects on the labor market through the restriction for product market. The example here is the Large Scale Store Law for the retail industry. The Large Scale Store Law was designed for protecting small sized family owned shops. This law had restricted start-up of all shops with sales areas over $500m^2$. The fist type of store with a sales space are of over $3000m^2$ is required to be scrutinized considerably longer than that of the second type of store with sales area of from $500m^2$ to $3000m^2$ (since 1991, used to be $1500m^2$). The law has been considerably amended from 1991, especially concerning of the border of the sales area between the fist type shop and the second type shop which is increased from $1500m^2$ to $3000m^2$. The amended law was put in force from 31 January 1992.

The law itself was abolished, but the alternative law (the Large Scale Store Location Law) started on

1st of June 2000. The new law restricts start-up of the shop with a sales area over 1,000m^2. The lower limit of restrictions of space area is larger than that of the previous law, and the new law does not intend to protect business activity of small shops, but to regulate availability of parking spaces, noise and other environmental conditions of shops. The regulator of the law is the local government.

What is the impact of The Large Scale Store Law on the labor market in these reformation periods? We investigated the impact of the law using employer-employee linked micro-data, because the law actually effects on the product market, and because the labor demand is the derived demand from production activities. The analysis requires information of both employer and employee, but no official survey does provide such data. We have linked the Basic Survey of Wage Structure with the Census of Commerce through the Establishment Census. See for detail Hayami [2000].

The analysis is based on estimations of labor input functions. The linked time series data was not available, and correlations among wages for various types of employment are strong. It is impossible to include wage structures for the determination of labor demands from cross section data for a single year. The estimated equations are three types for 10 types of employments with different ages and gender. The first type is for the number of employed persons, the second is for labor inputs in terms of person times hour, and the third is for the cost share of each category of employment.

All these equations are truncated, because the data for persons and hours are only available for employed persons. The explanatory variables included are output level (X and X^2), diversification of sales (OX and OX^2), ages of establishment (YR and YR^2), sales space area (S and S^2).

The subscript *i* denotes types of labor, that is, male employees in their ages of 20s, 30s, 40s, 50s, and 60s and female employees in their ages of 20s, 30s, 40s, 50s, and 60s.
The jth establishment employs the ith type of labor for Lij persons.

$$\begin{aligned} L_{ij} &= \alpha_{0i} + \alpha_{1i}X_j + \alpha_{2i}X_j^2 + \alpha_{3i}OX_j + \alpha_{4i}OX_j^2 \\ &\quad + \alpha_{5i}YR_j + \alpha_{6i}YR_j^2 + \alpha_{7i}S_j + \alpha_{8i}S_j^2 + \epsilon_j \\ &\quad \text{if } L^*_{ij} > 0 \\ L_{ij} &= 0 \quad \text{if } L^*_{ij} \le 0 \\ &\quad (i = 1, \ldots, m), \quad (j = 1 \ldots, n) \end{aligned}$$

The equations for person times hours are as follows:

$$\begin{aligned} Lh_{ij} &= \alpha_{0i} + \alpha_{1i}X + \alpha_{2i}X_j^2 + \alpha_{3i}OX_j + \alpha_{4i}OX_j^2 \\ &\quad + \alpha_{5i}YR_j + \alpha_{6i}YR_j^2 + \alpha_{7i}S_j + \alpha_{8i}S_j^2 + \epsilon_j \\ &\quad \text{if } Lh^*_{ij} > 0 \\ Lh_{ij} &= 0 \quad \text{if } Lh^*_{ij} \le 0 \\ &\quad (i = 1, \ldots, m), \quad (j = 1 \ldots, n) \end{aligned}$$

The equation shows that the jth establishment employs the ith type of labor inputs for Lhij persons times hours.

The last estimated equations are the cost share of each category of labor. whLij denotes the labor cost for the ith type of labor employed at the jth establishment, and Cj denotes the total labor cost of the jth establishment.

$$\frac{whL_{ij}}{C_j} = \gamma_{0i} + \gamma_{1i}\ln X_j + \gamma_{2i}\ln X_j^2 + \gamma_{3i}\frac{OX_j}{OX_j + X_j}$$

$$+ \gamma_{4i}\left(\frac{OX_j}{OX_j + X_j}\right)^2 + \gamma_{5i}YR_j + \gamma_{6i}YR_j^2 + \gamma_{7i}\ln S_j$$

$$+ \gamma_{8i}\ln S_j^2 + \varepsilon_{ij} \quad \text{if } \frac{whL_{ij}}{C_j} > 0$$

$$\frac{whL_{ij}}{C_j} = 0 \quad \text{if } \frac{whL_{ij}}{C_j} \leq 0$$

$$(i = 1, \ldots, m, \quad j = 1, \ldots, n)$$

The detail estimation results are available in Hayami [2000].

Figure 8 shows simulated employment structure by various space areas at the average level of the other explanatory variables. The employment structure shits to female employee from male as the space area increases. And this shift occurs between 500m^2 and 3,000 m^2, which exactly corresponds to the regulation. Interestingly, the manufacturing industry that has space area information for each establishment does not show clear change of pattern of employment structure. And the other variable like output level does not show change of employment structure.

