TCER Working Paper Series

Determinants and Effects of Worker-Initiated Training: Learning about Required Job Skills at the Workplace

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April 2016

Working Paper E-106
http://tcer.or.jp/wp/pdf/e106.pdf

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Determinants and Effects of Worker-Initiated Training:

Learning about Required Job Skills at the Workplace *

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April 9, 2016

*I would like to express my gratitude toward the following people for their helpful comments: Masaru Sasaki, Akihito Toda, Hideo Akabayashi, Yukiko Abe, Keisuke Kawata, Sachiko Kazekami, Tomohiro Machikita, Masayuki Nakai, Jiro Nakamura, Fumio Ohtake, Akihisa Shinozaki, Keiko Yoshida, and Daiji Kawaguchi. I also thank the participants of the 14th Labor Economics Conference (Awaji, September 2011) and the fall meeting of the Japanese Economic Association (Tsukuba, October 2011). This research was supported by a grant from the Tokyo Center for Economic Research and Grants-in-Aid for Scientific Research (C) (grant numbers: 25380371, 16K03711) from the Japan Society for the Promotion of Science. Editorial assistance was provided by Philip MacLellan.

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Abstract

There are two main channels for a worker to accumulate human capital; firm-provided training and worker-initiated training (*jiko-keihatu*). This study focuses on worker-initiated training—a learning activity to improve one's job skills outside of work hours at one's own expense—and examines the motivation underpinning it and its effects on wage growth, skill development, and job opportunities using a unique survey of Japanese workers. While the results indicate that there is no statistically significant immediate increase in wages from worker-initiated training, thus perhaps causing workers to be hesitant to engage in it, it is also shown that worker-initiated training improves job skills and enhances job opportunities, which suggests that it could lead to a wage increase in the future. In addition, those who receive guidance from their supervisors about required skills at the workplace, and thus some insight into desirable work-related skills, are more likely to engage in worker-initiated training than those who have not received such guidance. Moreover, those who within the past three years participated in firm-provided training, the other opportunity for a worker to learn about required skills at the workplace, are also more likely to participate in worker-initiated training. These results suggest that the introduction of a system to better inform workers about required job skills and the possible long-term effects of worker-initiated training could be effective in promoting it.

Keywords: job training, worker-initiated training, wage growth, skill development, workplace experiences
JEL Classification Code: J24, J31

1 Introduction

The question as to whether human capital investment plays a role in improving one's career has been a long-standing issue in labor economics, triggered by Becker's seminal study (Becker [1962]). In general, there are two main sources of human capital investment, or job training, available to workers: (1) firm-provided on-the-job training and (2) worker-initiated training (*jiko-keihatu*) to improve one's job-related skills and knowledge outside of work hours at one's own expense. Firm-provided training has been researched extensively, with most studies showing positive effects of training on wage growth and skill development.[1] Worker-initiated training, by contrast, has been researched much less extensively despite labor market trends suggesting that it might become increasingly important in the future. This study aims to contribute to our understanding of worker-initiated training by examining its effects on wage growth and career development, as well as the motivations behind it, using a unique survey of Japanese workers.

Human capital investment, especially firm-provided training, has played an important role in Japan's economic growth since the 1970s (Hashimoto and Raisian [1989], Mincer and Higuchi [1988]). However, according to the *Basic Survey of Human Resources Development* conducted by the Japanese Ministry of Health, Labour, and Welfare (hereafter, the *MHLW Survey*),[2]

[1] Bartel [1995], Booth [1993], Parent [1999], and, as for Japan, Hara [2014b], Kawaguchi [2006], and Kurosawa [2001].

[2] The *MHLW Survey* examines how Japanese companies and business establishments conduct and implement training for their employees to develop job-related skills. Since

firm-provided training has been decreasing in Japan. Because of this significant decrease in firm-provided training, there has been a growing interest in the role of worker-initiated training in skill development.

There are several reasons for this growing importance of worker-initiated training, both in the workplace and in labor economics. Firstly, the Japanese labor market has undergone a structural change in recent decades, with a substantial increase in the number of non-regular employees working under fixed-term contracts or on a part-time basis,[3] and this phenomenon has been observed in the other OECD countries as well.[4] Human capital theory predicts that a company will not be motivated to train such workers, and it has also been shown empirically that non-regular workers have fewer opportunities for firm-provided training than regular workers in many countries.[5] Thus, the decline in opportunities for some workers to acquire skills at the workplace is a problem not only for Japan but also for other developed countries, and worker-initiated training has a great potential role in making up for this. Additionally, Japan has also seen an increase in workers changing jobs because of the ongoing decline in the life-time employment system and

the 1990s, this is the only government survey that provides data on the status of job skill development in private Japanese companies.

[3]According to the *Labor Force Survey* by the Statistics Bureau of Japan, the ratio of non-regular workers has more than doubled from 15.3% in 1984 to 37.5% in 2015.

[4]See OECD [2010].

[5]It has been shown that the flexibility of the labor market is correlated negatively with on-the-job training in Japan (Kurosawa and Hara [2008]), the UK (Arulampalam and Booth [1998] and Booth, Francesconi, and Frank [2002]), Germany (Sauermann [2006]), Spain (Albert, Garcia-Serrano, and Hernanz [2005]) and other European countries (OECD [2002]).

of women seeking re-employment after child-rearing. With fewer opportunities for firm-provided training, these workers also could be expected to look to worker-initiated training as a pathway to accumulate human capital.

In addition to the growing numbers of non-regular workers for whom firm-provided training is less available, corporate actions and government policy also have contributed to the increasing relevance of worker-initiated training. Specifically, due to the long economic downturn since the early 1990s, Japanese companies have not been able to provide sufficient training and instead have required employees to develop their job abilities on their own (Abe, Kurosawa, and Toda [2005]). Meanwhile, also since the late 1990s, the government has introduced policies such as the *Educational Training Benefit* (*kyouiku-kunren-kyufu-seido*) to encourage such worker-initiated training and thereby compensate for the decrease of firm-provided training, as explained in detail in Section 2. While the objective of government policy appears to be the promotion of worker-initiated training, in reality, little is known about its determinants or effects.

Among the few extant studies of worker-initiated training, Kurosawa [2001] conducts an analysis using microdata from establishments in Kitakyushu-city, an industrial district in the southern part of Japan, finding that worker-initiated training does not affect wages significantly. On the other hand, Yoshida [2004] examines the impact of worker-initiated training among Japanese female workers using panel data[6] and shows that attending school and tak-

[6]Yoshida, using the *Japanese Panel Survey of Consumers* conducted by the Institute

ing correspondence courses are two forms of worker-initiated training that do have positive effects on annual income, but that these effects are only observed after a four year lag, with no effect observed in the first three years after training.[7] As the study of worker-initiated training is still in its infancy, further research is needed to clarify these findings and develop a more robust understanding of its determinants and effects.

With the foregoing in mind, the contributions of this study are as follows. First, the dataset is particularly informative relative to the literature in that it includes information not only on wages but also on many other measurement variables that allows us to provide a more comprehensive picture of the effects of worker-initiated training. Further, the dataset includes information on both male and female workers throughout Japan and also has a panel data structure so that we can apply a first-difference estimation technique to control for endogeneity, which is crucial when measuring the effects of job training. The second contribution of this study is that it is the first to attempt to capture the effects of worker-initiated training (that, by definition, occurs outside of work) in relation to workplace experiences; namely, firm-provided training as well as any guidance received at the work-

for Research on Household Economics, applies the Heckman, Ichimura, and Todd [1997] difference-in-differences non-parametric matching extension procedure.

