The Effect of Training Policy for Non-Regular Employees and Human Resource Management Practices

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Using a recent survey of establishments on the practices of non regular employments, we examine the effectiveness of various human resource management (HRM) policies towards non-regular employees. We focus on the gap between the target and the actual average tenures of non-regular employees as the benchmark to measure the effectiveness. We exploit a special characteristics of the survey in which a set of questions are asked on both regular and non-regular employments. With this feature, we conduct difference-in-difference type regressions to control for unobservable heterogeneity of establishments. We find that the emphasis on skill developments alone is not enough to enhance the stability of non-regular employees. Given the heterogeneity of non-regular employments, we find it important that the HRM policy is fine tuned towards the needs and aspirations of respective types of workers. For example, OJT, incentive provisions for skill improvements, and flex-time system are found to be important in the stability of part time (*arubaito*) workers. On the other hand, for contract workers, we find the positive impact of provision of a career track for administrative positions, on top of the OJT and incentive system for skill improvements. If misguided, some of HRM may well be counter-productive. For example, we find that a provision of off-the-job training tends to induce quits of contract employees.

I. Introduction

In recent years there has been an increase in the number of part-time, *arubaito* and contract workers, so-called "non-regular employees,"[1] an increase, too, in the frequency

[1] According to the time-series figures which can be derived from the surveys of the Statistical Office of the Ministry of General Affairs (the Special Survey of the Labor Force Survey for 1984 to 2001 and the Labor Force Survey [Detailed Tabulation] since 2002), non-regular employees made up 15.3% of the labor force in February 1984. By February 1994 this had increase to 19.1%, by February 1999 to 24.9% and rapidly increased further to 31.5% as the average from January to March 2004. (See http://www.stat.go.jp/data/roudou/longtime/zuhyou/lt51.xls). The categories used are: part-time workers, *arubaito* workers (a term originally used for student part-time workers, but now used to cover anyone working on a casual basis who does not fit into any of the other categories) workers dispatched from a temporary employment agency and "contract employee or entrusted employee" and "others." (Contract and entrusted employees have been separated from "others" only since 2001.) The change in the survey frame in 2001, makes direct comparison difficult as the source quoted notes, but there can be no doubt about the big increase in the proportion of non-regular employees. For a comparison of non-regular employees in Japan and the US see Houseman and Osawa (2003) and for the categorization of non-regular employees, see Keizer (2008).

with which such workers are employed alongside regular employees in work which is central to the firm's business. In short there have been big changes, both quantitative and qualitative in the role of non-regular employees in the labor market.

There are, of course, many firms which use non-regular employees only for supplementary and temporary assignments and apply simple personnel system (relative to those governing regular employees), thus economizing on personnel administration resources (Nakamura 1989, 1990). On the other hand, in some other firms, especially those in retail, restaurants and service sectors, non-regular employees are the main core of the labor force and, where efforts are made to introduce systems of evaluation and reward similar to those of regular employees (Honda 1998; Gadray, Jany-Catrice, and Ribault 2001; Takeishi 2006).

How to treat non-regular employees is not only a question that individual firms have to resolve in their employment policies: given the increase in the numbers of such workers, it is also a question of what should be the ideal nature of the Japanese labor market as a whole. The fact is that an increase in the proportions of non-regular employees is a common feature of most other advanced industrial countries, most notably in countries where the difference in employment conditions of regular and non-regular employees is greatest.[2]

In those countries, too, as in Japan the use of non-regular employees as the core labor force has become an important policy issue. There are already numerous studies looking into the question of whether temporary jobs are a stepping stone to future regular jobs or are simply dead-end jobs.[3] If temporary jobs are indeed to become stepping stones to future regular jobs, what is needed is not simply a matter of their treatment within individual firms, but for the external labor market to evaluate their experience as temporary workers to facilitate their upward mobility across jobs.

In the Japanese context, skill formation via job mobility is not a realistic possibility. Instead, we need practical steps to give temporary workers the chance of skill formation and make it easier to treat them as core workers. The minimum necessary steps are to put in place employment policies which foster and evaluate their skills.

As we note later, most of the existing literature is based on the assumption that treating non-regular employees as the core labor force is a good thing and that what is necessary is to employ them under conditions as much as possible close to the treatment given to regular employees. Nevertheless that does not seem to be what is happening and the question arises why that is so and whether it will ever be so without a legislation requiring equal

[2] An EU study found, for instance, that the probability for temporary workers to be transferred to regular employee status was, in Britain 47%, in Luxemburg 62%, in Portugal 49% but in Italy 28%, in France only 19%. (http://www.eurofound.europa.eu/ewco/reports/TN0506TR01/TN0506TR01.pdf)

[3] Houseman and Osawa (2003), Heinrich, Mueser and Troske (2005). Esteban-Pretel, Nakajima, and Tanaka (2009) have examined the extent to which experience as a temporary worker influences the chances of getting a regular job and conclude that there is little evidence of such a Stepping Stone function.

treatment.

One reason is because it has not been made clear what effects the policies for employing non-regular employees have in human resource management terms. In particular there have been few studies which investigate the effect on the worker stability. Generally speaking there is no question that if non-regular employees are to be given serious responsible jobs, some accumulation of human capital is needed. But for firms to spend money doing this, there needs to be some likelihood that, even as temporary workers, the people who are trained will stay in their jobs. In fact, it is not clear, however, whether the treatments commonly given to non-regular employees—typically the one originally designed for regular employees—does in fact increase the likelihood of their staying on the job, and thus constitute an effective employment policy. It may well be the case that low motivations and frequent turnover result so that inadequate skill formation hurts the performances of those workers. If so, given the high cost of training, employers may not recoup their investment. In fact, Takeishi (2006) has shown that even where there has been a progressive shift of non-regular employees into core jobs and employment policies have been adjusted accordingly, the measures introduced have not responded to the needs of the workers, and the introduction of such policies have not had much effect on work motivation or on the high turnovers.

It is not always easy to align the interests of workers to those of employers, in the provision of the training. Employers are most concerned to make sure that they are fully acquainted with the ins and outs of their present job and learn by on-the-job training to do it better, while the workers themselves have a much stronger incentive to acquire general skills that could be used in other workplaces. And this clash of interests does not apply only to training. The employer who wants to make his non-regular employees his main work force may want to give them jobs with wider and deeper responsibilities, whereas for workers, this may simply mean being forced into a more difficult and stressful tasks.[4]

Hence the need for empirical studies which show what kind of employment practices do have the effect of raising worker motivation and reducing their quit rates when efforts are made to treat them as core work force. Such studies have practical as well as academic importance.

This paper is based on the results of a questionnaire survey, the Establishment Survey of Employment Policies for Non-Standard Workers (hereafter simply the Survey), carried out by the Study Group on Personnel Administration for Non-Standard Workers of the Ministry of Health, Labor and Welfare. We hope, as well as demonstrating that at the present time, treating non-regular employees as the core work force does not necessarily reduce the turnover of such workers, to suggest what sort of employment policies might contribute to the reduction of the turnover rate. It should be noted that in this analysis we have no direct

[4] The studies cited in footnote 3 indicate that skill-job mismatch is greater for non-regular than for regular employees, and it is more often the case that job assignments are beyond the skill capabilities of non-regular employees.

data on the effect of various personnel policies on work motivation. But it seems to us reasonable to suppose that the lower the turnover, the higher work morale is likely to be.

Before the main analysis, we offer a brief description on the methodology used and the contribution that it makes. There has been an enormous accumulation of human resource management studies about the employment of non-standard workers, and the current situation is being gradually made clear. It appears from such studies that personnel policies as close to those for standard workers as possible facilitate the use of such workers as the core labor force. But, as will be shown later, most of these studies have as their empirical base a one shot cross-sectional analysis which cannot incorporate the impact of heterogeneous economic environments each sample firm or a worker faces. Typically, such a survey has no data on the profitability of the sample firms. Firms doing brisk business naturally employ large number of temporary workers, and they can afford costly personnel policies for non-regular employees. The underlying reason for the use of temporary workers as the main work force is the brisk business, not the use of high powered human resource management policy.

Given the absence of any panel surveys tracking events in particular firms over time, this is a difficult question to resolve. However, it is possible to make some headway by tweaking the questionnaire survey. The present survey is also a one shot cross-sectional study, but it does have two extra devices. The first is to ask for the expected, or hoped-for, period of service of non-regular employees so that we can look at the gap between expectation and reality. The second is to get the quit rates of regular as well as non-regular employees as a means of getting a measure of the otherwise unknowable variable of the firm's profitability. The assumption is that the profitability of the firm will have a similar effect on the quit rates of both regular and non-regular employees. Hence by comparing the difference in the quit rates of regular and non-regular employees with the difference in the personnel policies directed at each category, we obtain unbiased estimates of the effect of personnel policies on the stability of non-regular employees.

Our estimation results indicate that while improving some of the treatments of non-regular employees indeed reduce quit rates, their effectiveness depend on the nature of the policies adopted. While acknowledging inevitable limitations of the analysis based on any specific survey, we believe that this does constitute a useful addition to our understanding of the issues.

The structure of the paper is as follows. Section II summarizes existing studies of the use of temporary workers as core employees. Section III explains the nature of the data and describes the use of non-regular employee capabilities, the personnel policies adopted and turnover rates. Section IV offers an econometric analysis of the effect of personnel policies including skill development on turnover rates. Finally a brief conclusion is given in Section V.