Figure 9 shows much clearly change of labor input structure. It also presents a gap of employment structure at 1,500m^2. The gap is a rapid increase of female labor inputs at space area larger than 1,500m^2. But Figure 10 does not show such rapid structural change of employment, because Figure 10 represents structure of labor share. Labor share for female workers gradually increase as sales space area increases, in spite of rapid increase of labor inputs of female workers. This reflects the fact that wages of female part-time workers are significantly lower than those of males full-time workers as previously mentioned.

The large store employs more female workers than the small sized shop with lower wages and with higher education. This may be due to the Large Scale Store's Law that restricts entry of the other large store. The middle aged female workers would not like to work at small family owned shop, but if they have an opportunity to work in a large store, they do work. Relatively scarce opportunity for such jobs causes excess supply of female workers in the local labor market, which can bring lower wages for them. This explanation is still a hypothesis, but Figure 11 shows the number of establishments drastically decreases beyond these regulation boundaries of sales space area such as 500m^2 and 1,500m^2 (3,000m^2 introduced in 1991, so that the data for 1991 did not reflect this regulation.)

5. Concluding Remarks

In 1990s and up to 2002, during a long recession, the Japanese labor market experienced many regal reforms. But some of them, such as subsidies for employment promotion or work-sharing, did not have enough effect to increase employment. On the other hand, flexible working hours and introduction of temporary workers obtained popularity, thus widely spread. This is not only because of the reform of the labor standard law, but also because of the increase of social security payments for both employers and employees, which exempt house wives who work less than 3/4 of regular workers and earn less than 1.3 million yen of annual income. The combined institutional arrangements brought up rapid increase of

part-time workers. The employers reluctantly hire regular employees, because of their higher labor cost and higher dismissal cost. The labor market policy did intend to expand the employment opportunity, but the cost of regal fringe benefit (pension and health insurance, especially) and asymmetric benefit for housewives with insured husband, who need not pay their insurance for public pension or for public health insurance, disturbs employment of regular employment. These results were not expected when the labor standard law has been reformed. The reformation was just for up to date in current situation, whereas high social security payments and protection of housewives are adjustments for aged society and for raising the fertility rate. Unfortunately, the combination, in fact, promoted non-standard worker's employment with less permanent earnings than standard workers, which caused stagnant consumption and delayed the economic recovery.

The policy coordination is important to macro economy as well as micro economy. The Large Scale Store Law intends to protect small shops, but its labor market effect is to allow large stores to employ high quality labor with relatively lower wages, because of the local monopsony (monopoly for demand side). After the amendment, bankruptcy of large stores close to the rail station becomes eminent. At the same time, closings of local small shops have been increasing. Under the local government, large scale shopping malls have been emerging every local district in Japan. Still, the big shopping mall provides employment opportunity for non-standard workers.

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Table 1. Rates of Change of the Major Price Indices (per cent per annual)

	GDP deflator	Consumer Price Index	Wholesale Price Index
1990	2.4	3.1	0.43
1991	2.9	3.3	-0.04
1992	1.6	1.6	-0.27
1993	0.5	1.3	-0.49
1994	0.1	0.7	-0.31
1995	-0.5	-0.1	-0.24
1996	-0.8	0.1	-0.37
1997	0.3	1.8	0.23
1998	-0.1	0.6	-0.55
1999	-1.5	-0.3	-0.15
2000	-1.9	-0.7	-0.05
2001	-1.4	-0.7	-0.34
2002	NA	-0.9	-0.15

Sources: GDP deflator, Economic and Social Research Institute, Cabinet Office, Government of Japan, *Annual Reports on National Accounts* 2003.

Consumer Price Index, Statistics Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Annual Reports on Consumer Index* 2003.

Wholesale Price Index, Bank of Japan, *Annual Reports on Wholesale Price Index,* 2003.

Table 2. Growth Rates of the Final Demand at constant price 1990 (% pa)

	GDE	Private Cons	Public Cons	Domestic Gross Capital Formation				Export	(less) Import
				Total	Residential	Private	Public		
1985/80	3.24	1.53	0.53	0.60	-0.09	0.82	-0.18	0.61	-0.03
1990/85	4.79	2.29	0.48	2.42	0.46	1.69	0.25	0.26	-0.65
1995/90	1.39	1.18	0.46	-0.28	-0.11	-0.67	0.50	0.27	-0.24
2000/95	1.21	1.10	0.47	0.16	-0.14	0.61	-0.16	0.56	-0.31

Source: Economic and Social Research Institute, Cabinet Office, Government of Japan, *Annual Reports on National Accounts* 2002.

Unit: Average annual growth rate per cent

Table 3. Real GDP Growth Rates (per cent per annual, at 1995 constant price)

	Total	Agri	Manuf	Const	Pub Util	RW	Fin	Real	Trans	Comm	Serv	Gov Serv	NPO
1991	3.9	-11.2	5.0	-1.2	5.3	10.3	0.4	2.6	3.6	8.9	4.6	0.7	3.7
1992	0.8	2.7	-2.0	-2.3	0.3	5.6	2.4	3.2	0.6	3.3	2.7	1.5	6.7
1993	0.2	-9.1	-3.7	-0.1	-2.2	2.0	4.1	3.7	0.2	7.6	1.8	2.2	4.6
1994	0.7	2.4	-1.5	-5.0	2.7	4.6	7.7	1.8	1.1	7.3	0.1	2.4	3.7
1995	1.6	-6.0	4.1	-7.1	1.4	6.2	4.2	0.7	2.5	6.8	2.2	2.7	3.8
1996	3.4	2.4	4.2	-0.7	7.8	3.7	-1.3	2.1	-4.4	17.2	5.8	2.3	1.9
1997	2.0	-6.2	3.4	-1.2	0.5	2.9	5.1	1.6	-1.6	20.3	2.2	1.8	0.6
1998	-0.9	-3.1	-5.9	-2.5	3.1	-3.1	-1.6	0.7	-4.3	15.7	3.9	2.1	6.7
1999	0.4	-5.6	1.7	-1.4	1.2	-4.4	4.6	1.6	-2.0	-1.2	1.4	3.3	0.1
2000	2.6	1.6	7.2	-2.4	2.6	-3.0	2.4	1.9	0.6	4.7	3.6	3.0	-6.5
2001	-0.1	0.4	-4.9	-3.8	2.6	2.4	8.3	1.4	-1.3	9.0	2.1	1.8	0.0

