

Discussion Paper Series

RIEB

Kobe University

DP2026-11

**The Effects of Training under the
Employment Adjustment Subsidy during the
COVID-19 Pandemic: Evidence from Japan**

Yudai HIGASHI
Masaru SASAKI

March 30, 2026



Research Institute for Economics and Business Administration

Kobe University

2-1 Rokkodai, Nada, Kobe 657-8501 JAPAN

The effects of training under the Employment Adjustment Subsidy during the COVID-19 pandemic: Evidence from Japan^{*}

Yudai Higashi[†] Masaru Sasaki[‡]

March 30, 2026

Abstract

In Japan, many establishments adversely affected by the COVID-19 pandemic have received an Employment Adjustment Subsidy (EAS) to maintain employment. Beyond subsidizing temporary leave allowances, the EAS also includes a scheme that subsidizes employee training provided by establishments. Using establishment-level administrative data, this study examines the characteristics of establishments providing EAS-supported training to their employees and evaluates its effects on the probability of establishment closure, employment flows, and business activity levels during the pandemic. The results indicate that establishments with workforce compositions and industry affiliations linked with higher expected returns to human capital investment are more likely to provide EAS-supported training. Furthermore, the EAS-supported training provided early during the pandemic reduced the probability of establishment closures. Although this training temporarily increased the hiring rate during the EAS receipt period, this effect did not persist once receipt ended. There is no evidence that EAS-supported training reduced job separation rates or improved subjective business activity levels. Overall, the effects of EAS-supported training appear limited.

JEL classification: H25, J24, J63, L25

Keywords: Employment Adjustment Subsidy, Training, Establishment closure, Employment flow, Business activity, COVID-19 pandemic

^{*} This study was conducted as part of a research project at the Japan Institute for Labour Policy and Training (JILPT). The authors are grateful to the members of this project for their helpful comments. The authors thank the Japanese Ministry of Health, Labour and Welfare (MHLW) and JILPT for providing data. An earlier version of this paper was written in Japanese and included in JILPT Research Report No. 236, chapter 8, pp. 269–310 (2025). The views expressed in this paper are those of the authors and do not reflect those of the MHLW, JILPT, or the authors' affiliated institutions. All remaining errors are our own.

[†] Faculty of Economics, Kyoto Sangyo University, Kyoto, Japan; Research Institute for Economics and Business Administration, Kobe University, Kobe, Japan. Corresponding author, Email: yhigashi@cc.kyoto-su.ac.jp

[‡] Graduate School of Economics, The University of Osaka, Osaka, Japan; IZA, Germany. Email: sasaki@econ.osaka-u.ac.jp

1. Introduction

The COVID-19 pandemic caused many establishments to suspend or reduce their business activities. Regardless, the Japanese labor market experienced limited job separation and no sharp increase in the unemployment rate during the pandemic.¹ The primary factor mitigating significant employment reduction is considered to have been the widespread utilization of the Employment Adjustment Subsidy (EAS) during the pandemic.² The EAS is offered to establishments experiencing a decline in business activities owing to economic factors. Establishments that adjust employment by providing employees with temporary leave allowances, salaries for secondment, or training are eligible for the EAS. By providing employees with training, establishments become eligible to receive a premium in addition to the basic EAS amount.

This study focuses on the role of the EAS in supporting training, which is expected to enhance establishment performance by facilitating human capital accumulation. Specifically, this study examines the characteristics of establishments that provide EAS-supported training to their employees and evaluates the effects of such training on the probability of establishment closure, employment flows, and business activity levels during the COVID-19 pandemic. To this end, we use establishment-level administrative data on the EAS covering the period from 2019 to 2023.

Existing literature explores the overall effects of Japan's EAS during the COVID-19

¹ The unemployment rate, which was 2.4% in January 2020, prior to the onset of the pandemic, subsequently increased to 3.0% in late 2020. Thereafter, it declined, returning to the pre-pandemic level of 2.5% as of December 2022. See the website of the JILPT for the dynamics of the unemployment rate during the COVID-19 pandemic (<https://www.jil.go.jp/kokunai/statistics/covid-19/c06.html#c06-1>, accessed on February 8, 2026).

² Similar job retention schemes were implemented in other countries during the COVID-19 pandemic, and their effects have been examined in the literature. The US Paycheck Protection Program succeeded in boosting employment (Autor et al., 2022; Granja et al., 2022; Dalton, 2023), although it had a negative side effect on small business activity (Kapinos, 2021). The UK Coronavirus Job Retention Scheme prevented a decline in household income (Crossley et al., 2021). Germany's Kurzarbeit, similar to Japan's EAS, which was implemented before COVID-19, helped with employment retention (Aiyar and Dao, 2021).

pandemic and Great Recession, when significant demand emerged. Studies using administrative data indicate that during the COVID-19 pandemic, the EAS initially succeeded in retaining employment; however, this effect disappeared as the receipt period extended (JILPT, 2025).³ Specifically, while EAS receipt helped prevent earlier job losses during the COVID-19 pandemic, it caused establishments to delay ending their receipt, leading to a decline in employment at those establishments (Kawakami, 2025). After establishments stopped receiving the EAS, the hiring rate fell, and the job separation rate rose, leading to a decline in the net employment growth rate (Kabayashi, 2025). Furthermore, although EAS receipt reduced the risk of establishment closure and improved employment stability, these effects did not last long, and longer receipt periods worsened employment performance (He, 2025). These findings, based on administrative data, are consistent with evidence from survey data indicating that the EAS has no significant impact on employment (Honda et al., 2023).⁴ During the Great Recession, studies using administrative data also indicate that the EAS had both employment retention effects and adverse adjustment dynamics (Ariga and Kuo, 2017; He, 2017; Kabayashi, 2017; Kawakami, 2017; Zhang, 2017).