II. Existing Studies on Human Resource Management Policies for Non-regular Employees

Since the latter half of the 1990s there have been numerous studies of non-regular employees, with particularly valuable contributions being made concerning the use of part-time workers as the core work force. They have shown that there is a tendency for firms, as they increasingly use part-timers in core work areas, to adopt systems of evaluation and remuneration similar to those for regular employees, and provisions for promotion to regular employee status (Honda 1998). More recently the same tendency has been recorded for other types of non-regular employees, including contract workers (Takeishi 2006). Nishimoto and Imano (2003) investigates the use of more equal treatments of non-regular and regular employees in terms of rank system, job allocation, transfers, evaluation and pay systems. Their analysis found positive impacts of equal treatments on the use of non-regular workers as the core employees, as well as on the overall firm performance.[5] In general, these studies have shown the effectiveness of the adoption of personnel policies similar to that of regular employees on the quality of non-regular employees in core jobs. They also have contributed to the understanding of the mechanisms involved in making non-regular employees the core work force.

We need to apply due cautions, however, in generalizing these findings to the non-regular employees as a whole. To begin with, most of these studies are case studies depending on interviews and the cases have largely been confined to retailers, restaurants and other service firms, which have been known as the most successful cases in the use of non-regular employees for core jobs. They do not tell us much about the effects of personnel policies in other sectors including manufacturing, or, why there are other firms which are apparently reluctant to put non-regular employees into core jobs. Most of these studies concentrate in the relation between putting non-regular employees into core jobs and the overall characteristics of personnel policies towards them. As a result, the lack of the detailed analysis of HRM leaves many practical questions unanswered. For example, the impact of the adoptions on specific problems, such as high turnovers, is unknown.

Moreover, more attentions should be paid to the fact that these are based essentially on one shot, cross-sectional studies. There is always the possibility that with changes in business conditions and the profitability, different personnel policies will be introduced or there will be a change in turnover rates or job satisfaction levels, so that the cross section comparison does not tell us the whole reality. This defect of cross-sectional studies is often pointed out, but it applies also to existing studies on the use of non-regular employees in core jobs.

What are needed to make clear the mechanisms involved in using non-regular em-

[5] Ishihara and Shinozaki (2005) have also shown that equal treatment in such matters for part-time and regular employees increases the acceptability of pay differentials, and Morishima and Foy (2002) showed that it increased job satisfaction on the part of regular employees.

ployees for core jobs, thus making for a more socially efficient labor market, are studies which avoid this defect and produce more robust results regarding the relation of personnel policies to the use of non-regular employees in core jobs.[6]

III. Human Resource Policies, Employment Stability and Personnel Practices

1. The Data: The Establishment Survey of Employment Policies for Non-Regular Employees

For this purpose, in this paper we use the Survey (sponsored by the Study Group on Personnel Administration for Non-Standard Workers) to look at the relation between personnel policies and employment stability and thereby to improve the robustness of our understanding of the problems in using non-regular employees as core work force.

The sample was drawn from the *Teikoku Databank* and consisted of a random sample of a thousand each from the six categories used in the *Databank* to classify establishments; office and marketing facilities, production facilities, R&D facilities, shops and service establishments, warehousing and transport facilities, and sports and entertainment facilities. The questionnaire was mailed and sent back by mail during August and September 2005. The number of usable replies was 1337, giving a response rate of 22.3%.[7]

The questions in the survey are listed in Appendix Table 1. In most of the questions in the survey, respondents are asked to answer each question separately for three types of non-standard workers; part-time and *arubaito* workers, contract workers, and temporary agency and contract company workers. As this paper concerns the purposes and results and employment policies of directly employed non-regular employees, the analysis below will be confined to the first two categories, workers in the third category being excluded from all the data and tables. One advantage of the survey is its wide coverage of workers in these two categories and over a wide range of establishments, not just in the tertiary sector.

The raw data gathered by this survey are deposited at SSJDA, the Social Science Japan Data Archives attached to the Institute of Social and Economic Research at Tokyo University.

2. Establishment's Human Resource Deployment Policies Differ Widely

As we indicated at the beginning of this paper, there is no uniformity in the policies adopted with regard to non-regular employees; there are large differences depending on the industry sector and the size of the establishments, as well as on the purposes for which

[6] It is also the case that most of the studies of the 1990s concerned companies and establishments employing married women part-time. There are still very few studies of firms employing the kind of workers whose numbers have increased in recent years—younger workers in part-time or casual work, or full-time workers on time-limited contract basis. For the question of the deployment of a variety of employment forms, including regular employees, see Sato and Sano (2005).

[7] This overall response rate does not correspond to the response rate for each individual question.

non-regular employees are employed. Let us first demonstrate this with data from our Survey.

In the questionnaire, respondents were asked separately about directly employed non-regular employees and outside workers and on the basis of differences between the two we divided the sample into four categories as follows:

- Establishments seeking to use non-regular employees in general as core workers
- Establishments which are making active efforts to develop skills of non-regular employees in general
- Establishments seeking to use only some non-regular employees as core workers
- Establishments which are making active efforts to develop skills of only some types of non-regular employees

The categorization process is somewhat complex, but since it is a key variable we explain it here in detail. Question 11 asked "What sort of work do you employ non-regular employees (part-timers, *arubaito*, contract workers) for?" and required respondents to choose one among five alternative answers: (i) We give them supplementary work, (ii) We give them work which is core rather than supplementary but which involves fixed routines, (iii) What work we give them varies according to the needs of the moment, (iv) We try deliberately to give them quite demanding work in order to develop their capacities, (v) Other. This same question was asked separately for five categories of workers; non-managerial regular employees, particularly able non-regular employees, ordinary non-regular employees, particularly able workers from outside, and ordinary workers from outside. The results were used to assess differences in policies to develop the skills of non-regular employees.

First, firms which gave the answer "not supplementary but routine jobs"—or something better—for ordinary non-regular employees were put in the first category of "Establishments seeking to use non-regular employees in general as core workers." (Henceforth, "General non-regular core use.") Then, comparing the answers about the jobs given to non-regular employees in general, with the answers about regular employees, if they were the same (or better for non-regular employees) we counted the firm as coming in the category of "Establishments which are making active efforts to develop non-regular employees in general," (henceforth "General non-regular active development efforts") as a sub-group within the "general non-regular core use" category. The other two categories, selecting particularly able non-regular employees for core work and making active efforts to develop their skills, are self explanatory. Finally, in the analysis that follows, establishments which do not come in one of these four categories are described as "supplementary work only" establishments.

Table 1 shows, for both non-regular employees in general and for particularly able non-regular employees the percentage of establishments with core-use and skill development policies, by industry, and establishment size.

More than 90% of establishments put particularly able non-regular employees on to core jobs, and more than 40% give them jobs either similar to those of regular employees or

Table 1. Deployment Policy for Non-Regular Workers, by Industry and Establishment Size

a1. Use generally as core workers

		10 or less N=185	30 or less N=179	100 or less N=249	More than 100 N=183	All establishments N=796
Services	N=331	70.0	60.7	74.7	75.6	69.5
Manufacturing	N=284	62.9	71.4	70.8	65.3	68.0
Other	N=181	72.5	81.3	64.3	45.9	66.9
All industries	N=796	69.2	68.7	70.7	63.9	68.3

a2. Active training policies for all workers

		10 or less N=156	30 or less N=161	100 or less N=225	More than 100 N=171	All establishments N=713
Services	N=290	21.3	21.3	19.5	27.3	21.7
Manufacturing	N=262	12.1	20.0	17.5	15.2	16.4
Other	N=161	23.5	26.1	26.1	14.3	23.0
All industries	N=713	19.9	22.4	20.0	18.1	20.1

b1. Use particularly able employees as core workers

		10 or less N=136	30 or less N=142	100 or less N=208	More than 100 N=165	All establishments N=651
Services	N=284	94.7	92.4	96.2	100.0	95.4
Manufacturing	N=222	93.3	97.3	94.0	98.8	96.4
Other	N=145	88.9	97.4	91.3	93.9	93.1
All industries	N=651	93.4	95.1	94.2	98.2	95.2

b2. Active training policies for particularly able workers

		10 or less N=136	30 or less N=142	100 or less N=208	More than 100 N=165	All establishments N=651
Services	N=248	42.5	50.0	39.7	47.7	44.4
Manufacturing	N=208	42.9	51.4	52.0	35.4	44.7
Other	N=136	61.5	44.7	42.9	26.7	43.4
All industries	N=592	46.9	48.9	45.3	37.2	44.3

at least of a level which gives them the opportunity to develop their skills—a result which confirms the impression that the much touted “transformation of non-regular employees into the core labor force” is in fact proceeding to a considerable degree. As for non-regular employees in general, somewhat less than 70% put them on to core jobs and about 20% try actively to develop their skills. Moreover, the proportion of establishments which deploy particularly able non-regular employees in core jobs which also seek to develop their skills is nearly one half (44.3 divided by 95.2=0.47) whereas for non-regular employees in general the proportion is less than 30% (20.1 divided by 68.3=0.29). The latter are thus very much a minority. It is apparent that even in establishments which use non-regular employees in core jobs, it is frequently only particularly able workers that are given job assignments similar to those of regular employees.