Source: Economic and Social Research Institute, Cabinet Office, Government of Japan, *Annual Reports on National Accounts* 2003.

Notations: Agri: Agriculture, Fishery, and Forestry, Manuf: Manufacturing, Const: Construction. Pub Util: Public Utility (Power Supply, Gas Distribution, Water Suplly), Fin: Finance and Insurance, Real: Real Estate, Trans: Transportation, Comm: Telecommunication, Serv: Service Industry, Gov Serv: Government Service, NPO: Private Nonprofit Organization

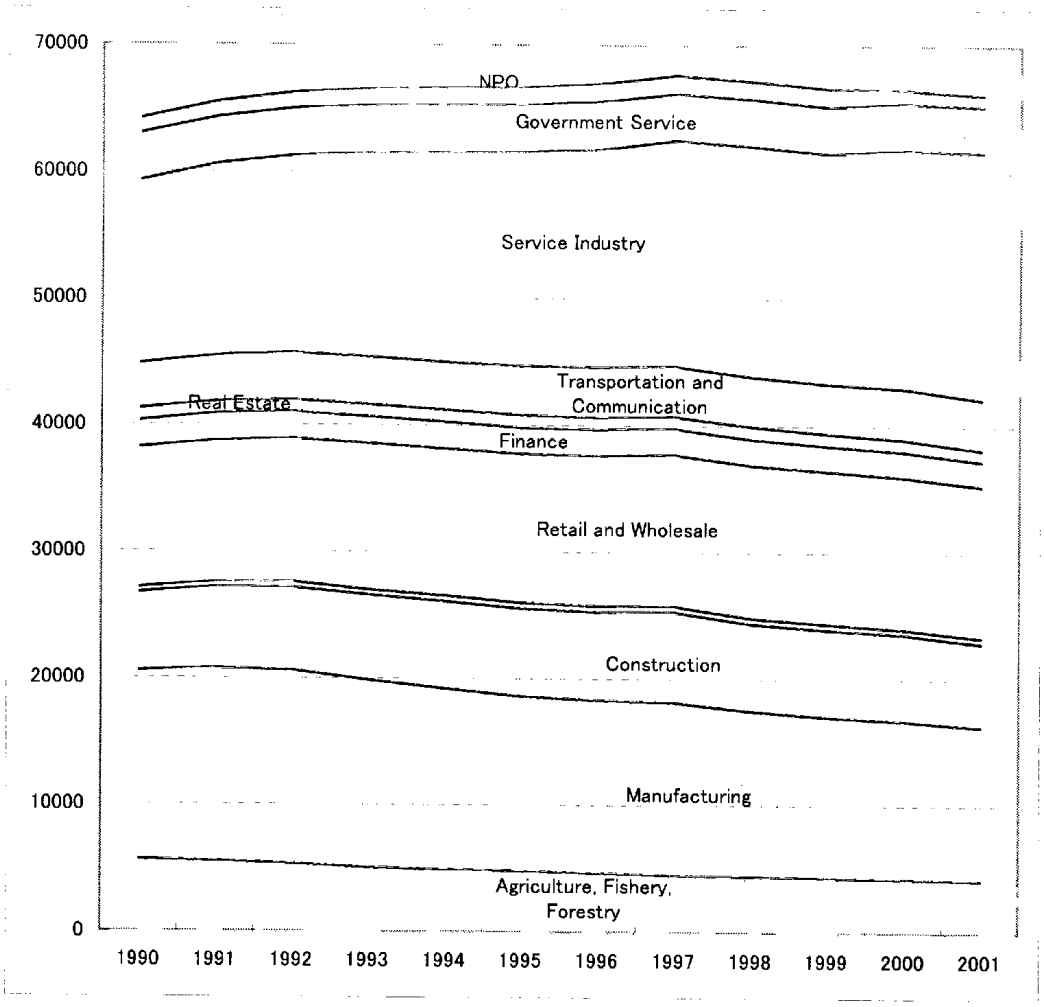


Figure 1. Trend of Employment by Industry Sector

Source: Economic and Social Research Institute, Cabinet Office, Government of Japan, *Annual Reports on National Accounts* 2003.

Unit: 1000 persons

Table 4. Regional Unemployment Rate (%)

	Hokkaido	Tohoku	Minami-Knato	Kita-Kanto, Kousinetsu	Hokriku	Tokai	Kinki	Chugoku	Shikoku	Kyushu
1995	3.2	2.6	3.5	2.2	2.3	2.6	4.0	2.4	2.8	3.3
2000	5.5	4.4	4.8	3.8	3.6	3.7	5.9	3.9	4.1	5.4

Source: Statistics Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labor Force Survey* 2002.