Although some evidence has been presented regarding the overall effects of the EAS, little is known about the effects of EAS-supported training. Exceptionally, Zhang (2017) exploited the fact that the training premium of the EAS was raised for large firms in June 2009, while it remained unchanged for small and medium-sized firms from February 2009 to March 2011 after the Great Recession, finding that an increase in the training

³ Using administrative data, Takamatsu and Iwata (2025) provide a descriptive overview of EAS distributions during the COVID-19 pandemic, including the term of receipt, amount, and attributes of recipient establishments, such as industry and firm size, and compare them with those during the Great Recession. Moriyama (2025) examines worker mobility in EAS-receiving establishments.

⁴ These results, which suggest limited positive effects of the EAS on employment retention during the pandemic, are consistent with the findings of Fukuda and Yamamoto (2025), who show that firms applying the EAS experienced lower sales than non-applicants, even during the economic recovery period.

premium reduced job separation.

This study contributes to the literature and policy discussions by revealing the effects of EAS-supported training, which is expected to play a greater role in worker reskilling and promoting employment mobility in the post-pandemic policy framework. In April 2024, the EAS design was modified to encourage establishments to provide training, rather than temporary leave. Under this new design, once the cumulative EAS receipt reached 30 days, the training premium increased in subsequent subsidy payment periods if the proportion of days allocated to EAS-supported training exceeded a specified threshold.⁵ Previously, the premium remained constant, regardless of the number of training days.

The main findings of this study can be summarized as follows. First, the establishments that provided EAS-supported training to their employees were associated with a larger employment size, younger workforce, lower share of female employees, higher share of white-collar workers, and operational sector in the information and communications industry. Establishments with these characteristics may have attempted to accumulate human capital to overcome the adverse effects of the COVID-19 pandemic. The region in which the establishments were located was not associated with the probability of providing EAS-supported training.

The effects of EAS-supported training can be summarized in three parts. First, EAS-supported training by establishments whose EAS receipts ended in FY2020 reduced the probability of establishment closure by 1.6 to 3.1 percentage points, whereas no such reduction was observed for establishments whose EAS receipts ended in FY2021 and FY2022. This finding suggests that earlier training during the COVID-19 pandemic was

⁵ See the document on the EAS website administered by the MHLW for details (<https://www.mhlw.go.jp/content/001238390.pdf>, accessed on February 10, 2026).

more effective at preventing establishment closure. Second, EAS-supported training by establishments whose EAS receipts ended in FY2020 and FY2022 increased hiring and net employment growth rates during the EAS receipt period; however, these effects did not persist after EAS receipt ended. Additionally, EAS-supported training by establishments whose EAS receipts ended in FY2021 reduced the hiring rate after EAS receipt ended. There is no evidence that EAS-supported training reduces job separation rates. Overall, the effects on employment retention are limited. Third, we found no evidence that EAS-supported training enhanced the subjective level of business activity.

The remainder of this paper is organized as follows. Section 2 presents the institutional background of EAS-supported training. Section 3 describes the data used in our study and provides a descriptive overview of the provision of EAS-supported training. Section 4 outlines the method for evaluating the effects of the EAS, and Section 5 presents the estimation results of our analysis. Finally, Section 6 provides concluding remarks.

2. Institutional background

The EAS constitutes one of the Employment Stabilization Programs managed under the Employment Insurance (EI) system, which is administered by the Japanese Ministry of Health, Labour and Welfare (MHLW). Establishments are eligible to apply for the EAS if their business activity declines below a certain threshold and they implement employment adjustments through temporary leave, secondments, or the provision of training. The EAS subsidizes a specified share of temporary leave allowances, wages paid to seconded workers, and wages paid to employees during training. Before the COVID-19 pandemic began, this subsidy rate was two-thirds for small and medium-sized enterprises (SMEs) and one-half for large enterprises, with an upper limit of 8,265

Japanese Yen (JPY) (55.1 US Dollars (USD)) per insured employee.⁶ If establishments provide insured employees with training, then they can receive a premium of 1200 JPY (8 USD) in addition to the above base subsidy rates, regardless of firm size.

From April 2020 to March 2023, the MHLW implemented special measures for the EAS to help establishments adversely affected by the COVID-19 pandemic maintain employment.⁷ In April 2020, the subsidy rate increased to four-fifths (full coverage if there was no employment terminations) for SMEs and two-thirds (three-quarters if there was no employment terminations) for large enterprises, and the upper limit was raised to 15,000 JPY (100 USD). Furthermore, when states of emergency or similar measures were declared, the rate for large enterprises increased to four-fifths (full coverage if there were no employment terminations). After April 2021, the subsidy rate and upper limit decreased in phases. The training premium was raised to 2400 JPY (16 USD) for SMEs and to 1800 JPY (12 USD) for large enterprises, and these premiums remained unchanged throughout the special measures.

Under the standard EAS scheme, premiums are typically provided for training aimed at enhancing workers' knowledge and skills directly related to their occupations. However, under special measures, the scope of eligibility was extended to include training conducted at home or satellite offices. Specifically, the following training schemes became eligible: training for basic business etiquette required across various occupations and job types (e.g., business manners, harassment, and mental health), an organizational training curriculum, self-directed learning at home without onsite lectures, and training

⁶ We use an exchange rate of 150 JPY for 1 USD.

⁷ For a detailed comparison between the ordinary EAS before the COVID-19 pandemic and the special measures for the EAS during the pandemic, see JILPT (2025, chapter 1) and the website of the MHLW (https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/koyou_roudou/koyou/kyufukin/pageL07.html, accessed on February 10, 2026).

previously provided to the same employees.⁸

Although the subsidy rates were adjusted several times under the special measures, we did not consider these changes when analyzing the causal effects of EAS-supported training because the special measures coincided with the COVID-19 pandemic, making it difficult to distinguish between these two effects. Furthermore, the training premium remained unchanged throughout the period of special measures, yielding no variation for analyzing premium effects. Therefore, to estimate causal effects, we employ a propensity score matching (PSM) approach that compares recipient establishments that provided EAS-supported training with similar recipient establishments that did not provide such training.

