Increasing Labor Flexibility During the Recession in Japan: The Role of Female Workers in Manufacturing

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Introduction

In 1990s , Japan experienced its first prolonged recession since the end of World War II, and has emerged from it in the last few years. During this recession the very nature of the Japanese company, which had been considered a virtue that supported full employment in the 1980s, has been criticized as a major cause of declining competitiveness for Japanese multinational companies and as a cause of the long recession. Among the former virtues, the so-called life-time employment system is the first and the foremost target for criticism. In the fast changing global business environment, giving a life-time guarantee of a job to employees is considered the last thing an employer wants to do. Following this logic, the re-emerged Japanese global firms are expected to have management systems that provide organizational and workforce flexibility. But an interesting new finding, which contradicts this intuition, seem to be emerging. The Japanese firms actually have preserved many of the old virtues, including employment stability for regular employees, along with modifications that improve workforce flexibility. Four articles in the coming special issue of Asian Business and Management give examples of this new evidence[1].

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In this paper we will examine the evidence and present our own interpretation of it, along with new evidence to support our interpretation. We examine whether the evidence is valid and how the evidence is reconciled with the fact that the Japanese companies analyzed have regained their international competitiveness in the new environment. We argue that a key concept in integrating seemingly contradictory facts is the role of female workers..

The structure of the paper is as follows. First, we document the changes in employment practices and the employment situation among large Japanese companies. Among these changes are the changes in employee composition, with more non-regular workers, sustained stability of regular workers' employment and increased overall employment flexibility.

Second, we explain how regular and non-regular female workers contribute to the stability of regular employment and to the increased flexibility of overall employment. In the third and final section we discuss the consequences of these changes and non-changes on short and long-term competitiveness of Japanese companies. We close by exploring the policy implications of our findings.

1) Recent Changes in Japanese Employment

A Macro compositional changes: More non-regular workers

The most striking phenomena in Japanese employment in the last two decades is the drastic change in the composition of employment. Table 1 shows the compositional changes of full time employees from 1982 to 2002 for all non-agriculture industries.

(Table 1 about here)

In 1982, 84% of full-time workers were "regular" workers—those workers with long-term careers and good fringe benefits at one company. But 20 years later, the regular workers' share had shrunk to 68%, just above two thirds, and this shrinking trend of regular employment has continued up to the present. This increasing trend is observed in all industries, despite some variation in the rate of those changes by industry. Figure 1 shows those trends and variations.

(Figure 1 about here)

Manufacturing, for example, is slow to change and its share of non-regular workers has made a modest increase from 15% in 1982 to 24% in 2002. At the other end of the spectrum is the wholesale and retail trade industry; their share of non-regular workers made an impressive increment from 24% in 1982 to 44% in 2002. The speed of this change is accelerating. See Table 1 again. Between 1982 and 1992, regular employment increased albeit at a low rate of 15%. But in the period from 1992 to 2002, regular employment shrank for both male and female workers at the rate of 6% and 15%, respectively. In comparison, non-regular employment increased at well over 50% during the both periods. And the actual increase is almost 50% larger in the latter period of 1992 to 2002 than in the former period. As a result in the latter period, non-regular employment is the only source of employment creation in Japan.

More female workers

The increase in non-regular workers is realized by a steady infusion of female workers into the labor market. Female full-time employment increased from 14 million in 1982 to 21 million in 2002 at the rate of 50% over these two decades as we see in the Table 1, well above the timid growth rate of 16% for their male counterparts. There are industry variations in this change as well. In shrinking industries like manufacturing from 1992 to 2002, female workers have borne a larger share of employment loss than male workers as female full-time workers lost 1.3 million jobs in comparison to 1.1 million loss for male counterparts . And in a relatively mature industry like retail and wholesale trade , the female employment growth rate of 29% is well above the male rate of 2%, even though it is much smaller than the overall female growth rate of 49%. Another important element of this female employment growth is its dependence on non-regular employment growth. Regular employment for female workers increased only 2% during the 1982 to 2002 period for non agriculture industry as a whole, while non-regular employment expanded at the striking rate of 150%. During the latter period of 1992 to 2002, dependence on non-regular employment deepened with non-regular female employment increasing 50% with sharp contrast of 15% decrease of regular female employment.