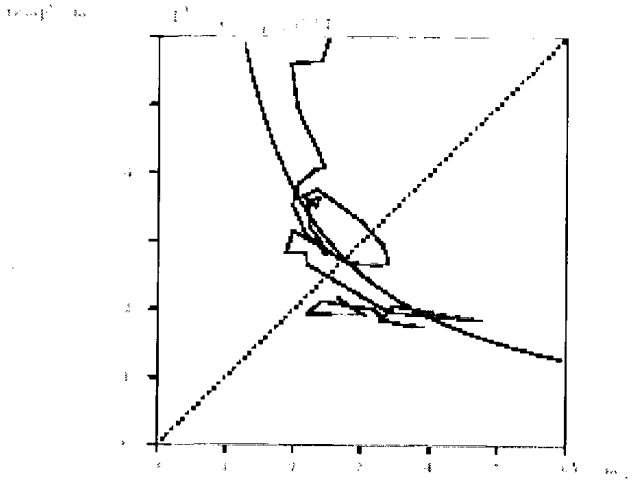


Figure 2. Japan's UV Curve 1963-2001

Source: Ministry of Health, Labour and Welfare, *Employment Security Office Administrative Statistics*, Statistical Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labour Force Survey*.

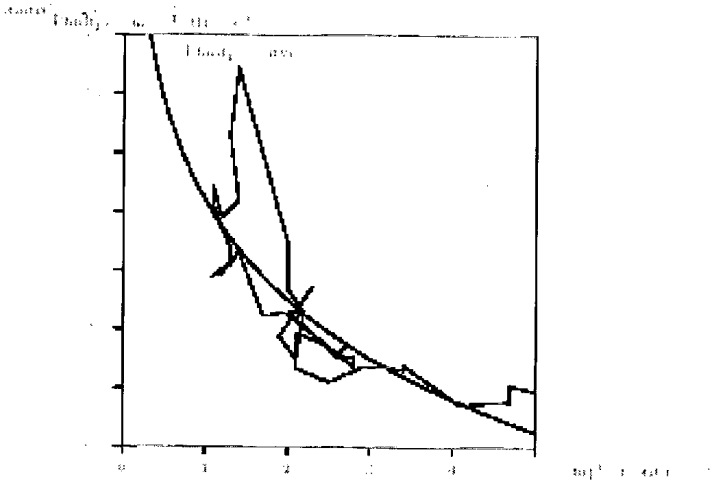


Figure 3. Japan's Phillips Curve 1963-2001

Source: Ministry of Health, Labour and Welfare, *Monthly Labour Statistics*, State Statistical Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labour Force Survey*.

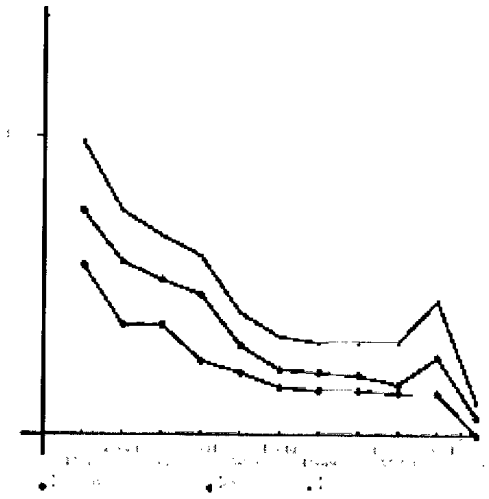


Figure 4. Japan's Female Unemployment Rate by Age 1990-2000

Source: Statistical Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labour Force Survey*.

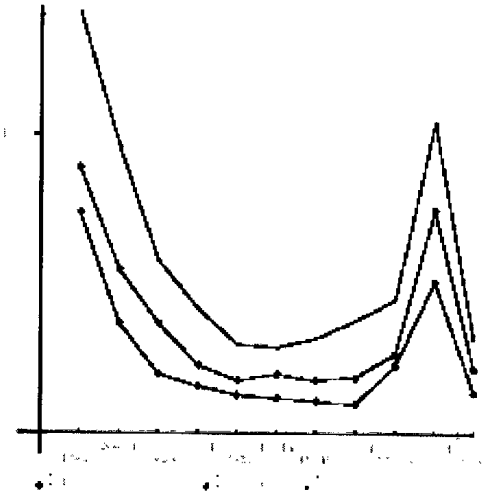


Figure 5. Japan's Male Unemployment Rate by Age 1990-2000

Source: Statistical Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labour Force Survey*.

Table 5. Enactment and revision of the Worker Dispatching Law

1986	Enforcement Restricted for 16 types of jobs which require special knowledge, skilled technique such as translator, software development, engineering design, tour conductor
1996	Deregulate the regulation that limited to 26 types of jobs
1999	Deregulate for any jobs with some exceptions (harbor transportation, construction, security guard, production and medical work) At maximum one year of dispatching contract. The employer should employ dispatched workers who have worked for longer than one year, and promote employers to enter the social insurance and unemployment insurance for dispatched workers. This is not obligation, but encouragement.

Source: Hayami and Matsuura [2001].