Across industry variations are small, except that in manufacturing there are few manufacturing establishments which seek to develop the skills of non-regular employees. There is no clear correlation between size and core deployment. We find, however, that, whereas in the service sector, there is little difference between size groups, and if anything, a tendency for the bigger establishments to do more training, in manufacturing and also in

the "other" category, the bigger the establishment the more negative the attitude to developing non-regular employees' skills.

As this shows, if one is to judge firms' policies for the deployment of human resources by the job assignments they make, as a general tendency, whereas in the service sector, workers are assigned to core jobs and efforts are made to develop their skills, in manufacturing and particularly in large manufacturing establishments the tendency to do so is weak. It is also apparent that there are differences in the treatment of non-regular employees depending on the industry and the size of the establishment.[8]

3. There is a Connection between Human Resource Deployment Policies and Employment Stability

The question is whether these efforts to develop non-regular employees' skills have their intended effects. In this paper we use, as a proxy for achieving the desired effect, the difference between the job-tenure pattern expected and that actually found. It is generally understood that the development of human resources requires an accumulation of human capital which is reflected in increased productivity, hence the length of job tenures for the workers who are the object of the investment in human capital would seem to be a good proxy.[9]

Before looking at the difference between expected and actual tenure lengths, let us see how expected tenure lengths are affected by firms' policies towards the deployment and training of non-regular employees. Table 2 seeks to clarify the issue by showing the expected tenure for different types of workers according to the general policy towards deployment and training that the firm has adopted.

What the table shows is that whichever type of non-regular employee one considers, the more a firm is active about its deployment of human resources (in the sense defined above) the longer the period of expected tenure. The correlation is particularly marked in the proportions in the three categories which hope for more than 10 years tenure. This is also clear from the fact that the expected tenure for regular employees shows no relation to the activeness or otherwise of the deployment of non-regular employees. It also is consonant with the basic logic of this paper that the development of human resources through training investment improves productivity.

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[8] On this question of differences according to the industry, and the assumptions which probably underlie it, see Keizer (2008).

[9] There are, however, two points to note here. First, if a firm has an active skill development policy and tenures are sufficiently long, should the non-regular employees not be promoted to regular status? Secondly, if the way is open for a non-regular employee in future to use his or her acquired skill to get a regular-status job in another firm then possibly one should not count long tenures as a precondition for skill development. However, even if that is so, the length of tenure is a matter of concern for firms themselves if as a result of their human resource development policies the expected degree of employment stability is not attained.

Table 2. The Relation between Human Resource Deployment Policies and Expected Length of Tenure

	Policy towards deployment of non-standard workers							
	(a) Expected tenure of part-time and *arubaito* workers (%)				(b) Expected tenure of contract workers (%)			
	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns
Up to 1 month	0.9	0.3	0.9	0.6	0.0	0.0	0.0	0.0
Up to 3 months	0.4	1.0	0.9	0.8	0.0	0.0	0.0	0.0
Up to 6 months	2.6	0.3	1.8	1.4	1.0	2.3	0.0	1.4
Up to 1 year	6.0	6.3	3.5	5.7	8.7	3.4	0.0	4.3
Up to 3 years	19.3	22.3	12.4	19.5	21.4	27.7	12.9	22.9
Up to 5 years	25.8	25.6	21.2	24.9	27.2	26.0	15.7	24.3
Up to 10 years	28.3	20.6	28.3	24.7	31.1	17.5	30.0	24.0
10 years or more	16.7	23.6	31.0	22.4	10.7	23.2	41.4	23.1
Total	100.0 N=233	100.0 N=301	100.0 N=113	100.0 N=647	100.0 N=103	100.0 N=177	100.0 N=70	100.0 N=350
Average	6.17	6.26	6.58	6.25	6.12	6.24	6.99	6.34
Average for regular employees	7.93	7.87	7.88	7.88	7.94	7.92	7.86	7.91

Note: The average is calculated by counting “Up to one month” as 1 and “10 years or more” as 8. The average for regular employees was calculated in the same way. However, the “All patterns” figure for regular employees differs, because on the left-hand side it is calculated only for firms which had “part-time or *arubaito*” workers and on the other side only for firms which had contract workers.

Let us next look at whether or not the expected tenures are in fact realized, as shown in Table 3.

The table shows the same pattern as for Table 2; the more active the development policy the longer is the actual tenure. And, also, the actual tenures of regular employees is again independent of the type of policy which prevails for non-regular employees.

Then, the next question is what about the gap between expected and actual tenures?

Table 3 shows, in the row “% actual shorter (1)” that around 40 or 50% of establishments report that workers stay in their employment for a shorter period than they had hoped for, which, in turn, suggests that their efforts fully to utilize non-regular employees were not having their expected effect. This is clear in that, as Table 2 shows, as many as 40% of establishments hoped to keep workers for as long as 10 years, the proportion where that actually happened was at most 10%.

More importantly, notice that the more active the efforts to develop both types of workers, the greater is the gap between expectation and reality. The more active the establishment is about the deployment and training of non-regular employees and the more it invests in training costs, the greater is the hope that tenures will be extended, and the more likely the disappointment. And this means that they fail to get positive returns from their investment, and the prospects for treating non-regular employees as core work force become less promising.

Table 3. The Relation between Human Resource Deployment Policies and Actual Length of Tenure

	Policy towards deployment of non-standard workers							
	(a) Actual tenure of part-time and *arubaito* workers (%)				(b) Actual tenure of contract workers (%)			
	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns
Up to 1 month	0.4	0.0	0.9	0.3	0.0	0.0	1.4	0.3
Up to 3 months	1.8	2.1	1.8	1.9	1.0	0.6	0.0	0.6
Up to 6 months	2.6	2.1	2.7	2.4	5.9	3.6	1.4	3.8
Up to 1 year	11.8	10.6	8.1	10.6	10.9	6.0	1.4	6.5
Up to 3 years	29.4	30.1	18.0	27.7	29.7	38.7	29.0	34.0
Up to 5 years	25.9	25.0	26.1	25.5	26.7	26.8	26.1	26.6
Up to 10 years	18.9	21.6	30.6	22.2	17.8	15.5	33.3	19.8
10 years or more	9.2	8.6	11.7	9.4	7.9	8.9	7.2	8.3
Total	100.0 N=231	100.0 N=296	100.0 N=113	100.0 N=640	100.0 N=103	100.0 N=172	100.0 N=70	100.0 N=345
Average	5.67	5.73	6.00	5.75	5.60	5.70	6.04	5.78
Average for regular employees	7.93	7.86	7.87	7.88	7.94	7.92	7.86	7.91
% actual shorter (1)	44.8	44.9	48.2	45.4	41.8	36.3	50.0	40.7
% actual shorter (2)	35.9	37.2	42.5	37.7	39.1	29.8	48.2	36.5

Note: Average and average for regular employees as for Table 2. "% actual shorter" the percentage of firms who said that the actual tenure lengths were shorter than those they expected. "% actual shorter (1)" is calculated for the relevant type of non-regular employees for all firms, "% actual shorter (2)" only for firms for which the actual tenures of regular employees coincided with the expected tenure terms, but the actual tenure terms of non-regular employees fell short of those expected.

This is an observation based on the aggregated experience of all industries, without considering the particular economic environments in which establishments find themselves. It is conceivable that the more unfavorable the environment, the more establishments try to substitute non-regular employees for regular employees. In that case, it is the unfavorable environment responsible for increasing quit rates and an increased gap between expected and actual. The true causality is between the worsening of the firm's economic conditions and the quit rate, and the observed relationship between active deployment and development policies and the tendency of workers to remain in employment is not causal. Hence we cannot necessarily conclude from the figures in "% actual shorter (1)" that the active deployment policies invite a failure of employment stability efforts.

To further probe this issue, we also analyzed only those firms whose actual length of service of their regular employees was the same as their expected length of service, (or longer) and worked out for their non-regular employees the gap between actual and expected. This is the row shown as "% actual shorter (2)" in Table 3. One can assume that where an industry, or a particular firm within an industry is having trouble, this will show up in their level of actual tenure terms for regular employees being lower than what they

Table 4. Personnel Deployment Policies and the Presence or Absence of Formal Personnel Administration Practices: Percentage Having Such Policies

	Policy towards deployment of non-standard workers							
	(a) Presence or absence of personnel administration practices for part-time and *arubaito* workers (%)				(b) Presence or absence of personnel administration practices for contract workers (%)			
	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns
	N=194	N=263	N=104	N=561	N=81	N=145	N=58	N=284
Personnel evaluation system	33.0	34.6	27.9	32.8	40.7	42.1	50.0	43.3
Pay grade system	8.8	7.6	5.8	7.7	12.4	17.2	22.4	16.9
Pay increase system	51.0	48.7	45.2	48.8	48.2	47.6	70.7	52.5
Bonus system	46.4	52.5	47.1	49.4	55.6	61.4	70.7	61.6
Mentor system	21.1	18.3	13.5	18.4	16.1	15.9	19.0	16.6
Promotion to supervisory functions	4.6	5.3	5.8	5.2	9.9	10.3	13.8	10.9
Promotion to regular employee status	32.0	30.4	29.8	30.8	38.3	42.1	46.6	41.9
Hire with pre conditions on type of jobs	25.3	25.1	25.0	25.1	38.3	18.6	15.5	23.6
Agreement on flex work hours	47.4	45.3	52.9	47.4	22.2	15.2	10.3	16.2
Transfer to contract worker status	12.9	11.4	14.4	12.5				

wanted and that, hence, firms where the expected level and the expected length of tenure of the regular employees coincided would be firms which were not particularly subject to problems. And that would suggest that if some firms among them had difficulty in keeping non-regular employees, it must have been due to some factors which affected only non-regular employees. And in fact it is the case that, (among these firms which keep regular employees for their expected length of tenure) for both types of non-regular employees, the more active the policy for deploying and developing them, the greater the gap between the expected and the actual tenures of such workers. Thus the conclusion from Table 2 that active policies increase the gap between expectation and result seems to be confirmed.