[7]Ishii, Sato, and Higuchi [2010] examine the effects of worker-initiated training on the transition from non-regular to regular worker and find that worker-initiated training positively affects this transition, but only for male contract workers. In terms of the determinants of worker-initiated training, Ikenaga and Kawaguchi [2013] finds that, for Japanese workers, expectations attached to the labor market affect participation in both firm-provided and worker-initiated training.

place about necessary job skills. As worker-initiated training is a learning activity aimed at developing job-related skills and knowledge, it is natural to assume that there may be a complementary relationship between firm-provided and worker-initiated training (discussed in Section 2), but this is the first study to examine this relationship.

The main findings of the study are that worker-initiated training does not immediately increase wages statistically significantly but does improve job skills and enhance job opportunities, which suggests that worker-initiated training could lead to wage increases in the future. Regarding the determinants of worker-initiated training, those who receive guidance from their supervisors about required skills at the workplace and those who participated in firm-provided training in the past three years are more likely to participate in worker-initiated training. As guidance from supervisors and participation in firm-provided training both convey information or insight about required work-related skills, this suggests that worker-initiated training is not completely unrelated to experiences at the workplace, and thus any policy to enhance worker-initiated training should be framed to include the workplace context.

2 Job Training Policy and Practice in Japan

Before moving to the analysis, in this section we provide an overview of job training in Japan, beginning with a description of its social-historical

context, followed by a time-series analysis of job-training to the present, and finally, a discussion of the legal framework and government policies shaping job training in Japan.

2.1 Social-Historical Background

First, we discuss the social-historical context of job training in Japan. According to Brinton [2008], there are two social models for skill development: (1) the self-initiated model, and (2) the other-initiated model. For example, American society tends to adopt the former, with individuals largely deciding for themselves whether they will go to college after high school or immediately join the workforce, what they will study at college and at which school, which company they will join, and how they will develop and maintain their skills. Japan, on the other hand, largely adopts the other-initiated model whereby, in the context of skill development, "other" refers to parents, schools, or employers – those more senior, experienced, and with higher social status.

While the views of others are also sought out in guiding individual choices in American society, the extent to which those others are relied on for the choices made is considerably greater in Japan. One illustrative example is the extent to which Japanese employers have traditionally provided firm-specific job training[8] and have prepared the career paths for their employees.[9] Under

[8]To the extent that, until relatively recently, university programs typically have focused on general courses of study rather than specialized knowledge.

[9]Another notable example of this "other-initiated" feature of the Japanese labor market is the system for hiring new high school graduates (*nihon-teki-kousotsu-shushoku*) that

these conditions, even though Japanese regular employees have typically also engaged in worker-initiated training (discussed next), its role in job skill development can be seen to be somewhat less important historically. However, with the ongoing decline in the lifetime employment system and the growing number of non-regular employees in the Japanese labor market who have few opportunities of receiving firm-provided training, the roles of firm-provided training and worker-initiated training may increasingly be viewed as complementary members of the set of skill-development opportunities. It therefore seems natural for experiences at the workplace to influence worker-initiated training.

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might best be described as "high school"-initiated but also involves the hiring firm and government regulations and legal restrictions. In Japan, high school students who want to apply for jobs are legally required to search jobs either through their high school or a regional public employment service office (known as "*Hello Work*" in Japanese). As students are not allowed to make contact with companies directly, the Japanese high school has had a very strong guidance function in a student's job hunt. Specifically, a Japanese company that wants to employ new high school graduates provides job offer information to high schools after applying for and receiving permission from a regional public employment service office. The high school then distributes these jobs among student applicants, deciding who the company will hire according to students' academic grades and attendance records. Additionally, under Japan's "one student, one job" offer system (*hitori-issya seido*), a student cannot receive multiple job offers and so the job allocated to the student by his/her school is the one the student must choose to accept. While, formally, the high school only recommends student applicants, in practice, a company never rejects hiring those students who are recommended by the high school. Thus, the job search for high school students in Japan is clearly other-initiated and, while it is said that this system has been weakening since the late 1990s, the system still remains and has helped in the transition of teenagers from school to work as well as contributing to the low unemployment rate among youth in Japan (Kosugi and Hori [2013]).

2.2 Time-Series Analysis of Job-Training

Next, we provide a time-series analysis of job training in Japan, including both firm-provided and worker-initiated training, using public statistics from the worker's component of the *MHLW Survey* and the *Survey on Job Training in the Private Sector*.[10] Figure 1 presents both the rates of receipt of firm-provided training and engagement in worker-initiated training from FY1992 to FY2012.[11]

Addressing firm-provided training first, 50–60% of regular employees participated in firm-provided training in the 1990s. Unfortunately, comparable data are not available from the late 1990s to the early 2000s, but from a high point of almost 60% in 2005, the rate showed a slight decline in 2006–2007 before dropping below 40% in 2008, the year of the Great Recession, and has remained in the low 40% range since then. Meanwhile, the ratio of non-regular workers has been increasing in the Japanese labor market since the 1990s and now comprises more than one-third of the labor force. Although the trend is similar to that of regular workers, the receipt of firm-provided

[10]The *Survey on Job Training in the Private Sector* conducted by the former Japanese Ministry of Labour is the precedent survey of the *MHLW Survey*. The Ministry of Health, Labor and Welfare (MHLW) was established by a governmental restructuring in 2001 that integrated the former Ministries of Labour and Health & Welfare; hence, the survey's name was changed. Both surveys are comprised of three smaller surveys of the worker, the establishment, and the company.

[11]The *MHLW survey* samples employees at large-scale private sector establishments with more than 30 employees. Firm-provided training here is defined as formal training delivered away from the immediate job site, preferably in a classroom setting or a training room at the firm. Although the *MHLW Survey* has been conducted every year since 1979, the survey sample and questions are not the same every year and so the data are not fully comparable. Here we use only the data that are comparable.

training by non-regular workers is roughly half of that for regular employees, reaching only 31% even at its peak in FY 2005. Combining these trends for regular and non-regular workers, the receipt of firm-provided training can be seen to be steadily decreasing among all Japanese employees. According to the company component survey of the *MHLW Survey*, average corporate spending per employee on firm-provided training decreased from about 25,000 yen (around $223) in 2007 to 13,000 yen (around $116) in 2008 and 2009.[12]

Now turning to worker-initiated training, about 60% of regular employees were engaged in worker-initiated training in the 1990s. Then, from a low point in 2005, the rate showed signs of recovering the 1990s level, rising to 58.1% in 2007. However, it then dropped to 42.1% in 2008 and has remained at around that level ever since. Over time, the trends for non-regular workers have been roughly parallel to those for regular workers but at a much lower level of about slightly over half the rate of regular workers.

These declining opportunities for job training, both firm-provided and worker-initiated, have given rise to serious concerns about a decrease in human capital in Japanese society as a whole. In this context, identifying factors that promote worker-initiated training becomes essential for the appropriate accumulation of human capital in Japan.

[12]The corresponding amounts for 2010 and 2011 were 15,000 yen and 14,000 yen, respectively (or approximately $188 and $175), based on an average exchange rate of approximately 80 yen to $1 during 2010 and 2011.