Table 6. Primary method of job search (10,000 persons)

	Primary method of job search	1980	1985	1990	1995	2000
Male	Total	75	101	84	117	204
	Applying to public employment security office	26	40	22	37	85
	Applying to private employment office and other organization					6
	Advertisements or magazines on job vacancies	7	29	27	42	63
	Through school or acquaintances	15	17	19	19	24
	Applying to prospective employer directly	21	7	5	6	4
	Preparation to start a business	3	5	3	5	8
	Others	3	3	8	8	15
Female	Total	49	63	59	82	123
	Applying to public employment security office	12	21	20	27	46
	Applying to private employment office and other organization					3
	Advertisements or magazines on job vacancies	6	26	22	39	51
	Through school or acquaintances	9	12	8	8	11
	Applying to prospective employer directly	20	3	4	5	3
	Preparation to start a business	0	0	0	0	1
	Others	2	1	3	2	7

Notes: Applying to private employment office and other organization had not permitted before 2000.

Source: Statistics Bureau, Management and Coordination Agency, *The Special Survey of the Labour Force Surver.* (Currently, Statistics Bureau, Ministry of Public Management, Home Affairs, Post and Telecommunications, *Labour Force Surve,* February and August.)

Table 7. Terms and Conditions of the Unemployment Insurance

From 1984	Years of Contribution				
	less than 1 year	1 – 4 years	5 – 9 years	more than 10 years	
younger than 30 years old	90	90	90	180	
30 – 44 years old	90	90	180	210	
45 – 54 years old	90	180	210	240	
older than 55 years old	90	210	240	300	
From April 1995					
	less than 1 year	1 – 4 years	5 – 9 years	10 – 19 years	more than 20 years
younger than 30 years old	90	90	90	180	180
30 – 44 years old	90	90	180	210	210
45 – 59 years old	90	180	210	240	300
60 – 64 years old	90	240	300	300	300
From April 2001					
	less than 1 year	1 – 4 years	5 – 9 years	10 – 19 years	more than 20 years
Voluntary Quitted	90	90	120	150	180
Involuntary, Dismissed					
younger than 30 years old	90	90	90	180	
30 – 44 years old	90	90	180	210	240
45 – 59 years old	90	180	240	270	330
60 – 64 years old	90	150	180	210	240

Note: The 2000 Revision of Employment Insurance Act increased insurance contribution rate.

Source: Sugeno [2002], [2003], Ohara [2002], the Ministry of Health, Labour, and Welfare, *The Employment Insurance Act*.

Table 8. Revision of the Labor Standards Law

1947	Enactment
1987	Introduce flexible working hours arrangements. Flexible working hours within one month and within three month. Non-standard flexible hours Introducing flexible work schedule Reduction of the legal working hours from 48 hours per week Introducing the exempt work (discretionary work), of which working hours are not specified under the labour standard law.
1988	Enforcement of the new legal working hours of 46 hours per week.
1991	Reduction of the legal working hours to 44 hours per week.
1993	Flexible working hours arrangements within one year Further reduction of the legal working hours from 44 hours per week to 40 hours per week, with exceptions and deferment for small size company and some industries.
1994	Enforcement of the new legal working hours of 40 hours per week.
1998	Extend the period of contract labour to three years from one year
2001	Abolishes the exemption of the legal working hours for special industries and small sized companies.

Source: Hayami and Matsuura [2001].

Table 9. Reduction of hours worked: decomposition during 1993-2000

	Monthly Hours Worked			Ratio of part-time
	Average	Regular staff	Part-time	
Change rate	-0.032	-0.014	-0.002	-0.015
Contribution	1.000	0.454	0.071	0.475

Notes: Similar decomposition in the short run has been shown in the Ministry of Health, Labour, and Welfare, *The White Paper on Labor* 1999, 2000, and 2001.

This table suggests that monthly hours worked reduced 3.2% during 1993-2000. 45.4% of the reduction of hours worked are due to the reduction of hours worked of regular staff workers, and 47.5% are due to the increase of the number of part-timer employees.

The decomposition is calculated by the following formula:

$$\frac{\Delta\bar{H}}{\bar{H}} = w_{Hr}\frac{\Delta Hr}{\bar{H}} + w_{Hp}\frac{\Delta Hp}{\bar{H}} + w_r\frac{\Delta r}{\bar{H}}$$

where $\bar{H}$ denotes the average monthly hours worked between 1993 and 2000, $\Delta\bar{H} = \bar{H}_{2000} - \bar{H}_{1993}$ denotes the difference of $\bar{H}$, $\Delta Hr = Hr_{2000} - Hr_{1993}$, $\Delta Hp = \bar{H}p_{2000} - \bar{H}p_{1993}$, $\Delta r = r_{2000} - r_{1993}$, Hr denotes monthly hours worked for regular staffs, Hp denotes monthly hours worked for part-time workers, and r denotes the employment ratio of part-time workers over all employed persons.

Monthly hours worked is averaged over twelve months, reported in *Annual Report on the Monthly Labour Survey*.

wHr denotes the weight for Hr, is equal to 1-(r2000+r1993)/2, wHp=(r2000+r1993)/2, and wr denotes (Hp(2000)+Hp(1993))/2-(Hr(2000)+Hr(1993))/2.

"Change rate"' in the above table equals to each term of the right hand side of the equation to $\frac{\Delta\bar{H}}{\bar{H}}$.

The regular employees include (1) worker who is employed without a contract on the employment duration, (2) worker employed on a contract for longer than one month, and (3) worker who works at least 18 days monthly in the two previous consecutive months.

Source: Ministry of Health, Labour, and Welfare, *Monthly Labour Survey* 2000.