3. Data

3.1. Data source

The dataset used in this study is based on administrative EAS and EI data collected by the MHLW. We also use questionnaire data on EAS utilization during the COVID-19 pandemic from an establishment-level survey conducted by the JILPT in 2023. The sample consists of 60,000 establishments randomly selected from a registry of establishments covered by the EI and 5,253 establishments that responded to the JILPT questionnaire. While the EI data cover all sampled establishments, the EAS data cover only those that received the EAS. The EAS and EI data used in this study were organized into an establishment-level monthly panel dataset by the JILPT. The three datasets (EAS, EI, and questionnaire survey data) were merged using establishment identifiers.⁹

⁸ See a document on the website of the special measures for the EAS during the COVID-19 pandemic (<https://www.mhlw.go.jp/content/000632248.pdf>, accessed on February 10, 2026) and a document for the 199th Employment Security Committee of the Labor Policy Council (<https://www.mhlw.go.jp/content/11601000/001169508.pdf>, accessed on February 10, 2026).

⁹ See JILPT (2025, chapter 1) for a more detailed description of the dataset.

Using EAS data, we identify whether establishments receive the EAS and provide EAS-supported training to their employees. From the EI data, we obtain the interest outcome variables, namely establishment closures and employment flows (i.e., hiring rate, job separation rate, and net employment growth rate), as well as establishment characteristics used to estimate propensity scores. The questionnaire survey data are used to obtain the outcome variable that measures business activity level.

The sample establishments in the dataset were restricted by the following three criteria. First, we omitted 54 establishments whose records were present in the EAS data but not in the EI data. These establishments were recorded as receiving an EAS after their closure. Second, we restricted establishments to those established in March 2019 or earlier that were still active in April 2020, which ensures that the covariates used to estimate propensity scores were constructed based on pre-pandemic information (FY2019; April 2019 to March 2020). This restriction also excludes newly entering establishments during the pandemic. That is, this study focuses on the effects of EAS-supported training on the outcomes of establishments that were already operational prior to the pandemic.¹⁰ Third, establishments that closed for reasons other than business deterioration, such as relocation or mergers, were omitted from the sample.¹¹

3.2. Treatment and control groups

This subsection describes how EAS recipient establishments were classified into

¹⁰ The number of sample establishments persistently decreases because this sample restriction approach excludes establishments that entered during the study period (see Figure A1 in the Appendix).

¹¹ Establishments are defined as closed only when their closure category is recorded as “abolition.” Establishments classified under other closure categories, such as “approval of termination of insurance coverage or revocation of voluntary enrollment,” “approval of non-applicability as an establishment,” “abolition due to establishment merger,” “relocation outside the jurisdiction,” “deletion of relocation records (subsequently recorded in the registry of the new jurisdiction),” or “registry closure (including bulk closure),” are excluded from the analytical sample.

treatment and control groups based on the provision of EAS-supported training. This process consisted of two steps. First, we focused on establishments that received the EAS. The timing of EAS receipt initiation and termination varies across the EAS recipient establishments, resulting in different durations of EAS receipt. Furthermore, some establishments received the EAS multiple times. These variations made it difficult to define a consistent treatment schedule. To address this issue, treatment was defined based on the timing of the termination of EAS receipt. Specifically, we classified establishments into three categories based on the fiscal year in which EAS receipt ended: FY2020, FY2021, and FY2022. We disregarded the start of EAS receipt in this procedure. In contrast, non-receipt establishments were defined as those that did not receive the EAS between April 2020 and December 2023, which is the final period covered by the EAS data.¹²

Next, we classified the aforementioned EAS recipient establishments into treatment and control groups based on whether EAS-supported training was conducted. An establishment was defined as providing EAS-supported training if the approved training premium exceeded zero in the EAS data. The data indicate that many establishments continued to receive the EAS even after they stopped providing training. If there is a non-trivial gap in timing between the end of EAS receipt and the provision of training, it is difficult to distinguish whether post-EAS outcomes are affected by EAS receipt itself or by training. To address this concern, we adopted the following definition: establishments that ceased receiving the EAS in a given fiscal year and provided their employees with EAS-supported training for at least one month in the same fiscal year were classified as

¹² Establishments that received only the Emergency Employment Stability Subsidy, which is another EAS scheme implemented as part of the special measures during the COVID-19 pandemic to provide financial support for temporary leave allowances of non-insured workers, but which does not support training, were classified as non-receipt establishments.

the treatment group, whereas those that did not were classified as the control group. Therefore, we constructed treatment and control groups separately for FY2020, FY2021, and FY2022. For example, an establishment that ceased receiving the EAS in FY2021 was classified into the treatment group if it provided its employees with EAS-supported training in any month of FY2021, whereas it was classified into the control group if it never provided training or if it provided training in the previous fiscal year, FY2020.

3.3. Variables

This subsection describes the outcome variables and their covariates. First, we describe three outcomes: the probability of establishment closures, employment flows, and business activity levels. Establishment closure is defined as an establishment recorded as closed in the EI data between the end of the EAS receipt and March 2024, which is the final period covered by the EI data used in this study. As described in Subsection 3.1, we exclude establishments that are considered closed for reasons other than business deterioration.

Employment flows consist of hiring, job separation, and net employment growth rates obtained from the EI data. We aggregate the monthly variables at the fiscal year level to remove seasonality and simplify our analyses. Following Ariga and Kuo (2017), who examine the effects of the EAS during the Great Recession, the three flow variables in fiscal year t are defined as

$$\text{Hiring rate}_t = \frac{H_t}{E_{t-1}} \times 100,$$

$$\text{Job separation rate}_t = \frac{S_t}{E_{t-1}} \times 100,$$

$$\text{Net employment growth rate}_t = \frac{H_t - S_t}{E_{t-1}} \times 100,$$

where H_t is the sum of the number of monthly hires in fiscal year t , S_t is the sum of the number of monthly job separations in fiscal year t , and E_{t-1} is the number of insured employees at the end of March in fiscal year $t - 1$. When E_{t-1} is zero, the corresponding establishment-year observations are excluded from the sample because these flows cannot be defined.