4. The Extent to Which Personnel Management Policies for Non-Regular Employees Are Introduced Depends on the Type of Policy.

(1) The Presence or Absence of Formal Personnel Policies for Non-Regular Employees

What then, explains the fact that enterprises which seek actively to develop the skills of non-regular employees fail to keep them? Previous studies suggests that the problem may lie in the failure of their personnel administration policies, and this may well apply to our own survey results.

Here, in Table 4, we show the proportion of enterprises which have various kinds of formal employment policies (relating to wages, for instance) separately according to the general strategy for deploying non-regular employees. Again, also separating the policies applied to part-time and *arubaito* workers, from those applying specifically to contract workers. As explained previously, “give them a supplementary role” means “not using them as core workers.”

It will be obvious from the table that there are wide variations in the frequency with

which various policies are reported. Thus, while more than 60% of establishments have bonus systems for contract workers, less that a tenth have pay grade systems for part-time and *arubaito* workers. There are also many practices for which the proportions of establishments using it for part-time and *arubaito* workers and those using it for contract workers are very different. For example, nearly a half of the sample allow part-time and *arubaito* workers to choose their preferred work hours and work days, but in the case of contract workers less than a quarter (16.2%) adopt such a policy.

For part-time and *arubaito* workers, there seems to be very little difference in the proportions adopting various practices according to their deployment policies. A possible exception is the fact that there is a smaller proportion promoting to supervisory positions among the establishments which try actively to develop their skills, whereas in the case of contract workers, several practices seem to be more common where there are active development policies. For example, bonus systems for contract workers are found in approximately 50% of establishments which do not try to use them as core workers, whereas the proportion rises to 70% where they do. Much the same can be said of evaluation systems, pay grade systems and promotion systems. By contrast, active skill development policies seem to be negatively correlated with some other practices, such as limiting the job definitions of contract workers, or, flex work days and work hours.

There is less variation according to deployment practices both in appointments to supervisory positions and to regular employee status.

(2) The Presence or Absence of Personnel Policies for Skill Development

Table 5 applies the same analysis to practices concerned with skill development.

There are indeed wide variations in the proportions adopting various practices, but not as much as we find in the wage systems, between part-time and *arubaito* workers on the one hand, and, contract workers, on the other. There is not much difference according to deployment policy, either, in the case of part-time and *arubaito* workers. As in Table 4, however, in the case of contract workers, there is an increase in the proportion of establishments offering training courses, help in self learning or towards the acquisition of qualifications as one goes from those which do not try to use them as core workers to those which do and then to those which have active development policies. These are mostly off-the-job training devices, though. When it comes to on-the-job training, like giving fellow-workers training responsibilities, spelling out required work skills, flexible work allocation and so on, there is no clear correlation with overall deployment policy.

Hence there is a wide variety of rates of adoption of various personnel practices even among establishments which have the same active deployment policy with respect to making non-regular employees core workers or not. It might be expected that the adoption of such practices might have some effect on the stability of non-regular employees.

Table 5. Personnel Deployment Policies and the Presence or Absence of Personnel Administration Practices Related to Skill Ddevelopment: Percentage Having Such Policies

	Policy towards deployment of non-standard workers							
	(a) Presence or absence of personnel administration practices for part-time and *arubaito* workers (%)				(b) Presence or absence of personnel administration practices for contract workers (%)			
	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns	Supplementary use	Use as core workers without training	Use as core plus active efforts to train	All patterns
	N=212	N=287	N=106	N=605	N=96	N=168	N=66	N=330
Giving supervisors or senior workers responsibility for training juniors	66.0	61.7	62.3	63.3	66.7	58.3	53.0	59.7
Preparing operation manuals	52.8	50.2	50.9	51.2	42.7	53.6	47.0	49.1
Explicit spelling out of required work skills	16.5	19.2	22.6	18.8	26.0	21.4	16.7	21.8
Assistance for acquiring in-firm or public skill qualifications	3.3	7.0	12.3	6.6	12.5	15.5	31.8	17.9
Assistance for self learning	12.7	8.0	18.9	11.6	16.7	19.6	31.8	21.2
Allocating work according to aptitude	45.8	43.9	44.3	44.6	38.5	48.8	43.9	44.9
Opportunities for career counseling	7.1	6.6	7.6	6.9	10.4	19.1	13.6	15.5
Training upon hiring	21.7	26.1	26.4	24.6	20.8	23.8	34.9	25.2
Periodic training courses	13.2	14.6	16.0	14.4	17.7	18.5	22.7	19.1

IV. Skill Development Policies for Non-Regular Employees and the Effectiveness of Personnel Administration Practices

1. Estimation Model

To summarize the above argument, the adoption of active skill development policies for part-time, *arubaito* and contract workers seems not to have the desired effects. It is also clear that even in those establishments where such policies are adopted, there is a great variety in the actual personnel practices that are introduced. This suggests that the possibility of getting workers to settle down for long tenures varies even among establishments which are equally positive in their skill development policies, depending on the particular type of personnel administration practices that they adopt. In this section we conduct econometric analyses of the relationships between those various practices and tenure lengths.

We assume that the reason why actual tenures do not match up to the expected or desired tenures is primarily because of the ineffectiveness of their personnel deployment policies and their personnel administrative practices. Putting that in the form of an estimation model, we get the following equation (A).

$$\Delta Ten\_non_j \equiv Ten\_non_j^{expected} - Ten\_non_j^{actual}$$
$$= \alpha^{non} + policy_j \cdot \beta^{policy} + inst\_non_j \cdot \beta_{non}^{inst} + contols + u_j^{est} + u_j^{non}$$

$\cdots\cdots$ (A)

Where $Ten\_non_j^{expected}$ is the expected length of service of non-regular employees in the establishment *j* and $Ten\_non_j^{actual}$ the corresponding actual length of service. The dependent variable is the difference between the expected and the actual average tenures, namely, ΔTen_non_j. The two explanatory variables are $policy_j$ which is the non-regular employee deployment policy of the establishment *j*, and $inst\_non_j$ which is a variable representing the presence or absence of the whole range of formal personnel administration practices including those related to training. If a practice was adopted the variable was scored 0; if it was not adopted it scored 1.

As for control variables, we use those which are likely to affect the tenure length of non-regular employees, namely the overall skill levels required in the workplace, the skill levels of non-regular employees, the dominant age group, the industry and establishment size. The coefficients which interested us most are the β_{non}^{inst} which allows one to see which of particular personnel practices contribute by its absence to preventing the actual tenure length from being as long as was expected.

The important thing here is that the gap between expected and actual tenures is affected not only by the deployment policy and the adoption or otherwise of certain personnel administration practices, but also by the particular circumstances in which the establishment is placed. We can explore some of these circumstances with the control variables applied to equation (A), but one should not overlook the fact that there remain other elements affecting tenure lengths which are not observable. We represent these unobservable elements as u_j^{est} for those which affect the establishment *j* in general, and u_j^{non} for those which affect only the tenures of its non-regular employees. We do, indeed, in this study consider these elements to the maximum possible, using trends in sales, an industry dummy and a scale dummy. But given only those control variables one cannot take into account such variables as changes in the overall personnel policies of the firm, or the medium to long term prospects for the firm's business which are likely to have an important effect on the stability of employment tenures.

This means that, if the circumstances of the establishment *j* are such that it is predisposed towards the use of non-regular employees, or to introduce a particular employment practice, the estimation of the βs through ordinary least squares estimation of equation (A) is biased and may lead to under- or over-estimation.

In order to get around this problem we use the difference between the expected and actual tenures of regular employees as a benchmark. That is to say, equation (A) revamped for regular employees becomes equation (B).

$$\Delta Ten\_reg_j \equiv Ten\_reg_j^{expected} - Ten\_reg_j^{actual} \quad \cdots\cdots \text{(B)}$$
$$= \alpha^{reg} + inst\_reg_j \cdot \beta_{reg}^{inst} + controls + u_j^{est} + u_j^{reg}$$

And by subtracting the two equations we get equation (C).

$$\Delta Ten_j \equiv \Delta Ten\_non_j - \Delta Ten\_reg_j$$
$$= \left(\alpha^{non} - \alpha^{reg}\right) + policy_j \cdot \beta^{policy} + \left(inst\_non_j \cdot \beta_{non}^{inst} - inst\_reg_j \cdot \beta_{reg}^{inst}\right) + controls + \left(u_j^{non} - u_j^{reg}\right)$$
$$\equiv \alpha + policy_j \cdot \beta^{policy} + \left(inst\_non_j \cdot \beta_{non}^{inst} - inst\_reg_j \cdot \beta_{reg}^{inst}\right) + controls + u_j$$

$\cdots\cdots$(C)

Equation (C) allows us to obtain an unbiased estimate of β_{non}^{inst} by the ordinary least squares method, as the specification allows us to adjust the observed difference between expected and actual tenures for non-regular employees on the basis of that same difference for regular employees and thus exclude the idiosyncratic establishment effect.