Table 10. Monthly total labor cost per regular worker

Unit: Yen/person month

Year	1978	1988	1998
Total Labour Cost	263,754	398,115	502,004
Wage and Salary			
Monthly total	223,084	333,638	409,485
(incl. Scheduled)	176,234	252,967	315,544
Social Securities			
Employment insurance	3,634	5,771	6,036
Health insurance	6,977	10,831	14,369
Pension	7,022	14,268	25,887
Other legal fb	442	461	576
Other labour Cost			
Allowance in kind	1,740	1,870	1,683
Retirement allowance	10,579	16,534	27,300
Non legal fb	8,501	11,048	13,481
Education training	695	1,521	1,464
Recruitment	416	1,170	802
Other	665	1,004	922

Notes: fb Fringe benefit

Employment insurance consists of unemployment insurance and worker's accident compensation insurance. Retirement allowance consists of a retirement lump sum grant, a retirement annuity and an accumulated fund for retirement (when a company is under a mutual aid scheme).

Source: Hayami and Matsuura [2001]. Ministry of Health, Labour and Welfare, *Survey on the institutions of wages and hours worked, and on the labor cost* (Chingin Rodo-jikan-tou-Sogo-chosa), 1998.

Table 11. Estimated Price Elasticity for Factor Inputs (Labor Demand)

Sector 1. Manufacturing Industry			
	Wage of Full time	Wage of Part-time	pK
Wage of Full-time	-0.0011563	-0.13590	1.0098
Wage of Part-time		-15.971	2.1537
pK			-1.3604
Sector2. Service Industry (in broad definition)			
	Wage of Full time	Wage of Part-time	pK
Wage of Full time	-0.055973	0.095649	1.0452
Wage of Part-time		-0.16345	0.92270
pK			-1.0089

Note: Elasticity is evaluated at the mean value for each input.

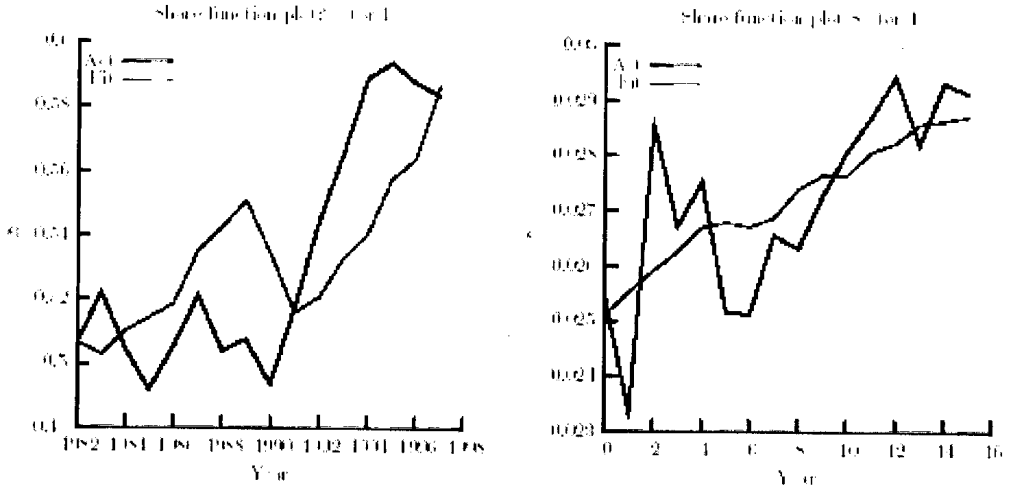


Figure 6. Labor's Shares of Sector 1: Full-time labor (left) and Part-time labor (right)

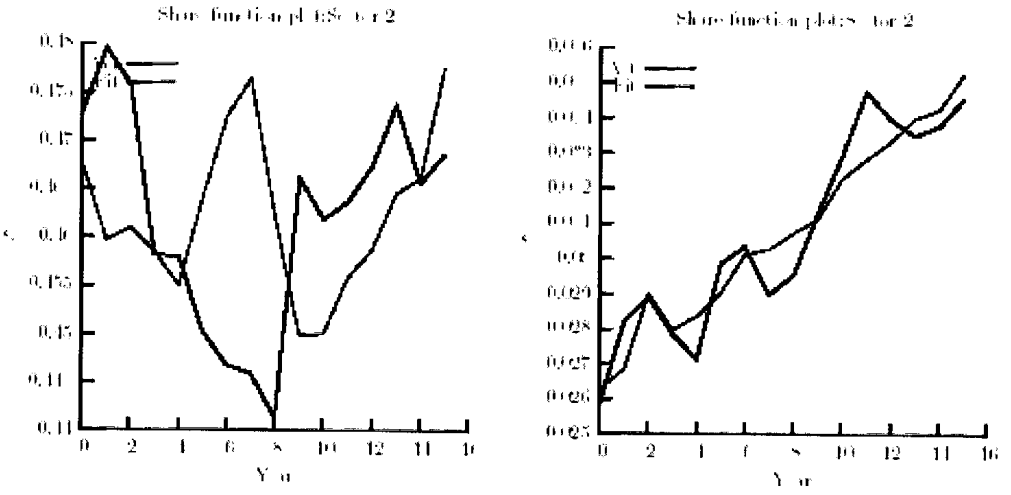
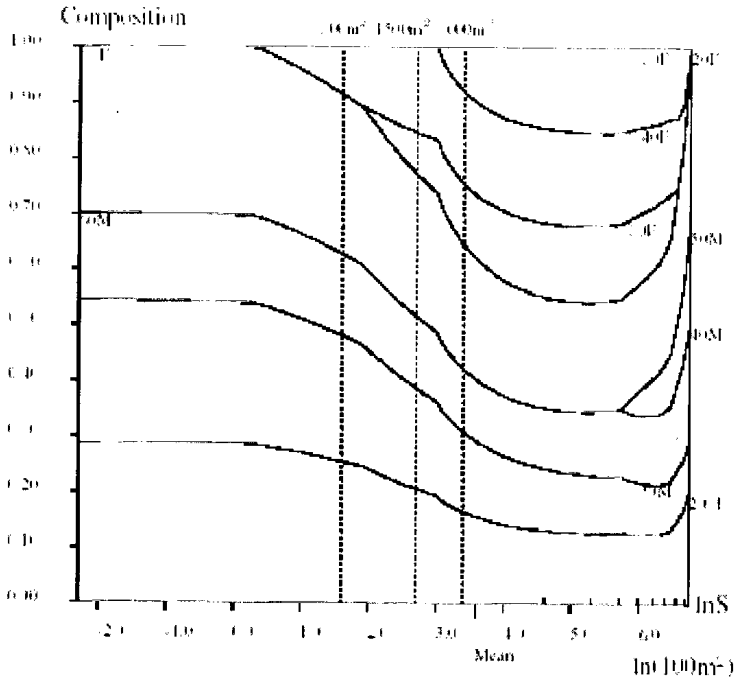