B Employment flexibility: Frequent large employment adjustments for regular worker

During the recession we observed unprecedented frequent and large scale reductions of regular employment by major Japanese firms across industries. Figure 2 shows the 25 year history of large employment changes for regular workers in the leading 40 companies in four sectors in manufacturing and sales industries. They are auto-mobile, electric and electronics equipments, department store and super market.

(Figure 2 about here)

The bar chart indicates the number of cases when those leading companies either reduced or increased their regular employment by more than 5% in a single financial year. Since the data cover four different sectors and some variation of corporate financial soundness among top 10 companies exists within each sector, usually cases with both large employment increase and decrease are present in each year. But the tide of change is obvious. From the mid 1990s, the number of large employment reductions of regular workers has surged, with an over-riding cyclical pattern reflecting short-term economic fluctuations. This surge is a

cause of the generally-perceived development that the Japanese firms have abandoned one of their long-held employment practices, namely "life-time employment".

Emerging evidence against less stable employment

New emerging evidence, though still insufficient and controversial, opposes this general perception. For example, in a previous study of employment adjustment using panel data, we estimated the so-called partial employment adjustment parameter for various groups of firms whose business activities are similar[2]. The parameter basically defines the magnitude of completeness of employment adjustment for the changing level of labor demand. We call it a partial employment adjustment parameter because generally the adjustment is incomplete. In other words, companies adjust their employment level with the magnitude less than that the demand change dictates. Therefore the parameter ranges from 1 to 0 with 1 for a perfect adjustment and 0 for no adjustment. We then tested if the employment adjustment parameter has changed during the prolonged recession. We suspected that the parameter has gotten larger to reflect the recent frequency of large scale employment adjustment we saw in Figure 2. The result is shown in Table 2.

(Table 2 about here)

As we see there, the employment adjustment parameter for regular workers is small regardless of type of business activities, ranging from the smallest 0.112 for ordinary cars to the largest 0.440 for small cars. And among 10 groups of companies organized based on the similarity of their business activities, only 3 groups had experienced an increase of employment adjustment parameter. They are ordinary car, truck and computer/IT equipment manufactures. These three groups' average adjustment parameters after the increase is still low at 0.201. In other words, the large scale employment reduction of regular workers in late 1990s and early 2000s is not the result of a change of employment behavior, but rather a simple reflection of large scale output reduction. In this sense, we say those employers have not changed significantly their "life-time employment practice" to their regular workers.

More flexible overall employment provided by non-regular workers

Other new evidence shows that the Japanese companies obtain high employment flexibility thanks to the growing number of non-regular workers. Please see the Table 3A. We estimated the similar employment adjustment parameter for overall full time workers

including non-regular workers, and compared to those employment adjustment parameter for regular workers only for the same groups of companies.

(Table 3 about here)

The industry groups we investigated are department stores and supermarkets, which are heavily dependent on non-regular female workers for its workforce. We further divided them into two sub-groups depending on their scope of store allocation, one for nation-wide store allocation and the other for region-wide store allocation so that we can control various labor demand factors. Besides those whole sales and retail trades we add another industry case to judge the general situation across industries. It is the automobile industry, a leading exporting industry well-documented for its long-term skill accumulation of blue-collar workers with long-term tenure for regular employees. We particularly focus on one of its leading companies and its related supply-chain companies, mostly its part suppliers. (We call these companies Group A hereafter.) With the help of their Group A labor unions, we conducted both company and employee surveys in 2000 and 2003 on employment practices with supplemental data provided by JAW (Japan Auto-mobile Workers Unions). Following the same logic we subdivide the sample firms in this Group A into two sub-groups, i.e. assemblers and part makers.