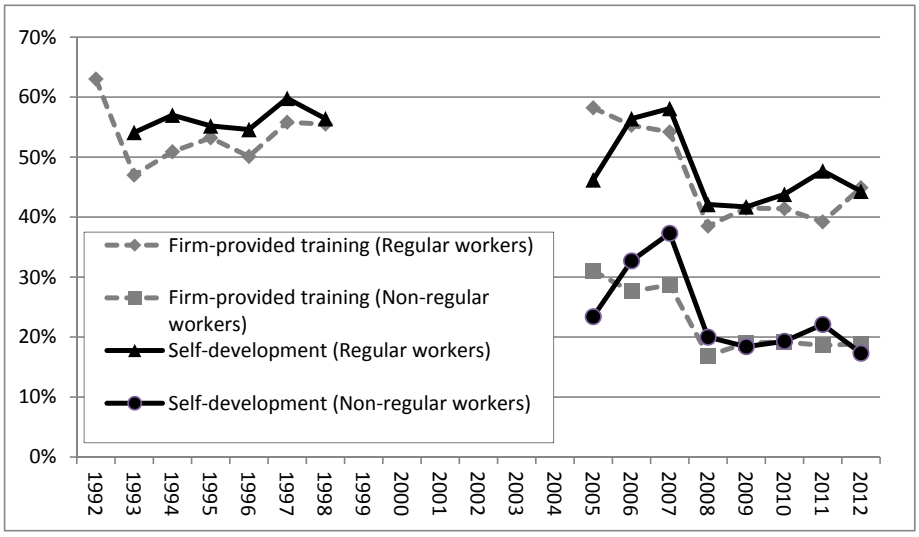

Figure 1: Receipt of Firm-Provided Training and Worker-initiated Training (FY 1992–2012)

Data: Before FY1999: the Japanese Ministry of Labour *Survey on Job Training in the Private Sector*; since FY2005: the Japanese Ministry of Health, Labour, and Welfare *Basic Survey of Human Resources Development*.

Notes:

1. The survey sample includes workers at establishments with more than 30 employees.
2. Comparable data between 1999 and 2004 are not available.

2.3 Government Job Training Policies

Lastly, we review the legal and political framework as it applies to skill development in Japan. Specifically, the *Human Resources Development Promotion Act* (*shokugyo-nouryoku-kaihatsu-sokushin-hou*) and the *Employment Insurance Law* (*koyo-hoken-hou*) have formed the basis for the introduction of job training policies in Japan,[13] including public job training programs for the unemployed and youth, subsidies for training companies, and worker benefits for training.

Until the 1980s, training policies for the employed focused on supporting workers indirectly through subsidies to the companies providing on-the-job training. However, in the early 1990s, as Japan plunged into a long-term recession following the collapse of the bubble economy, the structure of the labor market began to change, with a decrease in regular employees working under the traditional seniority-based pay system or under long-term employment contracts. Meanwhile, as the decline of the life-time employment system has led to more workers changing jobs over their careers, Japan has seen an increase in non-regular employees with fixed-term employment contracts as well as women re-entering the workforce after childrearing. All of these groups of workers have few opportunities for firm-provided training, and increased social awareness of their plight led to efforts to increase opportunities for them to develop skills on their own.

Consequently, in 1998, the *Educational Training Benefit System* was in-

[13]This section draws upon Morozumi [2000].

troduced under the *Employment Insurance Law* to provide direct financial support to individuals for worker-initiated training activities. This *Educational Training Benefit* is a type of voucher system, paying an employment insurance benefit for a portion of the job training costs incurred by individuals who take up and complete an MHLW-designated job training course at their own expense. Subsequently, the 2001 revision of the *Human Resources Development Promotion Act* included language to clearly indicate the need to promote worker-initiated training. More recently, in October 2014, the *Professional and Practical Educational Training Benefit* (*senmon-jissen-kyouiku-kunren-kyufu-kin*) was introduced. This program provides a larger subsidy than the regular *Educational Training Benefit* to workers who undertake training at professional and practical educational organizations, including at graduate school.[14]

Thus, the Japanese government has introduced policies to support worker-initiated training in the wake of the changing structure of the Japanese labor market in recent decades, with the policies mainly confined to financial support. Despite this government interest, however, there has been to date little rigorous study either to understand the factors that actually drive worker-initiated training or to identify which among such potential obstacles as monetary or time constraints or lack of knowledge about worker-initiated training might actually be holding people back from engaging in it. In addition, the

[14]See the following URL for more details;
http://www.mhlw.go.jp/english/dl/Overview_eng_03.pdf.

limited empirical evidence is equivocal as to whether worker-initiated training even has a positive effect on the worker. For these reasons, more extensive empirical study is needed to ensure that policies promoting worker-initiated training are effective.

3 Data

This study adopts data from the first and second waves of the *Survey on Work and Learning* conducted by The Japan Institute for Labour Policy and Training (JILPT).[15] The first wave conducted in 2008 and the second wave in 2011[16] each provide cross-sectional data for analysis. The *Survey* consists of a combination of interviews and self-administered questionnaires designed to understand current working conditions in Japan and the manner in which skill development has been implemented since the employees graduated from school. As the survey is complex, Figure 2 presents the basic structure.

Self-administered questionnaires were used to obtain information on working conditions, workplace attributes, basic personal attributes at the time of the survey (year t) and detailed information about firm-provided and worker-initiated training in the year prior to the survey (year $t-1$), including such items as course of study, length, and frequency. Data on work hours and monthly wages for both years $t-2$ and t were also collected as well as a sub-

[15] JILPT is the policy research institute of the Japanese Ministry of Health, Labour and Welfare (MHLW), and the surveys were conducted at the request of the MHLW.

[16] Currently, no specific plans for a third wave have been announced.

jective evaluation of changes in work skills (skill level and job performance) and job opportunities (possibilities for promotion and obtaining a preferred job) from year $t-2$ to year t.

The interview component of the survey, meanwhile, includes questions about educational history, work history and life events after graduation from junior high school.[17] From the interview data, information on turnover, movement between companies, and changes in work format or occupation both within a company and between companies was obtained, as well as information about marriage, divorce and childbirth each year.[18] The interview also collects annual data on whether or not a respondent participated in firm-provided and/or worker-initiated training each year after the respondent began working (i.e. if we set n as the number of years after starting to work, we have data for each year from year $t-n$ to year t).

The samples for both waves of the survey include Japanese workers aged 25–45 years, excluding full-time housewives and students. The first wave used a national representative sample of Japanese workers, whereas the second wave used a representative sample of workers from 20 major cities.[19]

[17] In other words, after completion of compulsory education, as Japanese compulsory education consists of 6 years of elementary school and 3 years of junior high school.

[18] Although the survey collects this information each quarter, our study used the fiscal year-end quarter to represent the data in order to coordinate with annual data on worker-initiated training and firm-provided training.

[19] These include the 23 wards of central Tokyo and 19 ordinance-designated cities: Sapporo, Sendai, Saitama, Chiba, Yokohama, Kawasaki, Sagamihara, Niigata, Shizuoka, Hamamatsu, Nagoya, Kyoto, Osaka, Sakai, Kobe, Okayama, Hiroshima, Kitakyusyu, and Fukuoka. However, as Sagamihara was not yet an ordinance-designated city during the first wave of the survey, it was excluded from the analysis.

Both surveys were implemented using the area sampling method to ensure representativeness.[20] In constructing the analysis sample, the first wave data was restricted to the 20 major cities included in the second wave survey, and both samples were also restricted to those respondents who were working from year $t-2$ to year t. The resultant sample sizes for the first and second waves were 825 and 1,866, respectively, and these were then pooled.