Business activity levels were obtained from the JILPT questionnaire. A corresponding question asked respondent establishments to report their business activity levels based on products and sales after the COVID-19 pandemic began, with the level in 2019 (the pre-pandemic period) being normalized to 100.¹³ Respondent establishments reported their annual average business activity levels for 2020, 2021, and 2023 on a numerical scale. These self-reported values were used directly in our analysis as proxies for production activity.

Next, we describe the covariates used to estimate propensity scores. From the EI data, we obtained establishment characteristics, including establishment size (number of insured employees), establishment age, industry dummies, and workforce composition variables (average age, share of women, average years of tenure, and share of white-collar workers). All these variables were derived from the values in FY2019, the pre-pandemic period. Industry dummies are primarily defined at the division (one-digit) level, although three industries are omitted and several industries are combined because the limited number of establishments providing EAS-supported training made it difficult to estimate their determinants. Additionally, to account for establishment-level employment fluidity,

¹³ The questionnaire instructs respondents to use production value for the manufacturing industry, ordinary profit for the finance and insurance industry, and sales (revenue) for other industries as measures of products and sales.

we construct a fluidity index as the sum of the above-defined hiring and job separation rates in FY2019.¹⁴ The hiring rates of some establishments in FY2019 were extremely high, substantially increasing the average hiring rate across establishments. Therefore, we exclude establishments in the top one percent of the hiring rate distribution as outliers.

Finally, to control for regional characteristics, we include regional block dummies and prefectural population density. The detailed definitions of these variables are presented in Table A1 in the Appendix.

3.4. Descriptive overview of EAS-supported training

This subsection provides an overview of EAS receipt and the provision of EAS-supported training. It also presents summary statistics for the variables.

Figure 1 presents the trends in the proportion of establishments receiving EAS and those providing EAS-supported training, specifically among EAS recipients, from January 2020 to March 2023.¹⁵ The solid and dashed lines in this figure represent the proportions of all sample establishments and those that continued operating until March 2024, respectively. The number of EAS recipient establishments increased sharply starting in March 2020, immediately after the onset of the pandemic, reaching a peak of approximately 20% (19.5% and 19.8% for all and continuing establishments, respectively) in May 2020. Thereafter, it followed a declining trend but remained higher than the pre-pandemic level, even in March 2023. Regarding the establishments that provided EAS-supported training, while the overall trend in their proportion among the EAS recipients was similar to that of all recipient establishments, it peaked at only 4.5%

¹⁴ The definition of the fluidity index follows Yamamoto and Kuroda (2016), who examined the relationship between worker fluidity and business performance.

¹⁵ Instead of the proportions, the corresponding values are reported in Figure A2 in the Appendix.

of EAS recipient establishments in July 2020.¹⁶ The proportion for continuing establishments was similar but slightly higher during 2020, with a peak in July 2020 at 4.6%, indicating that establishments that provided training at a relatively early stage of the pandemic may have avoided closure. Overall, these patterns suggest that relatively few establishments forced to suspend or reduce business activities during the pandemic regarded this period as an opportunity for workers to acquire new skills.

[Figure 1]

Figure 2 presents the distributions of the duration of EAS receipt and EAS-supported training in months. This figure displays these distributions for all EAS recipient establishments and for only those providing EAS-supported training over the full sample period (FY2020 to FY2022) and by fiscal year. One can see that most EAS recipient establishments provided no training across all periods, which is consistent with the patterns observed in the proportion reported above. For establishments that provided EAS-supported training, a large share of the training durations fell between one and three months. Even for these establishments, the duration of EAS-supported training was relatively short compared with the duration of EAS receipt.

[Figure 2]

Figure 3 presents the proportions of establishments that were closed by March 2024. The first panel compares this proportion between recipient establishments whose EAS receipt ended in FY2020 and non-recipient establishments, as well as between EAS recipient establishments that provided training and those that did not. The second and third panels report the same comparisons for establishments whose EAS receipts ended in FY2021 and FY2022, respectively. By definition, recipient establishments whose EAS

¹⁶ Similar patterns are observed when the proportions of establishments receiving EAS and those implementing EAS-supported training among the EAS recipients are calculated using the number of persons or amount of EAS (see Figure A3 in the Appendix).

receipts ended in FY2021 (FY2022) were not closed as of April 2021 (2022). Accordingly, non-recipients were also restricted to ensure comparability. Across all fiscal years, the proportion of closures was higher for non-recipients than for recipients. Furthermore, among recipients, establishments that provided training were less likely to close than those that did not. This pattern is particularly pronounced among establishments whose EAS receipts ended in FY2020, but weakened in the subsequent fiscal year when EAS support ended. This finding suggests that the EAS-supported training in the early stages of the COVID-19 pandemic helped establishments remain in business. For establishments whose EAS receipts ended in FY2021 or FY2022, the observation period for post-receipt outcomes was shorter, yielding a lower observed proportion of establishment closures.

[Figure 3]

Next, we describe the monthly trends in the three employment flows (hiring, job separation, and net employment growth rates).¹⁷ Figure 4 presents the trends in the average hiring rate from January 2019 to March 2024 by the fiscal year in which establishments ceased receiving EAS. The left panel compares recipient and non-recipient establishments, whereas the right panel compares recipient establishments that provided training and those that did not. The three panels on the left reveal that recipient establishments exhibited lower hiring rates than non-recipients, even prior to the onset of the COVID-19 pandemic. This pattern suggests two possibilities: establishments with weaker hiring activity prior to the pandemic may have been more heavily affected by the pandemic and, therefore, more likely to receive the EAS. Alternatively, among establishments similarly affected by the pandemic, those with such characteristics may have been more likely to apply for the EAS. In both cases, EAS receipts seem to involve

¹⁷ Trends aggregated at the fiscal year level are reported in Figures A4 to A6 in the Appendix to smooth seasonal fluctuations.

self-selection.