2. Estimation Results

The complete results are given in Appendix Table 2, and definitions and summary statistics of the variables in Appendix Table 3. Table 6 shows the principal results. The results of the estimation of equation (A) (separately for the two types of non-regular employees) are shown in models (1) and (6), while those for equation (C) are shown for various combinations of the explanatory variables in columns (2)-(5) and (7)-(10) First let us compare models (1) and (6) which are based only on data relating to non-regular employees, with models (2) and (7) which control for enterprise conditions using the data on regular employees. Personnel administration variables which in the former models show little or no explanatory power, assume a significant power in the latter models, with wide variation in their significance. Clearly the relation between personnel practices and tenure stability is greatly affected by the particular circumstances of the industry to which the establishment belongs and controlling for such variables is something that always has to be remembered when evaluating the worth of those practices.

Let us then look at various practices in turn, using equation (C) which takes account of the regular/non-regular difference, starting with the top-row, “overall adoption or not of active skill development policies.” In both models (3) and (8) which use that alone as the explanatory variable both coefficients are significantly positive, showing that it is the establishments more actively disposed to develop skills which have the greater gap between their expected and actual tenures, thus confirming the finding of the previous section. In models (2) and (7) which show the cumulated results of various practices, however, the estimated coefficient value the for active skill development policies is smaller, and, in the case of part-time and *arubaito* workers, it loses even the ten percent significance level. This

Table 6. The Relation between Skill Development Policies and the Effectiveness of Personnel Administration Practices (Extracts)

Model		(1)	(2)	(3)	(13)	(7)	(8)	(9)	(17)
Dependent Variables		Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures of non-regular employees, less that for regular employees (Months)			Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures of non-regular employees, less that for regular employees (Months)		
Type of worker		Part-time, *arubaito*				Contract			
Method of estimation		OLS							
Active skill development policy				+		++	++	++	++
Sill development system for non-regular employees	No allocation of responsibility for training		++	NO	++			NO	
	No operation manuals								
	No spelling out of required work skills								
	No help to acquire in-firm or public skill qualifications						--		--
	No help for self learning								
	No allocation of work according to aptitude								
	No career counseling								
	No training upon hiring						--		--
	No periodic training courses								
Wage system	No personnel evaluation system			NO				NO	
	No pay grade system								
	No pay increase system		++		++				
	No bonus system								
	No promotion to supervisory functions						++		++
	No promotion to regular employee status								
	No hire with pre conditions on type of jobs								
	No mutual agreement on flex work hours		++		++				
	No transfer to contract worker status					NO	NO		NO
Range of skill levels		YES	YES	NO	YES	YES	YES	NO	YES
Major age-group, gender and education attainment		YES	YES	NO	YES	YES	YES	NO	YES
Trend in sales, scale dummy, industry dummy		YES	YES	YES	YES	YES	YES	YES	YES
Fixed coefficient		YES	YES	YES	YES	YES	YES	YES	YES
Adjused R^2		0.003	0.039	0.009	0.045	0.103	0.189	0.078	0.149
Sample size		314	314	314	314	153	153	153	153

Note: Small-print row=standard deviation. Coefficients significantly different from zero are indicated thus: †= 5%, ‡= 10% level, - = 5%, -- =10% level for the negative signs. For details of the estimation procedure see Appendix Table 2. For details of the explanatory variables see Appendix Table 3.

suggests that it is not having a skill development policy in itself which affects the expected/actual tenure gap, but the particular array of practices which counts. So let us look at individual practices—separately for part-time and *arubaito*, and for contract workers.

For the former, model (2) shows it is the absence of any clear responsibility of supervisors or older workers for training, the absence of wage incremental systems and the lack of consultations with the worker over his or her hours of work which shorten tenures. The practices which seem to have no great influence are: opportunities for gaining external qualifications, or for independent personal training, and—this in contrast with contract workers considered below—opportunities for promotion to supervisory rank.

This suggests that supplying all these things—on-the-job training by supervisors or older workers, providing for pay increases in line with improvement in skills, and allowing flexible choice of work hours—would help in getting part-time and *arubaito* workers to stay longer in their jobs.

In the case of contract workers, in model (8) the possibility of promotion to supervisory rank seems to be a variable promoting stability which is unique to contract workers (in the case of part-time and *arubaito* workers the coefficient is not only insignificant; its sign is reversed.) We also find that the introduction of some practices actually increases the likelihood of quitting earlier than expected—notably, giving them the opportunity to acquire external qualifications, and putting on initial training courses. It seems to be the case that offering off-the-job training to contract workers is counter-productive as far as keeping them in employment is concerned. Rather, as in the case of part-time and *arubaito* workers, it is on-the-job training and pay increases as their skills increase which are more likely to keep them—and, also, giving them the chance to rise to supervisory positions.

As for the counter-productive nature of off-the-job training, it may well be that there are many contract workers who are trying to develop specialist skills in order to advance their careers in whatever enterprise suits them, not necessarily the current one. For them, off-the-job training courses which impart general skills probably enhance their ability to get a new job with better pay and conditions and with better opportunities for developing their skills, hence making it more likely that they will quit.

3. Robustness of the Findings

In order to test the robustness of the findings, we performed the following regressions.

Equation (C) is an excellent estimation model for eliminating impacts of the short-term labor market demand-side variables, but it fails to control for possible heterogeneity in worker characteristics across establishments. For example, certain types of establishments with particular skill development policies or wage systems may systematically attract workers who are planning their career developments, thus enhancing worker morale. This conjecture is supported by the differences in regression estimates between the one on part-time and *arubaito*, and the other for contract workers.

The important consideration for our study is whether differences in these respects *among* part-time and *arubaito* workers, and among contract workers cause them to choose or not to choose establishments with certain types of personnel administration policies and whether this affects the likelihood of their remaining stably in employment (biases due to self selection). It may be that equation (C) succeeds in controlling for variables concerned with the circumstances of the enterprise, but not for these supply-side variables.

Since the present study uses establishment cross-sectional data, it is basically very difficult to deal with such labor supply-side variables. What we do in this section is the best we can, namely to re-estimate equation (C) omitting certain control variables. One can suppose that the "career ambition" which is assumed to be a cause of changing labor-market supply-side behavior and the choice of place of employment, is likely to vary depending on age and sex and qualification-level. If that bias is quantitatively important, there should be a significant difference between equation (C) estimated with and without those control variables. As a matter of fact, a comparison of (4) and (5) with (2) (in the case of contract workers, [8], [10] with [7]. See Appendix Table 2.), reveals that there are no significant differences, either quantitatively or qualitatively. This suggests that, as far as part-time and *arubaito* workers and contract workers are concerned, differences within either of those two groups does not impart any strong bias to the estimation.

In models (11)-(16) in Appendix Table 2, we examine more directly the hypothesis that it is a set of differences in the personnel administrations of regular and non-regular employees that is responsible for the difference in their average tenures. Assuming that the impact of the personnel administration policies on the turnover rate is the same for both regular and non-regular employees, we re-estimated equation (C). That is, we impose the constraint $\beta_{non}^{inst} = \beta_{reg}^{inst} \equiv \beta^{inst}$ as shown in (D) below.

$$\Delta Ten_j = \alpha + policy_j \cdot \beta^{policy} + \left(inst\_non_j - inst\_reg_j\right) \cdot \beta^{inst} + controls + u_j \quad \cdots\cdots \text{(D)}$$

For this it was necessary to find some proxy variable for differences in the personnel administration of regular and non-regular employees. What we did was to assume that the practices listed in Table 4 were universal for regular employees and then score the absence of each particular practice for non-regular employees as 1 (separately for the two types) and its presence as 0, thus creating a dummy explanatory variable. We also did the same for the practices listed in Table 5.

Once again, the results show no significant difference in the coefficients representing the efficacy of personnel policies as between the estimations imposing the constraints ([11] and [14]) and those—(2) and (7)—where the constraint was not imposed.

As a result of these calculations we conclude that our findings are robust.

V. Conclusions

Using a survey result of establishments on the deployment of non-regular employees and the adoption of various personnel administration practices, we analyzed their efficacy chiefly from the point of view of workers' stability in their jobs. We summarize major findings.

First, in order to deploy non-regular employees as core workers, and also to achieve their stability, the effective use of personnel administration policies is important. This finding is broadly in line with the conclusions of the recent studies on the non-regular employees in Japan.

In this paper, we examined the efficacy of personnel policies by focusing on employee stability, rather than by looking at overall correlations between the use of non-regular employees and personnel policies. We have shown that the above propositions hold even when one controls for the unobserved heterogeneity of establishments.