From this pooled data, three datasets were constructed for this study, as can be seen in the schematic presented in Figure 2. The first dataset, *Data 1*, consists of cross-sectional data for year t used to analyze the determinants of worker-initiated training. As *Data 1* does not include such detailed information about worker-initiated training as obstacles, fees, length, and course of study, a second dataset, *Data 2*, was constructed to complement the information in *Data 1*. *Data 2* also consists of cross-sectional data, but for year $t-1$, so we need to keep in mind that there are slight differences in these two datasets. The third dataset, *Data 3*, consists of two-year panel data ($t-2$ and t) used to examine the effect of worker-initiated training while controlling for individual heterogeneity via a first-difference estimation (described below). *Data 3* was constructed by combining for each individual the information on wages and work hours for years $t-2$ and t from the self-administered questionnaire with the interview data on the workplace and workers in years $t-2$ and t.

[20] For more detail, see the following URLs: http://www.jil.go.jp/institute/research/2009/063.html and http://www.jil.go.jp/institute/reports/2013/documents/0152.pdf.

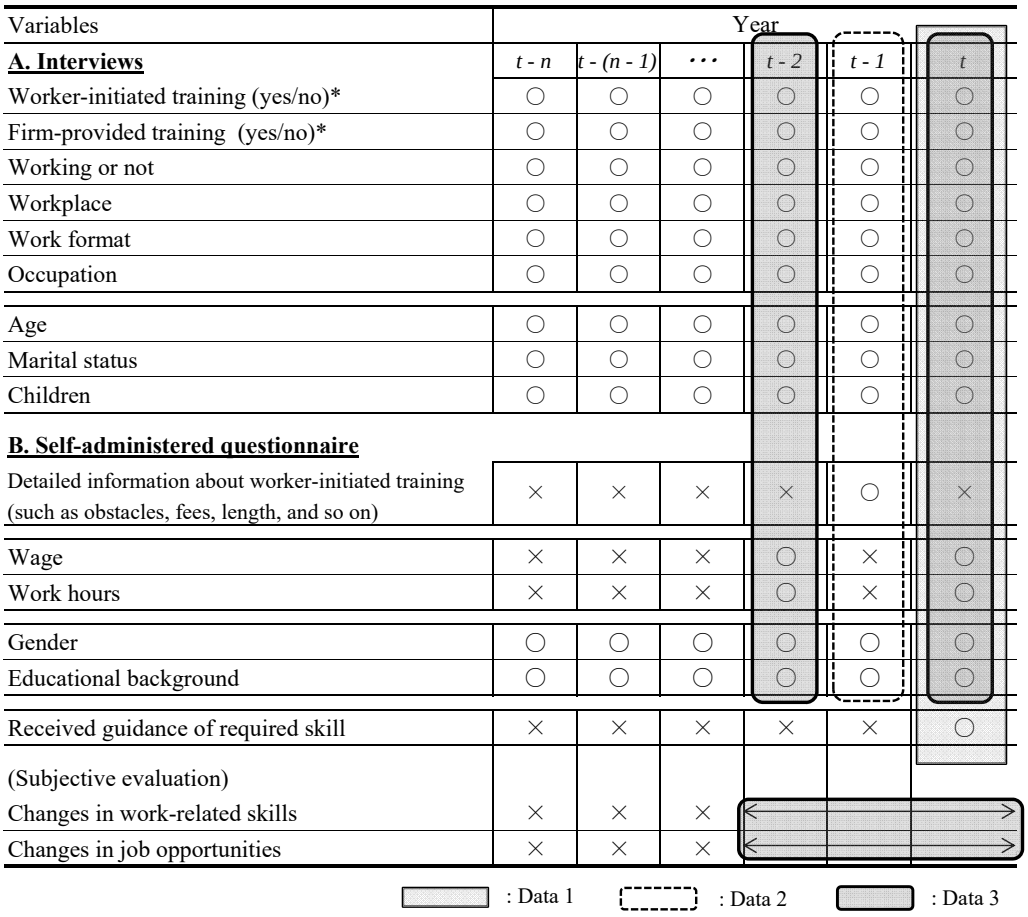

Figure 2: Structure of the Dataset

Notes:

1. *Data 1* and *Data 2* are cross-sectional; *Data 3* is two-year panel data.
2. × indicates no available data. * indicates that current and past training information are also included.
3. Year t is the survey year, and year $t - n$ is the year when a respondent started working.
4. Gender and educational background are invariable over time.

4 Current Worker-Initiated Training in Japan

4.1 Participants

In this section, we describe the current situation of worker-initiated training in Japan, beginning with an overview of who engages in it through a cross-tabulation of *Data 1*. The descriptive statistics for the *Data 1* analysis sample are reported in Table 1. We can see that 37.7% are female, 62.4% are married, and the average number of children is 1.096. As for academic background, 31.7% are middle or high school graduates, 28.7% are two-year college graduates, 36.0% are university graduates, and 3.6% have graduate degrees. The majority, 69.1%, are regular workers, and the second largest group, at 23.3%, are non-regular workers. Approximately 20% work as professional and technical workers and 23.4% are clerical staff. The largest industries represented are wholesale and retail (16.9%) and construction (14.6%).

Table 2 reports the rate of engagement in worker-initiated training according to various worker characteristics. We see first that 18.4%, or less than one-fifth, of Japanese workers surveyed engage in worker-initiated training, with the rate slightly higher for male workers than for female workers. Second, those in their 20s have the highest rates of engagement, and the younger they are, the more they engage in worker-initiated training. Because it is a human capital investment, it is natural that those who have many years until retirement will expect to obtain a higher return and thus are more likely to engage in worker-initiated training than those who are closer to

Table 1: Descriptive Statistics (*Data 1*)

Panel A

	Mean	SD
Worker-initiated training (=1 if yes in year t)	0.184	0.387
Previous worker-initiated training (=1 if yes b/w year t -3 and t-1)	0.448	0.497
Firm-provided training (=1 if yes b/w year t -2 and t)	0.381	0.486
Work hours	42.157	12.648
Monthly wage (10,000yen)	27.647	16.860
Received guidance for required skill (=1 if yes)	0.408	0.492

Panel B

	Mean	SD
Female (=1 if yes)	0.377	0.485
Age	34.064	5.639
Married (=1 if yes)	0.624	0.485
Number of children	1.096	1.122
Education		
Middle school/high school	0.317	0.466
Technical/two year college /vocational school	0.287	0.452
University	0.360	0.480
Graduate School	0.036	0.186
Work format		
Regular worker	0.691	0.462
Non-regular worker	0.233	0.423
Temp staff	0.032	0.176
Managers, officers, self-employed, family business worker	0.044	0.206
Occupation		
Professional, technical	0.205	0.404
Managerial	0.033	0.178
Clerical	0.234	0.424
Sales	0.183	0.387
Service	0.140	0.347
Technician, production	0.133	0.339
Transportation, communication	0.055	0.228
Security	0.008	0.088
Agriculture, forestry, fishery	0.002	0.047
Other	0.007	0.084
Firm size		
-99	0.460	0.498
100 - 999	0.255	0.436
1000 -	0.229	0.420
Public sector	0.056	0.230