Figure 7. Labor's Shares of Sector 2: Full-time labor (left) and Part-time labor (right)

Table 12. Summary of the Estimation for Translog Cost Function

	Sector 1	Sector 2
b_0	7.98142	9.14152
	(0.1429)	(0.693)
b_1	0.503597	0.556431
	(0.0183)	(0.154)
b_2	0.132961	0.0157991
	(0.0151)	(0.00805)
b_t	-0.0181467	-0.109365
	(0.0146)	(0.0776)
U_{11}	-0.108638	0.0124216
	(0.00623)	(0.0164)
U_{12}	-2.1610-7	8.3510-7
	(0.171926)	(0.0494)
U_{22}	-0.0862185	-0.010081
	(0.0040)	(0.0107)
b_{1t}	0.00666696	0.000732497
	(0.00040)	(0.00117)
b_{2t}	0.0011201	0.000483598
	(0.00013)	(5.44-5)

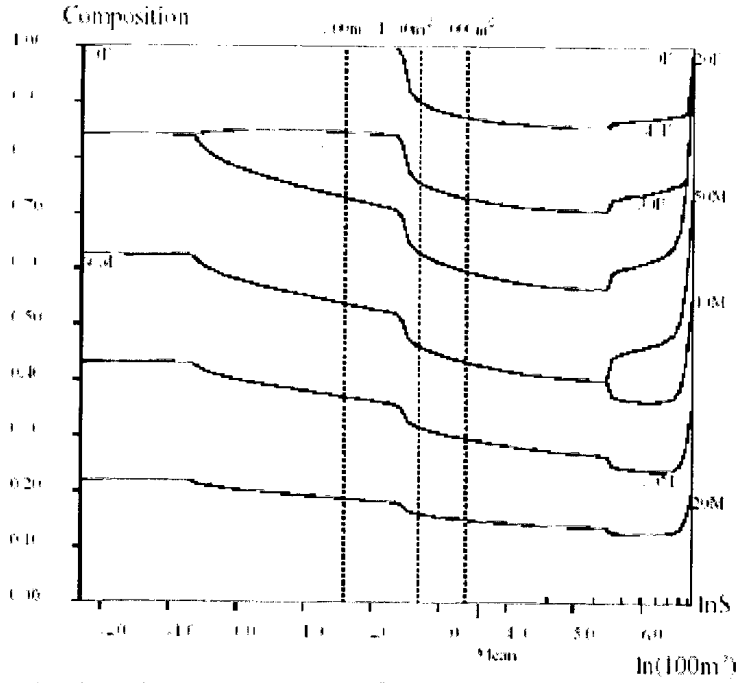
Note: Inside parenthesis is the standard error of estimated parameter. Sample size is 16, 1982-1997. Estimation is restricted to homogenous degree one and concavity on the cost function.



lnS: Natural logarithm of sales space area in 100m².
20M: Male employees in their 20s, 20F: Female employees in their 20s.
30M: Male employees in their 30s, 30F: Female employees in their 30s.
40M: Male employees in their 40s, 40F: Female employees in their 40s.
50M: Male employees in their 50s, 50F: Female employees in their 50s.
60M: Male employees in their 60s, 60F: Female employees in their 60s.