Secondly, considering the efficacy of particular personnel administration practices, we indicate the possibility that, both for part-time and *arubaito*, and for contract workers, giving explicit training responsibility to supervisors and senior workers and giving the opportunity for thorough on-the-job training can enhance the stability of these employees. At the same time, they need be supplemented by material incentives—systematic provision for pay increases as skills improve. We also found , for part time and *arubaito* workers, significant positive impact from the adoption of flex work hours and work days, whereas the provision of tenure track for supervisory positions can enhance the stability of contract workers.

These results serve to emphasize two points of importance for the employment of non-regular employees.

The first is that personnel practices have to be fine tuned to the needs and the preferences of employees. For example, part-time and *arubaito* workers who commit a limited number of hours a week, may have a strong preference for jobs which allow them to choose their work hours and make them compatible with the rest of their daily lives—the time they need for house-work, child or nursing care, study, or socializing. It can help to keep them in their jobs if employers give them this flexibility. In the case of contract workers, however, most of whom are full-time workers and for whom work is more likely to be their central life interest, such flexibility may be less important than the chance to improve their career prospects. Hence, the possibility of promotion to a supervisory position and so advance their careers while remaining with the same employer may be an effective way of keeping them in their jobs.

At the same time—and this is the second point—giving them the possibility for acquiring general skills through off-the-job training can increase the likelihood that they will quit. Non-regular employees, as compared with regular employees, are closer to the external labor market, and in designing personnel administration policies one should remember that

there is a strong possibility that one employer's investment in general training may just give a free ride to other employers. Unless, when providing off-the-job training, they also give them the possibility for wage increases and for promotion within the firm, the likelihood is the training will backfire and make it more likely that a worker quits.

It is easy to imagine that a training deficit as a result of this poaching externality is likely to increase as the external labor market comes to operate more effectively and as the transition from non-regular to regular employee status becomes smoother. It is beyond the scope of this article to consider the choice between seeing non-regular employee status as a stepping stone to regular status via the labor market, and alternatively placing the emphasis on developing the skills of non-regular employees within their individual places of employment, but that remains an important problem for labor policy.

There is a strong tendency in the discussion of personnel policies and work conditions for non-regular employees to advocate uniform equality of treatment, but institutions must be designed to take into account both labor supply incentives and differences in the marketability of individuals' human capital.

Appendix Table 1. Main Items Used in the Establishment Survey of Employment Policies for Non-Regular Employees

Topic	Items
Establishment Characteristics 1	Company headquarters or not / type of physical plant / industry / year established / number of regular employees / changes in output / changes in number of regular employees / changes in number of non-regular employees / changes in number of externally employed workers / changes in work load of regular employees / whether or not new regular employees have been recruited and deployed
Actual deployment of non-regular employees (including not only non-regular employees—part-time, *arubaito* and contract workers—but also workers from outside—temporary agency workers and workers from sub-contractors)	Whether any non-regular employees and outside workers are employed, length of contract period, work hours, median age, gender and education attainments / purpose for using non-standard labor / actual tenure lengths / job allocation methods / length of time needed to learn the job / proportion who do jobs of comparable responsibility to those of regular employees / measures against sudden changes in orders / the unit, (workplace, establishment, or company HQ) with ultimate responsibility for personnel management of non-regular employees.
Personnel administration for non-regular (part-time, *arubaito* and contract) employees	Training policies in place / evaluation and reward systems / equal treatments / whether employment record as non-regular employee is taken into account when recruiting
Opinions and problems regarding deployment of non-regular employees (including not only non-regular employees—part-time, *arubaito* and contract workers—but also outside workers—temporary agency workers and workers from sub-contractors)	The pluses and the minuses / problems encountered using non-regular employees / the extent of future deployment of non-regular employees
Other	Prospects for the business in next 3 years / Evaluation of firm's competitiveness / Sources of the firm's competitiveness / information useful for deciding how and whether to deploy non regular employees / intentions regarding the use of consulting agencies for personnel administration

Appendix Table 2-1. The Relation between Skill Development Policies

Model	(1)	(2)	(3)	(4)
Dependent Variables	Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures less that for regular employees		
Type of worker	Part-time, *arubaito*			
Method of Estimation				
Active Skill Development Policy	3.971 3.416	6.277 4.222	6.769 ‡ 4.008	6.702 4.213
Skill development system for non-regular employees				
No allocation of responsibility for training	4.223 2.814	10.074 † 3.719		9.557 † 3.693
No operation manuals	0.940 2.804	1.112 3.760		1.526 3.753
No spelling out of required work skills	2.717 3.574	6.640 4.917		6.974 4.901
No help to acquire skill qualifications	2.119 5.370	-5.045 6.883		-4.687 6.821
No help for self learning	3.849 3.893	5.815 5.231	—	4.957 5.214
No allocation of work according to aptitude	0.065 2.785	-3.803 3.508		-4.103 3.506
No career counseling	4.939 5.228	-1.929 6.743		-1.999 6.718
No training upon hiring	1.133 3.067	0.065 4.001		-0.041 3.994
No periodic training courses	-5.641 3.702	-3.478 4.670		-3.048 4.668
Skill development system for regular employees				
No allocation of responsibility for training		5.664 4.673		4.861 4.656
No operation manuals		-3.856 4.114		-3.214 4.098
No spelling out of required work skills		1.959 4.654		1.702 4.643
No help to acquire skill qualifications		-2.128 3.898		-2.266 3.872
No help for self learning	—	5.291 4.066	—	5.015 4.065
No allocation of work according to aptitude		0.241 3.483		0.899 3.468
No career counseling		6.706 4.861		6.144 4.841
No training upon hiring		-1.738 3.687		-1.688 3.684
No periodic training courses		1.643 3.818		2.277 3.805

Note: Lower row=standard deviation. Coefficients significantly different from zero are indicated thus: †= 5%, ‡= 10% level. For details of the explanatory variables see Appendix.

(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
of non-regular employees, (Months)		Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures of non-regular employees, less that for regular employees (Months)				
		Contract					
OLS							
6.905	7.049	13.754 †	20.184 †	24.549 †	19.414 †	19.921 †	24.214 †
4.213	4.561	5.561	6.175	5.876	6.136	5.967	6.871
8.837 †	8.823 †	6.560	8.936		8.091	7.913	7.682
3.649	4.138	4.819	5.670		5.628	5.451	7.132
1.507	3.754	5.995	7.366		8.127	8.841	9.558
3.721	4.331	5.259	6.487		6.244	5.984	8.127
6.692	11.988 †	6.483	8.662		7.218	6.495	3.914
4.900	5.945	6.609	7.977		7.894	7.639	10.842
-3.518	-4.022	-9.907	-26.371 †		-26.644 †	-24.876 †	-26.679 †
6.801	7.588	6.381	7.640		7.599	7.391	8.569
5.432	10.397 ‡	-4.037	4.338	—	5.337	3.210	6.264
5.200	5.771	6.038	7.276		7.224	6.976	8.595
-5.039	-0.735	2.881	5.272		6.220	5.011	-3.491
3.484	4.101	4.847	6.135		6.033	5.771	7.760
-2.097	-5.719	-2.919	-12.339		-13.604	-11.223	-1.847
6.683	8.656	6.574	8.536		8.484	8.119	10.285
0.257	4.158	-8.267	-15.364 †		-15.324 †	-15.074 †	-14.878 ‡
3.987	4.630	5.188	6.316		6.300	6.072	7.657
-3.984	-4.441	-6.251	2.093		0.943	2.004	4.637
4.647	5.205	5.854	7.434		7.339	7.228	8.920
3.545	4.521		-0.119		-0.915	0.001	0.400
4.588	5.408		7.698		7.654	7.474	9.545
-2.238	5.217		-2.287		-3.043	-2.126	2.333
4.034	4.781		6.473		6.326	5.976	8.172
2.002	-0.077		8.477		7.975	7.598	8.460
4.623	5.372		7.168		7.127	6.959	9.530
-1.878	-4.247		-14.201		-13.652 †	-12.053 ‡	-25.754 †
3.780	4.618		6.413		6.282	6.077	8.301
5.139	8.033	—	3.997	—	4.279	4.631	7.142
4.024	4.868		6.763		6.735	6.495	8.129
1.599	-0.303		-3.719		-2.848	-3.976	-2.144
3.445	3.985		6.096		5.978	5.699	8.306
4.794	3.602		-10.145		-11.625	-9.108	-12.823
4.769	5.946		8.364		8.267	7.719	9.943
-1.898	-1.682		-18.601 †		-17.972 †	-17.076 †	-22.502 †
3.650	4.230		6.635		6.602	6.276	7.913
0.935	0.322		8.486		8.957	8.883	19.579 †
3.710	4.490		6.629		6.475	6.335	8.403