	Mean	SD
Industry		
Agriculture, forestry, fishing, mining	0.003	0.051
Manufacturing	0.064	0.244
Construction	0.146	0.353
Electricity, gas, heat, water	0.012	0.107
Information, communication	0.068	0.251
Transportation, mail	0.068	0.252
Wholesale, retail	0.169	0.375
Finance, insurance	0.044	0.206
Real estate, leasing	0.025	0.156
Research, specialized & technical services	0.041	0.198
Hotel, restaurants	0.061	0.240
Life services, entertainment	0.056	0.230
Education, learning support,	0.049	0.216
Medical, welfare	0.098	0.298
Other services	0.063	0.243
Other	0.033	0.179
Academic performance in the third year of junior high school		
Very poor	0.111	0.314
Poor	0.141	0.348
Average	0.378	0.485
Excellent	0.204	0.403
Very excellent	0.166	0.373
First wave dummy (=1 if comes from the first wave data)	0.307	0.461

Notes: 1. N = 2,691.
2. Year t denotes the survey year of each wave of the survey.

retirement. Third, unmarried workers have a higher engagement rate than married workers, and those without children have higher rates than those with children. This suggests that family commitment is likely to negatively impact engagement in worker-initiated training. Fourth, educational background and worker-initiated training engagement are positively correlated, which indicates that those with a higher level of education might be more likely to initiate a job-related learning activity than those with lower education. Lastly, in terms of work format, the engagement rates of managers and the self-employed are the highest (34.3%). As these two groups are either not hired by an employer or are themselves the employer, they do not receive on-the-job training from others and so they might be likely to engage self-learning activities. Among the employed, the engagement ratio of regular employees is highest (31.9%), indicating that although non-regular employees have fewer opportunities for firm-provided training (Hara [2014b]), they are also less likely to engage in worker-initiated training than regular employees.

Table 2: Rate of Engagement in Worker-initiated Training by Worker Characteristics

			(%)
All	18.4		
Gender		Employment Format	
Male	30.3	Managers, officers, and self-employed workers	34.3
Female	27.2	Family business workers	24.2
		Regular employees	31.9
Age		Part-time non-regular employees	19.8
25–29	32.9	Full-time non-regular employees	25.8
30–39	27.2	Temp Staff	27.9
40–44	28.2	Other	17.6
Marital Status			
Married	26.6		
Not married	33.0	Academic Background	
		Middle school/high school	18.5
Children		Technical/2-year college or vocational school	30.5
No children	33.5	University	40.7
Have children	26.2	Graduate School	67.8

Data: *Data 1* from the first and second waves of the *Survey on Work and Learning*.

4.2 Obstacles

As mentioned above, less than one-fifth of Japanese workers engage in worker-initiated training, so more than four-fifths do not. Why not? Here we use *Data 2* to answer this question.

Table 3 shows the major obstacles expressed both by those who engaged in worker-initiated training and those who did not. Of the survey responses, 22.3% claimed that there was no particular reason preventing them and 7.2% claimed that they "have no interest in worker-initiated training." These responses were excluded in order to restrict the sample to those who had experienced problems in engaging in worker-initiated training. For both groups, the most commonly chosen response (multiple responses were possible) was "cannot afford the fees," followed by "busy with household/personal issues such as housework, parenting, and caregiving," indicating that the constraints of time and money are important factors related to worker-initiated training.

The main differences in the responses of the two groups were "do not know where I should learn" (10.2% vs. 18.9%), "do not know what certifications to get" (8.3% vs. 15.2%), and "do not know what skills or knowledge to be acquired" (13.6% vs. 20.0%), where the latter, higher, rates are the responses of those who did not engage in worker-initiated training. This indicates that not knowing what to do is one of the major obstacles to engaging in worker-initiated training and thus more available information about requisite skills might help to promote it. Accordingly, we examine in the next subsection (4.3) the relationship between worker-initiated training and opportunities

to be informed about requisite job skills. More specifically, we treat how workplaces inform their employees about required skills.

Table 3: Obstacles to Engaging in Worker-Initiated Training (Multiple Answers Possible)

	(%)	
	Those who engaged	Those who did not
Busy with household/personal issues (such as housework, parenting, and caregiving)	34.9	36.1
Cannot afford the fees	43.2	53.6
Do not know where I should learn	10.2	18.9
Do not know which training provider is reliable	15.4	17.9
Do not know what skills/knowledge to be acquired	13.6	20.0
Do not know what certifications to get	8.3	15.2
Other	6.2	4.6
N	324	1,556

Data: *Data 2* from the first and second waves of the *Survey on Work and Learning*.
Notes:

1. "Those who engaged" and "those who did not" indicates respondents who engaged and did not engage, respectively, in worker-initiated training in year $t-1$.
2. The above calculations are for those who did not answer "There are no problems in particular" and "Have no interest in worker-initiated training."

4.3 Promoting Worker-Initiated Training through Information about Required Job Skills

Here we look at this point a little more closely to confirm the validity of the hypothesis that more available information about requisite skills might help to promote worker-initiated training.

In 2010, JILPT conducted another survey, this one of small to mid-sized companies, to investigate how these employers made their employees aware of the requisite skills for their current jobs. The results are reported in Ooki [2011], and 58.8% of the small or mid-sized companies told their employees "in the context of daily work," suggesting one-to-one communication, followed by "in meetings and small group activities" (45.8%) and "at morning assemblies" (45.4%), indicating the use of group communication. The fourth most frequent method was "through on-the-job training at the workplace" (22.8%), suggesting that firm-provided training was also a means of indicating the specific skills and knowledge required. This information thus confirms our understanding that direct guidance and firm-provided training are common methods of informing employees about the requisite skills required of workers in Japanese companies.

As noted earlier, it is possible from Table 3 to infer a relationship between engagement in worker-initiated training and being informed about requisite job skills, and we explored this possibility in this study. To proceed, we used *Data 1* and the following two variables to represent opportunities to know about skills that should be acquired: (1) "received guidance on required skill" and (2) "current/previous firm-provided training".

The first variable, "received guidance on required skill," is as follows. If superiors or co-workers at the workplace provide clear guidance on the desired knowledge and job skills, it can be assumed that workers can more easily know what specific learning activities they should engage in. They are

thus less likely to claim that they "do not know what skills to be acquired" and are more likely to engage in worker-initiated training. The JILPT *Survey on Work and Learning* includes the question, "How much guidance did you receive from your supervisor about skills or knowledge required in the workplace?" From the responses to this question, the "received guidance about required skill" variable was constructed, taking the value of 1 if respondents chose either "received a lot" or "received some," and 0 otherwise.[21]

The second variable, "current/previous firm-provided training", indicates whether a worker is currently receiving or has in the past received firm-provided training. This was examined because firm-provided training can be considered to be an opportunity not only for acquiring skills but also for learning which skills will be required on the job in the future.[22] This variable was constructed from information about whether the company sent a worker for a workshop or training session to acquire knowledge or skills between years $t-3$ and $t-1$, taking the value of 1 if a worker received firm-provided training in year $t-1$ or the previous two years (years $t-2$ and $t-3$) and 0 otherwise. These opportunities to acquire information about required job skills either by receiving guidance about the required skill or through current or previous firm-provided training are expected to work to remove obstacles for worker-initiated training, thereby decreasing the marginal cost and increasing the marginal benefit. Consequently, it is expected that a worker will engage in

[21]The latter included the choices "difficult to say" and "received no guidance".

[22]According to the Ooki [2011] report of the results of the survey, this is explicitly recognized by some Japanese companies.

further worker-initiated training if these opportunities increase.

Table 4 shows the simple relationship between these guidance opportunity variables and actual worker-initiated training activities. Those who received guidance on job skills showed a higher rate of worker-initiated training (24.5%) than those who did not (14.1%). We can also see that those who received firm-provided training in the current and past two years had a higher rate of worker-initiated training (26.6%) than those who did not (13.3%), suggesting that there might be a positive relationship between the two activities.