The table shows the estimated employment adjustment parameters for full-time workers including non-regular workers and regular workers only. In the table the column "with" shows the result for the full-time workers and "without" indicate for the regular workers only. For all three industries the employment adjustment parameters are consistently larger for the full-time workers including non-regular workers than those without. Figures for supermarkets and automobile manufacturers particularly indicates that these industries and their sub-groups adheres to "life-time employment" with those parameters so small and statistically insignificant for the case of assemblers. With those numbers, we are safe to say that those leading companies famous for their employment stability in reality obtain quite a high employment flexibility to adjust to a changing market environment thanks to non - regular workers.

We next present additional evidence that there is a correlation between the share of non-regular workers in a company and its employment adjustment parameters for overall full time workers. We chosen department stores because among leading 10 companies there is a wide variation in the share of non-regular workers in the total full-time workforce. We estimated the same type of employment adjustment parameters for those two groups, whose result is presented in Table 3B. The column "With" shows the parameter for total

employment and the “Without” column shows the parameters for regular workers. The “Difference” column shows the difference of parameter between those two. And the line “High non-regular” shows those two parameters for the department stores with large non-regular worker share and that of “Low non-regular” presents the parameters for department stores with low non-regular worker share. The parameters do show that for those companies with a high share of non-regular workers the full-time employment adjustment parameters are indeed larger than those for companies with smaller share of non-regular workers as the former number 0.562 is more than twice than the latter 0,234. The same pattern is observed for the case of regular workers with the numbers respectively 0.430 and 0.160.

So far we have presented quantitative evidence on employment adjustment. Next evidence is qualitative. In the survey of the Group A, we asked the methods of employment reduction for both short- and long-term shocks. We asked respondent company to choose a employment adjustment method(s) for both short and mid-long term external shocks, and to indicate the order of application if they choose "multiple". The results are shown in Table4 below.

(Table 4 about here)

The line in the table shows an employment reduction method. The columns are numbered from 1st to 5th to show the order of application to reduce the employment size. The numbers in each line show the % of respondents who chose the method of the line for the 1st choice or the 2nd and so forth. The bold and italicized numbers are the largest and the second largest numbers. In other words, they are the most and 2nd most frequently chosen methods for each column. For a short term shock, reduction of non-regular employee is the second most frequently chosen method and the most frequently chosen method for the second application method. And for a mid/long term shock, reduction of non-regular employment is the most frequently cited method for the first choice. In other words, the reduction of non-regular employees is the primary method for employment reduction for external shocks. This evidence relates the increasing share of non-regular workers and the higher employment adjustment speed for overall workforce.

2) Female workers as an indication of flexibility at firm level: Through taking up a larger share of employment adjustment

So far our discussion has focused on non-regular employee as a whole, without

attention to the gender composition and to the role and function by gender. Here we argue that gender differences are critical in understanding how the Japanese companies have increased their employment flexibility. We will discuss this both at macro level and micro level with relevant data respectively.

First let's look at Table 1 again. This time we will pay attention to the compositional change of employment by type of employment and sex at manufacturing and sales industries. In manufacturing, female regular workers have lost their jobs at the rate of 36% for the period of 1982 to 2002, which compared to 9% reduction for male counterpart, even though female regular worker size was less than half of male counterpart at the initial year of the observation. Thus female workers have contributed to the disproportionately larger share of regular employment shedding than male counterpart in manufacturing. During the same period female workers have taken up almost half of new non-regular employment there, which is also a much larger share of unstable employment compared to their small presence in manufacturing overall employment. In the whole sale and retails, the same picture has unfolded with stronger force. In the 1982 to 2002 period, female workers have absorbed a larger share of regular employment reduction just as in manufacturing by losing more than a half million regular employment. But in the same period more than two million new non-regular employments have been created, and three fourths were taken up by female workers. All this means that without female workers, these large compositional changes from regular to non-regular employment in such a short period of time would not have been possible.