Appendix Table

Model	(1)	(2)	(3)	(4)
Dependent Variables	Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures less that for regular employees		
Type of worker	Part-time, arubaito			
Method of Estimation				
Wage system				
No personnel evaluation system	-0.529 3.055	-2.362 3.786		-2.407 3.783
No pay grade system	-3.291 5.029	-7.240 6.140		-6.965 6.082
No pay increase system	3.216 2.950	10.128 † 3.624		9.928 † 3.601
No bonus system	3.023 2.915	0.956 3.561		0.544 3.533
No promotion to supervisory functions	-8.464 5.897	-6.810 7.235	—	-7.030 7.230
No promotion to regular employee status	-3.294 2.948	-2.579 3.630		-1.841 3.503
No hire with pre conditions on type of jobs	0.151 3.206	-2.953 3.919		-2.203 3.845
No agreement on flex work hours	2.020 2.686	10.235 † 3.299		10.325 † 3.298
No transfer to contract worker status	5.505 3.776	2.429 4.714		1.582 4.686
Skill level required for the ordinary tasks	-0.457 0.314	-0.146 0.385	—	-0.192 0.384
Range of skill levels	-0.038 0.113	0.011 0.140		0.017 0.139
Major age-group	1.131 1.285	0.109 1.568	—	—
Major gender	0.656 1.282	1.698 1.575		
Major education attainment	-1.557 1.375	-2.673 1.697		
Trend in sales	0.218 1.604	2.798 1.970	2.314 1.857	2.958 1.942
Scale dummy (BASE＝30 and less employees)				
Less than 30 employees	0.419 4.083	-7.484 5.019	-5.251 4.741	-6.519 4.921
Less than 100 employees	-4.497 3.824	0.132 4.749	0.933 4.450	0.387 4.655
More than 100 employees	-5.163 4.037	-3.680 5.123	-0.035 4.773	-3.780 5.113
Industry dummy (BASE=Service)				
Manufacturing industry	-4.665 3.421	4.056 4.347	5.572 3.788	6.020 4.086
Other industries	-8.697 † 3.559	0.120 4.396	0.251 4.125	0.416 4.346
Fixed coefficient	23.933 † 11.217	0.375 13.939	-7.106 5.292	-0.896 11.264
Adjusted R^2	0.003	0.039	0.009	0.038
Sample Size	314	314	314	314

2-1. (*Continued*)

(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
of non-regular employees, (Months)		Gap between actual and expected tenures of non-regular employees (Months)	Gap between actual and expected tenures of non-regular employees, less that for regular employees (Months)				
		Contract					
	OLS						
-2.807	-4.600	-6.183	-2.448		-3.541	-5.277	-2.302
3.761	4.354	5.291	5.809		5.728	5.509	7.130
-5.792	-0.183	11.647	2.326		2.819	3.941	3.135
6.042	6.822	7.019	7.802		7.603	7.483	8.878
10.250 †	9.787 †	1.063	5.896		7.612	9.240	11.871
3.527	4.192	5.132	5.653		5.436	5.221	7.446
0.136	1.209	-3.469	-1.291		-2.081	-2.251	5.781
3.494	4.025	4.835	5.430		5.396	5.285	6.452
-5.603	-1.315	13.041 ‡	18.155 †		17.629 †	19.975 †	14.088
7.176	8.140	7.067	7.846	–	7.797	7.417	9.894
-1.560	-0.876	-7.709	2.431		3.415	4.207	-3.596
3.491	4.326	4.923	5.580		5.480	5.357	7.113
-0.570	-2.501	-2.999	-2.472		-1.908	-0.975	-3.766
3.779	4.424	5.759	6.432		6.358	6.065	8.102
10.526 †	7.046 ‡	5.090	9.619		7.610	6.090	3.397
3.266	3.797	6.545	7.690		7.552	7.388	9.423
3.170	1.069	–	–		–	–	–
4.627	5.795						
-0.205	-0.359	0.095	-0.081		-0.062	-0.098	-0.842
0.383	0.439	0.425	0.472	–	0.460	0.451	0.601
-0.015	-0.195	-0.411	-0.316		-0.319	-0.305	-0.398
0.137	0.157	0.188	0.206		0.203	0.198	0.266
	-2.821	-0.160	1.120				1.077
	2.023	1.498	1.650				1.945
–	-1.574	-1.223	-2.297	–	–	–	-3.659
	1.930	1.807	2.016				2.505
	-2.628	1.728	2.763				2.477
	1.943	1.857	2.100				2.529
	1.398	-2.000	0.494	-1.304	0.508		-0.734
	2.284	2.742	3.093	2.859	2.967		3.737
	-0.126	-0.104	-0.700	-6.485	-1.785		3.476
	5.586	7.528	8.379	8.183	8.307		10.206
	2.049	-2.968	4.063	-1.483	3.127		9.126
–	5.296	7.258	8.147	8.027	8.011	–	10.016
	-1.121	-6.943	9.075	-1.022	7.907		11.504
	5.831	7.414	8.694	8.069	8.578		10.933
	1.849	0.672	6.612	3.895	6.014		1.481
	4.734	5.826	6.480	5.736	6.380		7.596
	-4.293	-3.825	3.600	-0.694	2.347		-1.299
	5.133	5.770	6.696	5.982	6.565		8.323
0.284	28.294 ‡	14.167	-6.426	4.465	-3.558	-2.656	9.977
10.913	16.501	14.859	17.260	9.356	16.456	14.078	21.196
0.032	0.164	0.103	0.189	0.078	0.191	0.206	0.189
314	225	153	153	153	153	153	153

Appendix Table 2-2. The Relation between Skill Development Policies and the Effectiveness of Personnel Administration Practices

Model		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Dependent Variables		Gap between actual and expected tenures of non-regular employees, less that for regular employees (Months)							
Type of worker		Part-time, *arubaito*				Contract			
Method of Estimation		OLS							
Active Skill Development Policy		6.126	6.671	6.769 ‡	4.718	24.345 †	24.096 †	24.549 †	26.212 †
		4.086	4.078	4.008	4.435	6.248	5.904	5.876	6.809
Is there a difference between personnel policy provisions for regular and non-regular employees?	⟨⟨Skill development system⟩⟩								
	Responsibility for training juniors	12.315 †	10.449 †		7.569 ‡	8.346	9.172		9.770
		3.840	3.770		4.248	6.017	5.664		7.424
	Operation manuals	-0.433	0.454		5.908	2.235	2.098		6.052
		4.513	4.470		5.158	7.250	6.664		9.280
	Explicit spelling out of required work skills	4.022	4.425		-0.486	7.778	7.452		4.025
		5.058	5.065		5.884	6.645	6.360		8.889
	Assistance for acquiring skill qualifications	-1.800	-1.202		-3.102	-19.672 †	-17.119 †		-23.565 †
		3.733	3.607		4.385	6.071	5.632		7.537
	Assistance for self learning	5.549	5.060		8.835 †	5.283	4.093		6.185
		3.750	3.706		4.408	6.340	5.915		7.391
	Allocating work according to aptitude	-2.116	-2.335		-1.646	-4.458	-5.747		-11.976
		4.010	4.003		4.549	7.061	6.783		8.577
	Opportunities for career counseling	1.281	-0.189		-0.457	-11.441	-6.048		-9.859
		4.911	4.831		5.763	8.623	7.906		9.777
	Training upon hiring	0.363	-0.185		2.266	-15.507 †	-14.493 †		-19.047 †
		3.471	3.444		4.042	5.666	5.258		6.727
	Periodic training courses	-1.194	-1.529		-2.736	4.543	4.409		13.637
		3.676	3.568		4.316	6.421	6.116		8.546
	⟨⟨Wage system⟩⟩								
	Personnel evaluation system	-3.011	-3.483		-3.812	1.716	0.279		-1.459
		3.711	3.693		4.249	5.702	5.343		6.521
	Pay grade system	-6.448	-5.049		2.334	-0.623	0.199		3.628
		6.008	5.925		6.587	7.503	7.310		8.313
	Pay increase system	9.708 †	9.917 †		9.946 †	6.923	8.374		11.824 ‡
		3.538	3.460		4.080	5.530	5.214		6.669
	Bonus system	0.566	-0.517		1.121	-3.445	-4.033		2.791
		3.508	3.441		3.961	5.594	5.346		6.694
	Promotion to supervisory functions	-8.250	-7.493		-1.493	16.931 †	17.859 †		14.379
		7.013	6.969		7.807	7.956	7.328		9.509
	Promotion to regular employee status	-1.796	-0.305		0.090	-1.612	-0.767		-6.239
		3.577	3.433		4.197	5.412	4.989		6.254
	Hire with pre conditions on type of jobs	-4.178	-1.821		-4.195	-4.186	-2.487		-3.706
		3.876	3.746		4.378	6.453	5.887		7.867
	Agreement on flex work hours	8.966 †	9.180 †		6.696 ‡	7.049	4.884		3.727
		3.225	3.196		3.699	7.509	7.181		8.937
	Transfer to contract worker status	1.851	2.445		1.363				
		4.617	4.552		5.495				
Skill level required for the ordinary tasks		-0.217	-0.276		-0.407	-0.054	-0.062		-0.525
		0.381	0.380		0.433	0.465	0.450		0.553
Range of skill levels		0.027	0.015		-0.156	-0.303	-0.280		-0.352
		0.136	0.133		0.149	0.198	0.193		0.241
Major age-group		0.632			-2.183	0.515			-1.153
		1.557			1.969	2.739			3.589
Major gender		1.774			-1.309	-0.899			-1.604
		1.550			1.892	1.873			2.197
Major education attainment		-2.874 ‡			-2.906	0.371			0.576
		1.682			1.929	2.538			2.871
Trend in sales		2.905		2.314	1.414	-0.835		-1.304	-1.243
		1.948		1.857	2.267	3.059		2.859	3.618
Scale dummy (BASE = 10 and less employees)	Less than 30 employees	-7.391		-5.251	-0.068	-0.270		-6.485	4.511
		4.961		4.741	5.486	8.365		8.183	9.831
	Less than 100 employees	-0.415		0.933	2.501	6.149		-1.483	9.093
		4.654		4.450	5.133	8.338		8.027	9.761
	More than 100 employees	-2.588		-0.035	-0.687	12.661		-1.022	11.300
		5.010		4.773	5.597	8.875		8.069	10.277
Industry dummy (BASE = Service)	Manufacturing industry	2.649		5.572	0.650	1.936		3.895	2.244
		4.283		3.788	4.620	6.302		5.736	7.165
	Other industries	-0.900		0.251	-5.827	-0.636		-0.694	-1.834
		4.283		4.125	5.068	6.686		5.982	8.324
Fixed coefficient		-2.667	-0.081	-7.106	17.380	-8.219	-6.485	4.465	5.397
		12.493	9.037	5.292	14.864	19.889	11.628	9.356	23.631
Adjusted R^2		0.045	0.036	0.009	0.125	0.149	0.174	0.078	0.180
Sample Size		314	314	314	225	153	153	153	116

Note: Lower row=standard deviation. Coefficients significantly different from zero are indicated thus: †= 5%, ‡= 10% level.
For details of the explanatory variables see Appendix.