Table 4: Rate of Engagement in Worker-initiated Training by Opportunity for Guidance about Required Skills

	(%)
Guidance	
Yes	24.5
No	14.1
Firm-provided training between years $t-3$ and $t-1$	
Yes	26.6
No	13.3

Data: *Data 1* from the first and second waves of the *Survey on Work and Learning*.

4.4 Characteristics

The current status of worker-initiated training in Japan is presented in more detail here, using the *Data 2* dataset again. Table 5 shows the hours and

fees for worker-initiated training in year $t-1$.[23] Among those who engaged in worker-initiated training, 12.0% did so for less than 8 hours, 20.4% for 8–24 hours, 21.7% for 24–48 hours, 27.8% for 48–100 hours, and 18.2% for more than 100 hours during the year. In other words, more than 80% of those who engaged in worker-initiated training did so for less than 100 hours. The average of worker-initiated training hours among those who engaged in it, using the middle value of each category[24], was 50.8 hours per year, or approximately one hour per week. As for training fees, including items such as course fees, textbooks, and reference books, 37.8% of respondents—the highest percentage—spent less than 10,000 yen, while 27.5% incurred 10,000–30,000 yen; 12.4%, 30,000–50,000 yen; 10.7%, 50,000–100,000 yen; and 11.7%, more than 100,000 yen. Conducting the same calculation as for hours, the average cost was 30,456 yen (around $272), implying that a worker who engaged in worker-initiated training paid about 2,500 yen (around $22) for it per month.

Next, we briefly describe the content of worker-initiated training activities and the manner in which they were conducted, using a portion of *Data 2* that includes information only from the second wave survey and not from the first wave. To be clear, the data used in this subsection differs from that used above and in the subsequent econometric analysis.[25] The results shown

[23]The sample includes only those who actually engaged in it. We also exclude non-respondents and respondents who chose "unknown".

[24]Less than 8 hours = 8; more than 100 hours = 100.

[25]The questions are slightly different between the first and the second waves, and only the second wave survey contains relevant information for the question here.

Table 5: Worker-initiated Training Hours and Fees

			(%)
Panel A: Hours		Panel B: Fees	
Less than 8 hours	12.0	Less than 10,000 yen	37.8
8 – 24 hours	20.4	10,000 – 30,000 yen	27.5
24 – 48 hours	21.7	30,000 – 50,000 yen	12.4
48 – 100 hours	27.8	50,000 – 100,000 yen	10.7
More than 100 hours	18.2	More than 100,000 yen	11.7
N	683	N	720

Data: *Data 2* from the first and second waves of the *Survey on Work and Learning*.

below are merely for reference to obtain an idea about the worker-initiated training of Japanese workers. 62.3% of those who engaged in worker-initiated training studied on their own, 35.6% participated in workshop or training sessions, and 25.2% attended a seminar. The contents of the worker-initiated training they opted for included office or clerical work (33.0%), manufacturing technology (30.9%), IT or information processing (17.8%), a foreign language (14.4%), and others (22.1%).

5 Econometric Model

In this section, we explain the estimation models used in this study. First, we present the model for examining the effect of worker-initiated training on workers' wages and the growth in job skills and job opportunities, using *Data 3* panel data. As worker-initiated training and firm-provided training are both human capital investments, past or current engagement in either of these activities is expected to affect job skills and job opportunities positively.

We therefore model the effect on wages in years t and $t-2$ as, respectively,

$$lnw_{i,t} = \delta_1 \sum_{\tau=s}^{t} Workertrng_{i,\tau} + \delta_2 \sum_{\tau=s}^{t} Firmtrng_{i,\tau} + \alpha_t + \beta X_{i,t} + c_i + u_{i,t} \quad (1)$$

and

$$lnw_{i,t-2} = \delta_1 \sum_{\tau=s}^{t-2} Workertrng_{i,\tau} + \delta_2 \sum_{\tau=s}^{t-2} Firmtrng_{i,\tau} + \alpha_{t-2} + \beta X_{i,t-2} + c_i + u_{i,t-2}, \quad (2)$$

where $lnw_{i,t}$ is the log of the hourly wage for year t. The treatment variable $Workertrng_{i,\tau}$ indicates whether worker i engaged in worker-initiated training in year t, $Firmtrng_{i,\tau}$ indicates the receipt of firm-provided training, and s is the year in which a worker began working after graduation. The vector $X_{i,t}$ contains a worker's characteristics including age, square of age, marital status, number of children, tenure, square of tenure, work formats, and occupations. c_i captures all unobserved time-constant factors that affect $lnw_{i,t}$, and $u_{i,t}$ is the idiosyncratic error term. This specification considers the potential effects of past engagement in worker-initiated training and firm-provided training on the current level of wages without accounting for any depreciation of accumulated skills over time. It also allows for the unobserved effect on wages, c_i, to be correlated with worker-initiated training because if workers with high abilities are likely to engage in worker-initiated training, then $Workertrng_{i,\tau}$ is endogenous. $Firmtrng_{i,\tau}$ might also be endogenous because a company would likely want to send a worker with high ability to firm-provided training.

It is important to remove this potential endogeneity, so we implemented a first-difference estimation. Subtracting equation (2) from equation (1), we obtained the first-difference equation as

$$\Delta lnw_{i,t} = \delta_1(\sum_{\tau=t-1}^{t} Workertrng_{i,\tau}) + \delta_2(\sum_{\tau=t-1}^{t} Firmtrng_{i,\tau}) + \Delta X_{i,t}\beta + \Delta u_{i,t}. \tag{3}$$

Taking this first-order difference removes the unobserved effect, c_i, allowing us to apply the exogeneity assumption, which means that $E(\Delta u_{i,t}|Workertrng_{i,t}, Workertrng_{i,t-1}, Firmtrng_{i,t}, Firmtrng_{i,t-1}, \Delta X_{i,t}) = 0$. This provides us with a consistent estimator because the OLS estimator is an unbiased estimator under the exogeneity assumption. The effect of worker-initiated training is thus examined by estimating Eq. (3). δ_1 is the coefficient of interest and is considered the causal effect of worker-initiated training. In the estimation, $\sum_{\tau=t-1}^{t} Workertrng_{i,\tau}$ takes two if a worker engaged in it in both years $t-1$ and t, 1 if in either year and 0 otherwise, and the same goes for $\sum_{\tau=t-1}^{t} Firmtrng_{i,\tau}$.

The effect of worker-initiated training on work skills and job opportunities was estimated using the same analysis framework. The variables on changes in work skills are from the self-evaluation of changes in skill level and job performance from year $t-2$ to t, and those on changes in job opportunities are from the self-evaluation of changes in promotion possibility and the possibility to obtain a preferred job. These dummy variables[26] were

[26]These variables are based on subjective changes in evaluations. Although I prefer to examine actual and objective data, this was unavailable in the survey, so these variables were constructed using the best data available.

constructed from the questions "Do you think that now (year t) you have personally changed since year $t-2$ with respect to the criteria given below (i.e., 1. skill level, 2. job performance, 3. promotion possibility, and 4. possibility to obtain a preferred job)?" A value of 1 was assigned if the answer was "improved" or "somewhat improved," and 0 in the case of "no change," "somewhat declined" or "declined." A probit estimation was conducted on Eq. (3).