Now let's turn our attention to micro data on regular employment. By looking at the turnover and new-hire data by sex at firm level, we can learn how it is possible that a smaller number of female regular workers can contribute to a disproportionately large share of regular worker reduction. When we examined the choice of employment reduction method for short and long term shocks in Table 4, we learned that reduction of non-regular employment ranked high for both short and long term market shocks. But the table contains further interesting information on the preference of employment reduction methods by employers. Stopping new hire of regular workers is the third preferred employment adjustment method for short term shock and first for mid/long term shock in the overall choice for regular workers. On the other hand, simple discharge of regular workers is the least preferred choice for both short and mid/long term shocks, which in turn proves that those companies in the Group A still uphold the long held employment practice of employment commitment to regular workers. But this commitment is actually not applied to both male and female workers equally. We assembled the annual turnover and replacement ratios by sex for this group companies. The result is shown in Table 5.

(Table 5 about here)

The table shows annual turnover, hire and replacement ratios by type of business for the Group A firms. Each line represents type of business activities such as auto-mobile assembler and auto part supplier. The columns show annual turnover, hire and replacement rates. We calculated those rates for male, female and total regular workers. One striking finding is that female regular workers leave jobs two to five times more frequently than male counterparts. But female new hire rates do not match these high numbers in general, thus making their replacement rate less than 1 (or 100 in %) in most cases. This pattern is observed across types of firms in the group with an exception for assemblers and others. We therefore conclude that employers realized the swift substitution of regular employment by non-regular employment by exploiting the high turnover rate of female regular workers by providing new regular jobs mostly to male workers and new non-regular jobs to female workers.

3) Consequences of those changes

So far we have seen evidence which supports our hypothesis that contrary to the sustained stability of regular worker employment the overall employment flexibility has been increased, and female workers are instrumental in this enhanced flexibility. Our next question is what is (are) the consequence(s) of increased employment flexibility. One direct effect is on the ability of Japanese firms to respond to a changing market environment. Either by a quantitative change or a qualitative one, higher employment flexibility allows the Japanese firms to respond to the changes of market more quickly and smoothly by altering output level or composition of outputs. In other words, they get higher market competitiveness by the above-mentioned employment flexibility. The turn around of financial conditions of those leading companies in auto and electric/electrical manufacturing in Table 6 supports this inference. The table shows the changes in recent years of both operating and current profit rates for leading 10 companies in two industries mentioned above.

(Table 6 about here)

But the increased employment flexibilities have brought in three more consequences because of the specific format in which the flexibilities are realized, i.e. by more non-regular and mostly female workers. One of them is the impact on the skill

formation of workers. As most new employment in the last two decades is one of casual and short-term nature, the firms do not have much incentive to invest in those workers. Figure 3 shows the changes of share of training and educational expenses in total labor cost. The average share of training and educational expenses has decreased in recent years despite a pick in the latest observation year.

(Figure 3 about here)

Moreover as there are less regular worker with higher skills in the workplace than before, there is less opportunity for non-regular workers to learn from those with more skills. This insufficient skill creation at the workplace is well-evidenced and considered as one of biggest challenge and threat for the sustained competitiveness of Japanese manufacturing companies. We just cite the result of the comprehensive survey the Group A unions conducted on this issue. Even though the products of the company A are famous for their superb quality worldwide and its production methods, which has been practiced among all the Group A companies, and they are heavily dependent on their highly skilled workforce, 78% of the surveyed companies doubt that they can maintain the current skill level of their workforce in the near future[3]. The same concern is widely shared and similar evidence is abundant. It seems a natural consequence that the cases of recall of Japanese cars, among all other manufactured product recalls, have been increasing at an alarming rate since 1990s.

(Figure 4 about here.)

The figure shows both number of cases and the total number of recalled cars since 1980. The number of recall cases increased discontinuously around year 2000, and the total number of recalled cars also jumped in subsequent years.