Appendix Table 3. Explanation of the Variables Used in the Regression Analysis and Summary of Statistics

		Part-time, *arubaito wokers*					Contract workers				
		Sample size	Average	Standard deviation	Min.	Max.	Sample size	Average	Standard deviation	Min.	Max.
The gap between actual and expected tenures of non-regular employees	For each category represented in row headings of Tables 2 and 3, the calculated median of the tenure length expected (Over 10 years counted as 120 months).	314	11.43	22.46	-60	84	153	15.15	27.10	-60	89.5
The gap between actual and expected tenures of non-regular employees, less that for regular employees	For each category represented in row headings of Tables 2 and 3, the calculated median of the tenure length expected (Over 10 years counted as 120 months).	314	-0.13	27.74	-87	84	153	5.94	30.75	-102	87
Skill level required for the ordinary tasks	Training required for regular workers to reach the skill level required for the ordinary tasks non-regular workers usually do (in months).	314	3.32	4.84	0.5	30	153	4.40	5.78	0.5	30
Range of skill levels	The gap between the training period required for regular workers to acquire the skill required by the most demanding of the jobs given to non-regular workers, and ditto for the general type of job that non-regular workers do.	314	11.87	13.78	1	84	153	13.21	13.63	1	72
Major age-group	1. Teenagers, 2. 20-year-olds, 3. 30-year-olds, 4. 40-year-olds, 5. Over fifties.	314	3.67	1.14	1	5	153	3.45	1.17	2	5
Major gender	1. All male, 2. Mostly male, 3. Equal representation, 4. Mostly female, 5. All female.	314	3.80	1.09	1	5	153	2.88	1.53	1	5
Major education attainment	1. Junior high school, 2. High school, 3. Junior college and vocational training school, 4. University and above.	314	2.44	0.98	1	5	153	2.67	1.04	1	5
Trend in sales	Compared with three years ago; 1. Increased, 2. About the same, 3. Decreased.	314	2.05	0.85	1	3	153	1.93	0.84	1	3

				Part-time, *arubaito* wokers		Contract workers	
				Sample size	Average	Sample size	Average
Personnel policy provisions for non-regular employees	Training system	Responsibility for training juniors	No one given special responsibility for training of non-regular workers: 1, other replies: 0.	314	0.65	153	0.65
		Operation manuals	No operation manuals provided for non-regular workers: 1, other replies: 0.	314	0.54	153	0.56
		Explicit spelling out of required work skills	No explicit description of job for non-regular workers: 1, other replies: 0.	314	0.21	153	0.20
		Assistance for acquiring skill qualifications	No help given to non-regular workers to help them gain external qaualifications: 1, other replies: 0.	314	0.08	153	0.22
		Assistance for self learning	No help given to non-regular workers for self learning: 1, other repllies: 0.	314	0.15	153	0.27
		Allocating work according to aptitude	Job allocation does not take account of individual aptitues for non-regular worers: 1, other: 0.	314	0.46	153	0.48
		Opportunities for career counseling	No provision made for career counselling for non-regular workers: 1, other replies: 0.	314	0.08	153	0.18
		Training upon hiring	No initial traning upon hiring for non-regular workers: 1, other replies: 0.	314	0.28	153	0.27
		Periodic training courses	No periodic retraning courses for non-regular workers: 1, other replies: 0.	314	0.19	153	0.24
	Wage system	Personnel evaluation system	No personnel evaluation system for non-regular workers: 1, other replies: 0.	314	0.66	153	0.61
		Pay grade system	No pay grade system for non-regular workers: 1, other replies: 0.	314	0.91	153	0.84
		Pay increase system	No system for awarding pay increases for non-regular workers: 1, other replies: 0.	314	0.50	153	0.49
		Bonus system	No bonus system for non-regular workers: 1, other replies: 0.	314	0.52	153	0.37
		Promotion to supervisory functions	No system for promoting non-regular workers to supervisory jobs: 1, other replies: 0.	314	0.94	153	0.86
		Promotion to regular employee status	No system for promoting non-regular workers to regular worker status: 1, other replies: 0.	314	0.65	153	0.51
		Hire with pre conditions on type of jobs	No specific limitation of job type when recruiting non-regular workers: 1, other replies: 0.	314	0.75	153	0.78
		Agreement on flex work hours	No provisions for allowing non-regular workers to choose their own work hours : 1, other replies: 0.	314	0.53	153	0.86
		Transfer to contract worker status	No provision for promoting part-time and arubaito workers to contract worker status: 1, other replies: 0.	314	0.85		

Appendix Table 3. (*Continued*)

Personnel policy provisions for regular employees	Training system	Responsibility for training juniors	No one given special responsibility for training of non-regular workers: 1, other replies: 0.	314	0.83	153	0.86
		Operation manuals	No operation manuals provided for non-regular workers: 1, other replies: 0.	314	0.62	153	0.64
		Explicit spelling out of required work skills	No explicit description of job for non-regular workers: 1, other replies: 0.	314	0.31	153	0.39
		Assistance for acquiring skill qualifications	No help given to non-regular workers to help them gain external qaualifications: 1, other replies: 0.	314	0.55	153	0.69
		Assistance for self learning	No help given to non-regular workers for self learning: 1, other repllies: 0.	314	0.50	153	0.58
		Allocating work according to aptitude	Job allocation does not take account of individual aptitues for non-regular worers: 1, other: 0.	314	0.49	153	0.58
		Opportunities for career counseling	No provision made for career counselling for non-regular workers: 1, other replies: 0.	314	0.22	153	0.30
		Training upon hiring	No initial traning upon hiring for non-regular workers: 1, other replies: 0.	314	0.61	153	0.66
		Periodic training courses	No periodic retraning courses for non-regular workers: 1, other replies: 0.	314	0.50	153	0.56
Is there a difference between personnel policy provisions for regular and non-regular employees	Training system	Responsibility for training juniors	Someone given special responsibility for training regular workers but no one for non-regular workers: 1, other replies: 0.	314	0.23	153	0.24
		Operation manuals	Operation manual provided for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.18	153	0.17
		Explicit spelling out of required work skills	Explicit description of job for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.15	153	0.20
		Assistance for acquiring skill qualifications	Help given to regular workers to help them gain external qualifications but not to non-regular workers: 1, other replies: 0.	314	0.48	153	0.48
		Assistance for self learning	Help given to regular workers for self learning but not to non-regular workers: 1, other replies: 0.	314	0.35	153	0.31
		Allocating work according to aptitude	Job allocation takes account of individual aptitudes for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.20	153	0.19
		Opportunities for career counseling	Provision made for career counseling for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.16	153	0.14
		Training upon hiring	Initial training upon hiring for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.36	153	0.40
		Periodic training courses	Periodic retraining courses for regular workers but not for non-regular workers: 1, other replies: 0.	314	0.34	153	0.33
	Wage system	Personnel evaluation system	No personnel evaluation system for non-regular workers: 1, other replies: 0.	314	0.66	153	0.61
		Pay grade system	No pay grade system for non-regular workers: 1, other replies: 0.	314	0.91	153	0.84
		Pay increase system	No pay grade for awarding pay increases for non-regular workers: 1, other replies: 0.	314	0.50	153	0.49
		Bonus system	No bonus system for non-regular workers: 1, other replies: 0.	314	0.52	153	0.37
		Promotion to supervisory functions	No system for promoting non-regular workers to supervisory jobs: 1, other replies: 0.	314	0.94	153	0.86
		Promotion to regular employee status	No system for promoting non-regular workers to regular worker status: 1, other replies: 0.	314	0.65	153	0.51
		Hire with pre conditions on type of jobs	No specific limitation of job type when recruiting non-regular workers: 1, other replies: 0.	314	0.75	153	0.78
		Agreement on flex work hours	No provisions for allowing non-regular workers to choose their own work hours : 1, other replies: 0.	314	0.53	153	0.86
		Transfer to contract worker status	No provision for promoting part-time and arubaito workers to contract worker status: 1, other replies: 0.	314	0.85		

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