Before reporting the estimation results, we first look at the difference in the mean of wage growth and changes in work skills and job opportunities by worker-initiated training engagement, as summarized in Table 6. "Yes" indicates that he/she engaged in worker-initiated training in year t or $t-1$ or both years ($\sum_{\tau=t-1}^{t} Workertrng_{i,\tau} = 1 \ or \ 2$), while "No" indicates that he/she did not ($\sum_{\tau=t-1}^{t} Workertrng_{i,\tau} = 0$). We can see that the wage growth of those who engaged in worker-initiated training between years t and $t-1$ was -0.006, versus -0.025 for those who did not. Although wages decreased from year $t-1$ to t, reflecting an overall decrease in wages in the entire Japanese market during the period of analysis, the decline was smaller for those who engaged in worker-initiated training. Similarly, for the self-evaluation of changes in work skills and job opportunities, the ratio of those who perceived that their skill level and job opportunities grew was higher among those who engaged in worker-initiated training than those who did not. From this cross-tabulation, we can see that engagement in worker-initiated training caused wage growth and positive changes in work skills and

job opportunities.

Table 6: Average Wage Growth and Change in Work Skills and Job Opportunities by Engagement in Worker-Initiated Training

	Worker-initiated Training	
	Yes	No
Wage growth	-0.006	-0.025
Skill level change	0.306	0.159
Job performance change	0.237	0.093
Change in promotion possibility	0.611	0.333
Change in possibility to get a preferred job	0.631	0.396
N	794	1,491

Source: *Data 3* from the first and second waves of the *Survey on Work and Learning*
Note: "Yes" indicates that he/she engaged in worker-initiated training in year t, $t-1$, or both years. "No" indicates that he/she did not.

The second analysis examined using the cross-sectional dataset *Data 1* the characteristics of workers who engaged in worker-initiated training. The conditional expectation of $Workertrng_i$ is assumed to be as follows:

$$E(Workertrng_i|Z_i) = P(Workertrng_i = 1|Z_i) = \Phi(Z_i\delta_i), \tag{4}$$

where Z_i includes individual characteristics such as age, sex, education, marital status, children, work formats, and other workplace variables. Guidance about required skills at the workplace and receipt of firm-provided training during the past three years were the main explanatory variables in this estimation, as explained in Section 4 (Table 4).

Engagement in worker-initiated training is not considered to be exogenously determined, as workers with higher study habits are more likely to

engage in worker-initiated training, causing high-ability workers to be more engaged in self-learning activities than low-ability workers. To control for the influence of this self-selection, we also added to the estimation model a worker-initiated training variable for the past three years.[27]

6 Effects of Worker-Initiated Training

Table 7 reports the estimation results for the effects of worker-initiated training using Eq. (3). We can see from Columns (1) to (4) that engagement in worker-initiated training increased skill level, job performance, promotion possibility, and the possibility of obtaining a preferred job with statistical significance. As explained above, these are subjective variables, and while it possible that these subjective evaluations may not necessarily reflect actual improvements in work skills and job opportunities, they do nonetheless suggest that engaging in worker-initiated training may be effective in enhancing job capabilities and opportunities. Looking to the estimation results for wage growth, Column (5) indicates that worker-initiated training did not increase wages statistically significantly while firm-provided training had a significantly positive effect on wages.

These results appear to show that worker-initiated human capital investment does not generate an immediate monetary return, suggesting that a reason why Japanese workers do not currently have a strong incentive to

[27] This variable takes 1 if worker i engaged in worker-initiated training in the three years prior to year t; that is, between $t-3$ and $t-1$, and 0 otherwise.

conduct worker-initiated training might be because they expect no monetary return from it. However, as both firm-provided and worker-initiated training are human capital investment activities, why would it be the case that only self-initiated learning would not yield a return? Japanese business practice may provide some insight. While Japanese companies commonly include the receipt and outcomes of firm-provided training as a personnel evaluation item for each employee when conducting personnel performance reviews, many Japanese companies do not include engagement in worker-initiated training as an evaluation item. Therefore, receipt of firm-provided training is likely to be reflected in an employee's wages, but even if that worker conducts worker-initiated training and his/her skill improves, the outcome will most likely be neither evaluated nor rewarded.

Another interesting point is suggested from these results. As explained above, the lack of any effect on short-term outcomes such as current wages could represent an obstacle in promoting worker-initiated training. However, as such training could affect long-term outcomes through current increases in job capabilities and opportunities, career consulting or similar activities to encourage workers to recognize this long-term effect might be helpful in promoting engagement in worker-initiated training.

Table 7: Results of Worker-Initiated Training Effects

	(1) ΔSkill level	(2) ΔJob performance	(3) ΔPromotion possibility	(4) ΔPossibility to get a prefered job	(5) $\Delta lnw_{i,t}$
Worker-initiated training	0.177***	0.161***	0.076***	0.082***	0.001
(b/w year t and $t-1$)	(0.014)	(0.015)	(0.012)	(0.010)	(0.007)
Firm-provided training	0.092***	0.083***	0.061***	0.016	0.016**
(b/w year t and $t-1$)	(0.014)	(0.015)	(0.012)	(0.010)	(0.007)
ΔAge^2	-0.169***	-0.175***	-0.103***	-0.131***	-0.001
	(0.046)	(0.047)	(0.040)	(0.034)	(0.023)
ΔMarried	-0.103***	-0.107***	-0.046	-0.026	0.028
	(0.036)	(0.037)	(0.029)	(0.024)	(0.018)
ΔNo of children	0.083***	0.071**	0.065**	0.016	0.007
	(0.032)	(0.033)	(0.025)	(0.022)	(0.016)
ΔTenure	0.014*	0.015**	-0.013**	-0.020***	0.013***
	(0.007)	(0.007)	(0.006)	(0.005)	(0.003)
ΔTenure^2	-0.184***	-0.162***	0.038	0.044	-0.068***
	(0.044)	(0.044)	(0.037)	(0.031)	(0.021)
1st wave dummy	-0.079***	-0.121***	-0.005	-0.012	-0.002
	(0.021)	(0.021)	(0.018)	(0.015)	(0.010)
Constant	–	–	–	–	-0.025
					(0.031)
ΔEmployment format, & ΔOccupation	Yes	Yes	Yes	Yes	Yes
Observations	2,285	2,285	2,285	2,285	2285
R-squared	0.110	0.092	0.065	0.084	0.024
F stat					3.160***
Chi-squared	342.9***	290.2***	152.2***	158.4***	

Data: *Data 3* from the first and second waves of the *Survey on Work and Learning*.
Notes:

1. Columns (1)–(4) are the results of probit analysis, and marginal effects are reported. Column (5) is the result of the first difference estimation.

2. Standard errors are presented in parentheses. ***, **, and * denote p<0.01, p<0.05, and p<0.1, respectively.

7 Promotion of Worker-Initiated Training

The results in Section 6 suggest that pursuing worker-initiated training may have a positive effect on job capabilities and opportunities, but not on short-term outcomes such as increases in current wages. There is, of course, another possible path besides an increase in salary to gain a monetary return from worker-initiated training, which is to change to a job with higher pay. Due to data limitations, examining that effect is beyond the scope of this study. However, we also cannot deny the possibility that skill development might bring about a future increase in worker well-being. Therefore, here we examine what promotes worker-initiated training, using the cross-sectional dataset *Data 1* which is different from the dataset used in Section 6.

Table 8 shows the estimation results for the determining factors for worker-initiated training, reporting the marginal effects of worker-initiated training incidences obtained from a probit analysis using Eq. (4). The main explanatory variables are "receiving guidance for required skills", and "current and previous firm-provided training", as explained in subsection 4.3, to which are added working hours and monthly wage to represent time and monetary constraints. This analysis also takes into account control variables for individual and firm attributes such as gender, age, education, marriage, number of children, industry, firm size, and occupation category.