Contrary to the negative consequence above there is a positive impact of surging non-regular employment on competitiveness, which may offset some of the above mentioned negative impact of infusion of non-regular workers. A larger share of non-regular, particularly female, workers reduces the labor cost. See the Table 7A below.

(Table 7 A about here)

The table shows the average real wage rates of full time workers working for firms with more than 5 employees since 1994. In the whole sales and retail industry, which was the

path-setter of this compositional shift, the impact was evident even in the 1990s. Their real wage rate was down marginally in the period of between 1994 and 1999 even though all other industries have registered sizable wage increases. But this negative impact on labor cost has spread to other industries in the 2000s, and the size of the wage decline has increased significantly. The average real wage declined 4.7% for all industries between 1999 and 2004. And the decline is larger in the whole sail and retail industries and service industries where non-regular worker share is larger than all industries average. Consequently the labor share has declined as well as we see in Table 7B.

(Table 7B about here)

Other things equal, this reduced cost helps the Japanese companies to improve their competitive position in the market.

Needless to say, this reduced labor cost is a bad news for workers even thought this lower labor cost may create more jobs in the future or increase the survival rate of their present jobs in the future. And the impact on workers' wellbeing is not limited to the absolute level of purchasing power of their work hour. The increased non-regular employment by female workers has deteriorated the relative position of Japanese female workers to their male counterparts. Low relative wage of Japanese female workers has been well documented[4] and there is some evidence that there are some positive factors emerging to rectify the situation in recent years[5]. But the compositional shift to non-regular employment works certainly against this rectifying trend. See the Figure 5 below the stagnated improvement of female/male wage disparity in recent years.

(Figure 5 about here)

As we can see in the figure, the relative female wage is a way down from their male counterparts despite their growing share in the workforce with almost equivalent educational backgroud. And in the whole sales and retail industry predominantly occupied by female non-regular workers, the parity is actually deteriorating in recent years.

4) Policy implications

After all these findings above, how should policy makers respond to this trend toward more non-regular workers? The government should have a longer and wider perspective than

private companies in their resource allocation. We also know that a short term economic merit often contradicts that of long-term. As the Japanese companies invest less and less in their workers, regular and non-regular alike, the government should fill the gap between the needs and supply of skills by providing enhanced public skill formation programs beyond those traditional ones towards more diverse types of workers, particularly female non-regular workers with more diverse content and more flexible program offering. Another area the government should respond decisively is the stagnating wage of female workers. It is well documented that the wage inequality by sex is the largest in Japan among developed countries even after controlling all other factors, including the type of employment[6]. As more female workers take up non-regular work, the wage disparity will increase unless a decisive intervention by the government is implemented. Lastly I have to add that academics have to respond to those two policy implications by presenting a convincing reason not only why but also how those policies work in the long-run. If the public allocate more resources for training otherwise paid by employers, we have to present a convincing reason why we should. This is an area where academic research will be in need. .Similarly, wage parity based on social and cultural values is hard to rectify. Further research on wage disparity is in great demand.
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Footnotes:

[1]"Has Japanese Enterprise Changes?" Asian Business and Management, Special Issue, Vol. 6, December 2007.

[2] With the partial employment adjustment model, a company's assumed employment adjustment practice is expressed as follows.

$$\ln N_t - \ln N_{t-1} = \lambda \cdot \left(\ln L_t^* - \ln N_{t-1} \right)$$

where N_t is the actual employment level in term t, L_t^* is the optimal employment level and λ represents the employment adjustment coefficient ($0 \leqq \lambda \leqq 1$). In the partial adjustment model, if a company is looking to modify employment level this will incur various expenses. Therefore the actual level of employment adjustment is determined within the balance of profit generated when these expenses attain an optimal employment level L_t^*.

[3] See Chubu-Sansei Ken(2000), pp.291, Table 1-1-33.

[4] See Nakata and Takehiro(2002) for example.

[5] See Nakata(2002) for example.

[6] See Nakata and Takehiro(2002) for example.

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