In the right panels, for the samples of EAS recipient establishments whose receipts ended in FY2020 and FY2021, it is unclear whether there are differences in the average hiring rate between establishments that provided training and those that did not. In contrast, in the sample of establishments whose EAS receipts ended in FY2022, those that provided training exhibited higher hiring rates than those that did not, particularly in April at the beginning of each fiscal year. This pattern has been observed since 2019, before the onset of the COVID-19 pandemic, suggesting that providing EAS-supported training may involve self-selection.

[Figure 4]

Figure 5 plots the trends in the average job separation rate. In the left panels, one can see that the job separation rates of non-recipients remained almost constant over the period, whereas those of recipients increased within the fiscal year in which EAS receipts ended and exceeded the rates of non-recipients. This result suggests that although the EAS suppressed increases in recipients' job separation rates during the receipt period, this effect did not persist after the receipt ended. In contrast, in the right panels, which focus on recipients, although the provision of training seems to have suppressed increases in job separation rates among establishments whose EAS receipt ended in FY2020 and FY2021, this trend is not clearly apparent.

[Figure 5]

Figure 6 presents the average net employment growth rate trends. We define this rate as the hiring rate minus the job separation rate, where a positive value indicates that the hiring rate exceeds the job separation rate. This figure reveals that the net employment rates do not exhibit clear differences according to EAS receipt status or training provision.

[Figure 6]

Finally, Tables 1 and 2 report the summary statistics of the covariates used in the subsequent analysis. Table 1 presents the summary statistics by EAS receipt status, whereas Table 2 presents the summary statistics by training provision status among EAS recipients.

[Tables 1 and 2]

4. Method

To examine the characteristics of EAS recipient establishments that provided their employees with EAS-supported training, we first estimate the following probit model:

$$Pr(D_i = 1|X_i) = \Phi(X_i\beta),$$

where D_i is an indicator taking one if a recipient establishment i belongs to the treatment group (i.e., establishment providing EAS-supported training) and zero otherwise. X_i is a vector of covariates, β is a vector of parameters, and Φ is the normal cumulative distribution function.

Next, we investigate the causal effects of EAS-supported training on the outcomes. The descriptive evidence in Section 3 suggests that training provisions may involve self-selection, potentially leading to biased estimates. To address potential endogeneity, we use the PSM method, which was developed by Rosenbaum and Rubin (1983).¹⁸ The propensity score $P(X) = Pr(D = 1|X)$, namely the probability of provision of training conditional on the observed covariates, is estimated using the above probit model. For the PSM estimations using business activity level as the outcome, the probit model excludes industrial dummies and regional block dummies from the covariates because the estimation could not be run as a result of the small sample size. Based on the propensity score $P(X)$, establishments that provided training (treatment group, $D = 1$) were

¹⁸ The discussion of the PSM in this section follows Caliendo and Kopeinig (2008).

matched with similar establishments that did not provide training (control group, $D = 0$). Then, under the unconfoundedness assumption ($Y(0) \perp D|X$) and the overlap assumption ($Pr(D = 1|X) < 1$), the average treatment effect on the treated (ATT) estimator is described as follows:

$$\tau_{ATT}^{PSM} = E_{P(X)|D=1}\{E(Y(1)|D = 1, P(X)) - E(Y(0)|D = 0, P(X))\},$$

where $Y(1)$ and $Y(0)$ are potential outcomes under the treatment and control groups, respectively. The matching method adopted in this study was k -nearest neighbor matching ($k = 1,4$) with replacement. As proposed by Abadie and Imbens (2016), robust standard errors accounting for the estimated propensity scores were computed.¹⁹ After matching, a balancing test was performed.²⁰

5. Results

5.1. Characteristics of establishments providing EAS-supported training

Table 3 reports the average marginal effects derived from probit model estimations. In addition to examining the factors influencing the provision of EAS-supported training using the sample of EAS recipient establishments, this table also presents the determinants of EAS receipt as a benchmark, using the full sample.

[Table 3]

We first focus on establishment size (i.e., the number of insured employees) and age (i.e., years since establishment). An increase of 100 insured workers is significantly

¹⁹ To estimate the ATT using PSM, the Stata command `teffects psmatch` is used. The advantage of this command is that it can estimate the robust standard errors proposed by Abadie and Imbens (2016).

²⁰ Appendix B provides the standardized bias proposed by Rosenbaum and Rubin (1985), given by

$$\text{Standardized bias (\%)} = 100 \times \frac{\bar{X}_1 - \bar{X}_0}{\sqrt{(s_1^2 - s_0^2)/2}},$$

where \bar{X}_1 and \bar{X}_0 are the averages of covariates for the treatment and control groups, respectively, and s_1^2 and s_0^2 are the variances of covariates for the treatment and control groups, respectively. For this balancing test, the Stata commands `psmatch2` and `pstest`, developed by Leuven and Sianesi (2003), are used.

associated with a 0.8 to 2.0 percentage point higher probability of EAS receipt (columns (1) to (3)) and a 1.1 to 1.3 percentage point higher probability of providing EAS-supported training (columns (4) to (6)). These results suggest that large establishments were more likely to receive the EAS. Furthermore, larger establishments that received the EAS were more likely to provide employees with EAS-supported training. A 10-year increase in establishment age is significantly associated with a 1.4 to 2.4 percentage point higher probability of EAS receipt (columns (1) to (3)), whereas it shows no statistically significant association with the provision of EAS-supported training (columns (4) to (6)).

Next, we examine the composition of employees in these establishments. Columns (1) to (3) show that a 10-year increase in the average age of employees is significantly associated with a 1.5 to 3.0 percentage point lower probability of receiving the EAS. Similarly, a 10-year increase in average worker tenure is significantly associated with a 3.7 to 5.2 percentage point lower probability of EAS receipt. These results suggest that establishments that employ younger or less tenured workers are more likely to receive the EAS to maintain their employment. Columns (4) to (6) reveal that a 10-year increase in the average age of workers is significantly associated with a 1.9 to 2.5 percentage point lower probability of providing EAS-supported training, which may reflect an incentive to invest in younger workers for whom returns on training are considered higher. Columns (4) and (5) also indicate a negative marginal effect of average tenure, although it is statistically insignificant.