From Table 8, we see that guidance about the skills required in the current job had a statistically significant positive effect on the incidence of worker-

initiated training. The marginal effect was 0.049, which implies that the enrollment rate in worker-initiated training for workers who received the guidance for required skill was 4.9 percentage points higher than those who did not receive it. As the probability of engagement in worker-initiated training was 18.4% (Table 1); therefore, if the worker receives guidance, the probability increases to 23.3% $(18.4 + 4.9)$, which means that it will have risen by around 25% $((23.3 - 18.4) \div 18.4 \times 100)$. Further, those who participated in firm-provided training in the past three years were more likely to engage in worker-initiated training, with a marginal effect of 0.041. Conducting the same calculation as above, the probability of engagement in worker-initiated training increases to 22.5% $(18.4 + 4.1)$, or about a 22% rise, if one participated in firm-provided training. These results suggest that if workers have the opportunity to learn about the desired job skills and knowledge either through firm-provided training or directly from their supervisors, they are more likely to be motivated to enroll in self-learning activities. In other words, information about what is required to enhance a worker's performance of his/her current job increases the incidence of worker-initiated training, and the size of the effect is not negligible.

Next, we can also see from Table 8 that long working hours discouraged enrollment in worker-initiated training statistically significantly and that the larger the monthly wage the worker received, the more he/she engaged in worker-initiated training, as the coefficient of monthly wage was positive, but this effect was not statistically significant. These results suggest that the time

constraint might be the bigger bottleneck preventing Japanese workers from undertaking worker-initiated training than the monetary constraint, and so policies such as a temporary leave system or short-time flexible work system that eased time constraints could be effective in promoting worker-initiated training.

Lastly, in terms of additional factors that might impact the incidence of worker-initiated training, we see that gender and educational background had no statistically significant effect but that younger workers were likely to engage in it, as predicted by economic theory. Married workers, too, were likely to engage in worker-initiated training, though the number of children had a statistically significant negative impact. This suggests that raising children hinders worker-initiated training, but there could be a marriage premium. Finally, regular workers and those working in large-scale companies and in the public sector all had a higher incidence of worker-initiated training, with the latter impact statistically significant. These groups have greater opportunities to participate in firm-provided training than others,[28] and even after controlling for this difference in opportunity for firm-provided training, they are more likely to engage in worker-initiated training than other groups. This suggests that the opportunity gap in skill development among workers might be considerably large in Japan.

[28]See Hara [2014a] for more detail.

Table 8: Results for the Determinants of Worker-Initiated Training

Dependent variable: enrollment in worker-initiated training in year t (=1 if yes, otherwise 0)	
Receiving guidance for required skill (=1 if yes)	0.049***
	(0.013)
Current and previous firm-provided training	0.041***
(b/w year t -2 and t)	(0.014)
Working hours	-0.001*
	(0.001)
Monthly wage	0.0004
	(0.001)
Previous self-development	0.315***
(b/w year t -3 and t-1)	(0.014)
Female	0.010
	(0.018)
Age	-0.004***
	(0.001)
Married	0.040**
	(0.018)
Number of children	-0.020**
	(0.008)
Technical/junior college or vocational school	-0.017
	(0.019)
University	0.005
	(0.019)
Graduate School	-0.052
(Middle school/high school)	(0.037)
Regular worker	0.069**
	(0.033)
Non-regular worker	0.034
	(0.035)
Temp staff	0.068
(Managers, officers, self-employed, Family business worker)	(0.048)
100 - 999	0.036**
	(0.017)
1000 -	0.053***
	(0.019)
Public sector	0.056*
(-99)	(0.032)
1st wave dummy	0.029**
	(0.014)
Occupation, industry, academic performance of the 3rd year in junior high school	Yes
Observations	2,691
Pseudo R-squared	0.304
Chi-squared	781.2***

Data: *Data 1* from the first and second waves of the *Survey on Work and Learning*.
Notes: Marginal effects are reported, and standard errors are presented in parentheses. ***, **, and * denote p<0.01, p<0.05, and p<0.1, respectively.

8 Conclusion

This study examined the effects of worker-initiated training on wage growth, skill development and enhancement of job opportunities, as well as the determinants of that worker-initiated training, for workers in Japan. The results show that while worker-initiated training was not linked to any immediate increase in wages, as Kurosawa [2001] also finds, the pursuit of worker-initiated training did have positive effects on job capabilities and opportunities. As these effects could bring about a future increase in worker well-being and, potentially, even an increase in wages from a career change, worker-initiated training is worthy of further promotion, especially for a country concerned about an impending decrease in its human resource base.

A first step to promote worker-initiated training would be to include it as an evaluation item in human resource management systems so that workers could receive some return from their efforts, thus providing an appropriate incentive mechanism to motivate workers to pursue worker-initiated training that could benefit both individual workers and society.

However, it is also shown that worker-initiated training is influenced by workplace experiences; that is, a worker who receives guidance about a required skill at work or who is now receiving or has previously received firm-provided training is more likely to engage in worker-initiated training. This suggests that the introduction and active promotion by companies of a system for informing workers about required job skills could be effective in promot-

ing worker-initiated training. Given that the history of skill development in Japan has been predominantly situated within the workplace, this study has shown that even learning activities that occur privately outside of work are still closely related to the workplace experience, and this suggests that it is inappropriate to ignore the relationship between workers and the workplace when discussing worker-initiated skill development.

With the continuing decline in the life-time employment system and the concomitant increase in the number of non-regular, part-time and temporary workers, however, those who progress through their career in a single company are decreasing, which means an increase in those who do not generally have access to career guidance opportunities at the workplace such as firm-provided training or guidance about required job skills. To secure such opportunities for workers, one might therefore also consider developing further initiatives such as the provision of career consulting outside the workplace as occurs with, for example, the public employment security service. Recently, the Japanese Ministry of Health, Labor and Welfare has begun to rationalize and improve the existing qualifications for career counselors in an attempt to increase the number of highly qualified career counselors and expand the use of career consulting, with positive expected effects.

In addition, informing workers that worker-initiated training could have positive long-term future outcomes might be effective in promoting worker-initiated training. It is understandable that a worker would not be incentivized to engage in worker-initiated training if short-term outcomes are not

observed. However, if he/she knew that this training, providing current skill development and enhanced job opportunities, might provide positive long-term outcomes, he/she would have an incentive to engage in it. If such information were provided through career consulting, worker-initiated training could thus be promoted.

Perhaps most importantly, the results also show that time is a greater constraint than money for worker-initiated training, which has implications for current government policy. Since the late 1990s, the Japanese government has introduced policies to promote worker-initiated training; namely, the *Educational Training Benefit* and the *Professional and Practical Educational Training Benefit*. Both of these are voucher systems that provide financial assistance to employees for the worker-initiated training expenses they incur, and the effectiveness of this system is currently being debated.[29] The results of this study suggest that, rather than financial assistance (or, perhaps, in addition to it), a more effective policy might be one that assists workers in securing time to engage in worker-initiated training.[30]

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[29] Abe, Kurosawa, and Toda [2005] show that the *Educational Training Benefit* does not appear to have an effect on wage growth.

[30] As an example, in April 2016, a subsidy will be introduced in Japan for companies that provide unpaid leave to employees who engage in worker-initiated training.

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