Figure 8. Employment structure by sale space area in the retail industry

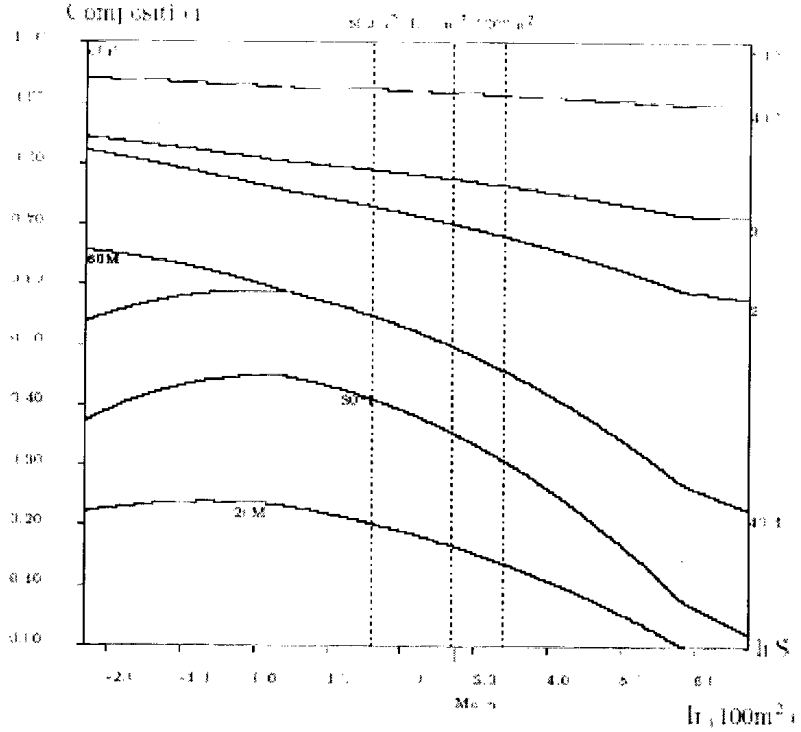
Notes: The composition is estimated by labor input function (). Variables other than sales space area are assigned to the average value. Entry regulation exists at the sales space area (500m^2, and 1500m^2), as a result, across these space areas the employment structure shifts from male dominant to female dominant establishments. Female workers in the retail industry are mostly part-time workers with high education. The space area (3000m^2) is at the new entry regulation that restricts entry of establishments out of environmental condition (noise etc).



lnS: Natural logarithm of sales space area in 100m².
20M: Male employees in their 20s, 20F: Female employees in their 20s.
30M: Male employees in their 30s, 30F: Female employees in their 30s.
40M: Male employees in their 40s, 40F: Female employees in their 40s.
50M: Male employees in their 50s, 50F: Female employees in their 50s.
60M: Male employees in their 60s, 60F: Female employees in their 60s.

Figure 9. Labor input (person times hour) structure by sale space area in the retail industry

Notes: The labor input is estimated by labor input function (). Variables other than sales space area are assigned to the average value. Entry regulation exists at the sales space area (500m^2, and 1500m^2), as a result, across these space areas the employment structure shifts from male dominant to female dominant establishments. Female workers in the retail industry are mostly part-time workers with high education. The space area (3000m^2) is at the new entry regulation that restricts entry of establishments out of environmental condition (noise etc).



lnS: Natural logarithm of sales space area in 100m^2.
20M: Male employees in their 20s, 20F: Female employees in their 20s
30M: Male employees in their 30s, 30F: Female employees in their 30s
40M: Male employees in their 40s, 40F: Female employees in their 40s.
50M: Male employees in their 50s, 50F: Female employee in their 50s.
60M: Male employees in their 60s, 60F: Female employees in their 60s.

Figure 10. Labor cost share structure by sale space area in the retail industry

Notes: The labor input is estimated by labor input function (). Variables other than sales space area are assigned to the average value. Entry regulation exists at the sales space area (500m^2, and 1500m^2), as a result, across these space areas the employment structure shifts from male dominant to female dominant establishments. Female workers in the retail industry are mostly part-time workers with high education. The space area (3000m^2) is at the new entry regulation that restricts entry of establishments out of environmental condition (noise etc).

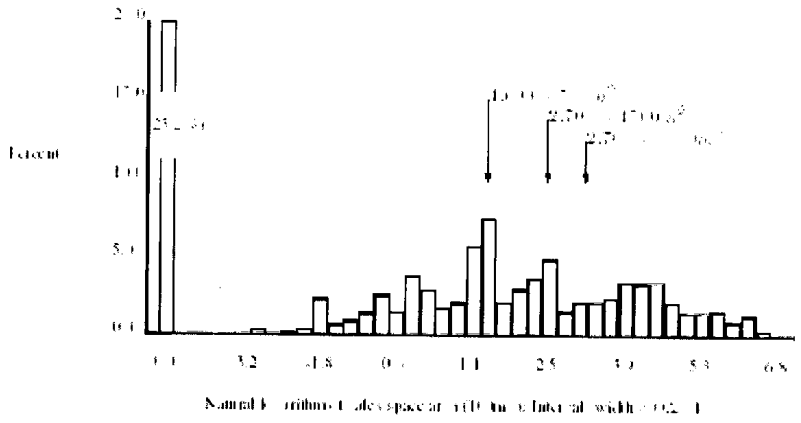


Figure 11. Distribution of establishments by sale space area in the retail industry in 1991

Notes: Entry regulation exists at the sales space area ($500m^2$, and $1500m^2$), as a result, across these space areas the employment structure shifts from male dominant to female dominant establishments. The space area ($3000m^2$) is at the new entry regulation that restricts entry of establishments out of environmental condition (noise etc).

The figure shows clear gap of distribution for larger establishments with $500m^2$ and more, and for establishments with $1500m^2$. It had been strong entry restriction for over these space areas, therefore once permitted for somewhat larger establishment to enter the market, the establishment tends to be much larger than $500m^2$ but smaller than $1500m^2$.