Regarding the gender of employees, using a restricted sample of establishments whose EAS receipts ended in FY2020, a 10-percentage-point increase in the share of female employees is significantly associated with a 0.2 percentage point higher probability of EAS receipt (column (1)) and 0.3 percentage point lower probability of providing EAS-supported training (column (4)). This pattern suggests that establishments

characterized by a higher share of female employees were more likely to receive the EAS, possibly reflecting the larger adverse effects of the pandemic. In contrast, they were less likely to provide EAS-supported training, which may reflect differences in the expected returns on training or incentives for human capital investment across establishments. However, in the sample of establishments whose EAS receipts ended in FY2021 and FY2022, the share of female employees was not significantly associated with either the probability of EAS receipt or the probability of providing EAS-supported training. Focusing on occupation, a 10-percentage-point increase in the share of white-collar workers is significantly associated with a 0.5 percentage point lower probability of EAS receipt (Columns (1) to (3)), whereas it is significantly associated with a 0.2 to 0.3 percentage point higher probability of providing EAS-supported training (Columns (4) to (6)). These results suggest that establishments characterized by a higher proportion of white-collar employees were generally less severely affected by the COVID-19 pandemic and were consequently less likely to receive the EAS. Among such establishments, those that received the EAS were more likely to invest in human capital through training.

The estimates of the industry dummies indicate that when considering “construction” as the reference category, most industries are associated with a higher probability of EAS receipt (columns (1) to (3)). Among the sample of EAS recipients, the information and communications industry exhibits the highest probability of providing training, with an 8.2 to 11.4 percentage point higher probability than that of construction (columns (4) to (6)). Several other industries are significantly and positively associated with the probability of providing EAS-supported training. These patterns suggest that establishments in these industries regard investing in human capital through training as a valuable strategy for mitigating the impact of COVID-19.

Finally, we focus on the regions in which establishments are located. A 1000-person-

per-km² increase in prefectural population density is significantly associated with a 0.2 to 0.6 percentage point higher probability of EAS receipt (columns (1) to (3)), whereas it shows no significant association with the probability of providing EAS-supported training (columns (4) to (6)). This result suggests that the provision of EAS-supported training does not differ systematically according to the degree of urbanization, although prefectures constitute relatively large geographic units representing local labor markets. A few estimates of the regional block dummies are statistically significant; however, they also exhibit no clear regional patterns in terms of the provision of EAS-supported training.

5.2. Effects of EAS-supported training

This subsection presents the PSM estimation results for the effects of EAS-supported training on outcomes.²¹ The balancing test results are reported in Appendix B. Note that there is no single set of results from the balancing tests because the sample sizes differ across outcomes and the fiscal years in which EAS receipts ended. The balancing test results indicate that in many cases, standardized biases are below 10 or 25 in absolute value and that the mean differences in covariates between the treatment and control groups are not statistically significant at the 5% level. Although a complete balance was not achieved and some covariates remain imbalanced in certain specifications, the overall covariate balance improved after matching. Therefore, we proceeded with our analysis while interpreting the results cautiously.

Table 4 presents the ATT of EAS-supported training on the probability of establishment closure by the fiscal year in which EAS receipt ended. Using a sample of establishments whose EAS receipt ended in FY2020, the ATT estimate from one-nearest-

²¹ Tables A2–A4 in the Appendix report comparisons of the mean outcomes between the treatment and control groups prior to matching.

neighbor matching ($k = 1$) indicates a 3.1 percentage point reduction in the probability of establishment closure, which is statistically significant at the 5% level. Similarly, the estimate from four-nearest-neighbor matching ($k = 4$) shows a 1.6 percentage point reduction, although this value is statistically significant at the 10% level. In contrast, for establishments whose EAS receipt ended in FY2021, the estimate based on $k = 1$ for matching is positive and statistically significant at the 10% level, whereas the estimate based on $k = 4$ for matching shows no statistically significant effect, indicating that the result is not robust. For establishments whose EAS receipt ended in FY2022, neither matching method ($k = 1$ or $k = 4$) yields a statistically significant effect. Overall, these results suggest that providing EAS-supported training in the early stages of the COVID-19 pandemic helped prevent the closure of establishments. However, because establishment closures are defined as those occurring by March 2024, establishments whose EAS receipts ended in later fiscal years have a shorter period to observe closures, resulting in lower observed closure rates. This restricted observation period may partially explain the lack of statistically significant negative effects observed in establishments whose EAS receipts ended in FY2021 and FY2022.

[Table 4]

Table 5 presents the ATT of EAS-supported training on employment flows (i.e., hiring, job separation, and net employment growth rates) for each fiscal year from FY2019 to FY2023. Panels A, B, and C contain the results for establishments whose EAS receipts ended in FY2020, FY2021, and FY2022, respectively.

The first column shows the effects on employment flows in FY2019 (i.e., the pre-COVID-19 period). These estimates can be considered as placebo tests, because if the covariates in the treatment and control groups are balanced after using PSM, then there should be no differences in employment flows between the two groups in FY2019, when

the causal effect of EAS-supported training should not exist. However, in Panels A and C, some estimates indicate statistically significant differences in employment flows between the two groups. One possible explanation for these differences is that some important covariates were unobserved or omitted from the propensity score estimation. Simultaneously, these statistically significant differences were not consistently observed in either one- or four-nearest-neighbor matching. Therefore, although we should be cautious regarding the possibility of insufficient matching, we believe that PSM can approximate causal effects to a certain extent.

[Table 5]

Focusing on the estimates that are statistically significant under both matching methods ($k = 1$ and $k = 4$), Panel A for establishments whose EAS receipt ended in FY2020 indicates that EAS-supported training significantly raised the hiring rate by 4.91 to 8.62 percentage points and the net employment growth rate by 4.23 to 8.66 percentage points in FY2020. Two interpretations are possible for this result: establishments that provided EAS-supported training succeeded in accumulating human capital, or a higher amount of EAS with a training premium contributed more to employment retention than the EAS alone. Although the latter mechanism is considered to reduce job separation rates, no such results are observed. Therefore, we can infer that the former mechanism may have raised labor productivity and led to the hiring of complementary workers, thereby boosting hiring and net employment growth rates. However, between FY2021 and FY2023, excluding the result that the effect on the hiring rate in FY2022 is negative and statistically significant at the 10% level only when using $k = 4$ for matching, we find no significant positive effects on hiring or net employment growth rates. This trend suggests that the effect of EAS-supported training, which increased hiring and net employment growth rates in FY2020, did not persist.

Panel B for establishments whose EAS receipt ended in FY2021 reveals no significant positive effect of EAS-supported training on the hiring rate, unlike Panel A for establishments whose EAS receipt ended in FY2020. Instead, both matching methods ($k = 1$ and $k = 4$) simultaneously demonstrate a significant decrease in the hiring rate by 5.41 to 9.69 percentage points in FY2022, which is the fiscal year after EAS receipt ended. It is possible that the end of EAS receipt with a training premium made it more difficult for establishments to maintain employment compared with those that did not provide training to their employees. Consequently, such establishments may have suppressed total employment by reducing the number of new hires after the EAS receipts ended.

Panel C presents the results for establishments whose EAS receipts ended in FY2022. Focusing on the estimates that are statistically significant under both matching methods ($k = 1$ and $k = 4$), the hiring rate increased by 8.13 to 9.43 percentage points in FY2021 and by 2.03 to 4.58 percentage points in FY2022. The net employment growth rate in FY2021 also increased by 6.37 to 6.87 percentage points. In contrast, no significant effects are observed in FY2023 (i.e., the period after EAS receipt ended).

In summary, for establishments whose EAS receipts ended in FY2020 or FY2022, EAS-supported training raised hiring and net employment rates only during the period when the establishments were receiving the EAS. However, this effect did not persist after EAS receipt ended. A negative effect on the hiring rate after EAS receipt ended was also observed for establishments whose EAS receipt ended in FY2021. Furthermore, we found no effect that suppressed the job separation rate, regardless of the fiscal year in which the EAS receipts ended. Overall, the effect of EAS-supported training on employment retention was limited.

Finally, Table 6 presents the ATT of EAS-supported training on the business activity

level for each year from 2020 to 2022 by the fiscal year in which EAS receipt ended. For establishments whose EAS receipt ended in FY2021, the ATT estimate from one-nearest-neighbor matching ($k = 1$) indicates a negative and statistically significant effect on the business activity level in 2020; however, the corresponding estimate from four-nearest-neighbor matching ($k = 4$) is not statistically significant. For establishments whose EAS receipt ended in FY2022, both matching methods ($k = 1$ and $k = 4$) indicate that the effect on the business activity level in 2020 is negative and statistically significant, but only marginally at the 10% level. These results are difficult to interpret, but indicate that EAS-supported training reduced the business activity level by 2020. However, these results are not robust because the results for establishments whose EAS receipt ended in FY2021 differ between the two matching methods ($k = 1$ and $k = 4$), and the results for establishments whose EAS receipt ended in FY2022 are statistically significant at the 10% level. No significant positive effect was observed, suggesting that EAS-supported training did not improve the establishments' subjective production or sales during the COVID-19 pandemic.

[Table 6]

6. Conclusion

In Japan, many establishments adversely affected by the COVID-19 shock received the EAS to maintain employment. The EAS offers financial support not only for temporary leave allowances and wages for seconded workers, but also for wages when establishments provide training to their employees. Among these schemes, this study focused on the effects of EAS-supported training. Specifically, we examined the characteristics of establishments that provided EAS-supported training and investigated the effects of such training on establishment-level outcomes, namely the likelihood of

closures, employment flows, and business activity levels, during the COVID-19 pandemic. We utilized establishment-level administrative data on the EAS and EI, as well as questionnaire survey data. We employed PSM to address the causal effects of EAS-supported training.

We first found that within the sample of EAS recipient establishments, those that provided their employees with EAS-supported training tended to be larger, had younger workers, had a lower share of female workers, had a higher share of white-collar workers, and were in the information and communications industry. Establishments with these characteristics may have adapted to the COVID-19 shock by investing in human capital through training. The regions in which the establishments were located were not associated with the probability of providing EAS-supported training.

Next, regarding the effects of EAS-supported training, the results of the PSM estimations can be divided into three categories. First, the EAS-supported training provided by establishments whose EAS receipts ended in FY2020 reduced the probability of establishment closure by 1.6 to 3.1 percentage points, whereas no such effect was observed for establishments whose EAS receipts ended in FY2021 or FY2022. This finding suggests that the EAS-supported training provided earlier during the COVID-19 pandemic mitigated the risk of establishment closures.

Second, while the EAS-supported training provided by establishments whose EAS receipts ended in FY2020 and FY2022 raised hiring and net employment growth rates during EAS receipt, these effects did not persist after EAS receipt ended. For establishments whose EAS receipt ended in FY2021, EAS-supported training reduced the hiring rate after EAS receipt ended. This pattern suggests that the end of EAS receipt, including the training premium, made it more difficult for establishments to maintain employment compared with those that did not provide training. Additionally, there is no

evidence that EAS-supported training reduced the job separation rate, regardless of the fiscal year in which EAS receipt ended. Therefore, we can conclude that EAS-supported training has a limited effect on employment retention.

Third, we found no evidence that EAS-supported training improved the subjective level of business activities. In other words, such training may not directly affect production and sales.

This study has certain limitations that must be acknowledged. To investigate human capital accumulation through EAS-supported training, labor productivity should ideally be measured directly. However, the outcomes analyzed in this study, namely establishment closures and employment flows, indirectly reflect labor productivity. Although the business activity level seems to be a close proxy for labor productivity, this index may involve measurement errors because it relies on self-reported survey data. Accordingly, the possibility remains that EAS-supported training affects labor productivity, which this study could not examine directly.

References

- Abadie, A., & Imbens, G. W. (2016). Matching on the estimated propensity score. *Econometrica*, 84(2), 781–807. <https://doi.org/10.3982/ECTA11293>
- Aiyar, S., & Dao, M. C. (2021). The effectiveness of job-retention schemes: COVID-19 Evidence From the German States. *IMF Working Papers*, 2021(242), 1. <https://doi.org/10.5089/9781513596174.001>
- Ariga, K., & Kuo, C-W. (2017). Koyo chosei ni ataeru koyo chosei joseikin no koka [The effects of the Employment Adjustment Subsidy on employment adjustment]. In *Koyo chosei joseikin no seisaku koka ni kansuru kenkyu* [Research on the policy effects of

- the Employment Adjustment Subsidy] (JILPT Research Report No. 187, pp. 153–204). The Japan Institute for Labour Policy and Training. (in Japanese).
- Autor, D., Cho, D., Crane, L. D., Goldar, M., Lutz, B., Montes, J., Peterman, W. B., Ratner, D., Villar, D., & Yildirmaz, A. (2022). An evaluation of the Paycheck Protection Program using administrative payroll microdata. *Journal of Public Economics*, 211, 104664. <https://doi.org/10.1016/j.jpubeco.2022.104664>
- Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, 22(1), 31–72. <https://doi.org/10.1111/j.1467-6419.2007.00527.x>
- Crossley, T. F., Fisher, P., & Low, H. (2021). The heterogeneous and regressive consequences of COVID-19: Evidence from high quality panel data. *Journal of Public Economics*, 193, 104334. <https://doi.org/10.1016/j.jpubeco.2020.104334>
- Dalton, M. (2023). Putting the Paycheck Protection Program into perspective: an analysis using administrative and survey data. *National Tax Journal*, 76(2), 393–437. <https://doi.org/10.1086/724591>
- Fukuda, A., & Yamamoto, I. (2025). Ex-ante and ex-post evaluation of zombie firms arising from the EAS program during the COVID-19 pandemic: A study of Japanese SMEs. *Japan and the World Economy*, 74, 101308. <https://doi.org/10.1016/j.japwor.2025.101308>
- Granja, J., Makridis, C., Yannelis, C., & Zwick, E. (2022). Did the paycheck protection program hit the target? *Journal of Financial Economics*, 145(3), 725–761. <https://doi.org/10.1016/j.jfineco.2022.05.006>
- He, F. (2017). Koyo chosei joseikin no seisaku koka [The policy effects of the Employment Adjustment Subsidy]. In *Koyo chosei joseikin no seisaku koka ni kansuru kenkyu* [Research on the policy effects of the Employment Adjustment

- Subsidy] (JILPT Research Report No. 187, pp. 205–224). The Japan Institute for Labour Policy and Training. (in Japanese).
- He, F. (2025). Haigyo kakuritsu to koyo ryo no henka kara mita koyo chosei joseikin no seisaku koka [The effects of the Employment Adjustment Subsidy on establishment closure probability and changes in employment]. In *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during the COVID-19 crisis] (JILPT Research Report No. 236, pp. 163–180). The Japan Institute for Labour Policy and Training. (in Japanese).
- Honda, T., Hosono, K., Miyakawa, D., Ono, A., & Uesugi, I. (2023). Determinants and effects of the use of COVID-19 business support programs in Japan. *Journal of the Japanese and International Economies*, 67, 101239. <https://doi.org/10.1016/j.jjie.2022.101239>
- Japan Institute for Labour Policy and Training (JILPT). (2025). *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during the COVID-19 crisis] (JILPT Research Report No. 236). (in Japanese).
- Kambayashi, R. (2017). Koyo chosei joseikin no jukyu to koyo seicho tono kankei [The relationship between receipt of the Employment Adjustment Subsidy and employment growth]. In *Koyo chosei joseikin no seisaku koka ni kansuru kenkyu* [Research on the policy effects of the Employment Adjustment Subsidy] (JILPT Research Report No. 187, pp. 103–117). The Japan Institute for Labour Policy and Training. (in Japanese).

- Kambayashi, R. (2025). Koyo chosei joseikin no koka no lehman shock ji to korona ki no hikaku [A comparison of the effects of the Employment Adjustment Subsidy during the Great Recession and the COVID-19 pandemic]. In *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during the COVID-19 crisis] (JILPT Research Report No. 236, pp. 153–161). The Japan Institute for Labour Policy and Training. (in Japanese).
- Kapinos, P. (2021). Did the Paycheck Protection Program have negative side effects on small-business activity? *Economics Letters*, 208, 110045. <https://doi.org/10.1016/j.econlet.2021.110045>
- Kawakami, A. (2017). Jigyosho no kaihai wo tsujita koyo chosei joseikin no koka: Lehman shock ki no josei ni taisuru koyo soshutsu soshitsu bunseki wo mochiita kensho [The effects of the Employment Adjustment Subsidy through establishment entry and exit: An evaluation using job creation and destruction during the Great Recession]. In *Koyo chosei joseikin no seisaku koka ni kansuru kenkyu* [Research on the policy effects of the Employment Adjustment Subsidy] (JILPT Research Report No. 187, pp. 118–149). The Japan Institute for Labour Policy and Training. (in Japanese).
- Kawakami, A. (2025). Korona ka ni okeru koyo chosei joseikin ga taishutsu kodo to koyo henka ni ataeru eikyo [The effects of the Employment Adjustment Subsidy during the COVID-19 pandemic on establishment exit and employment dynamics]. In *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during the COVID-19 crisis] (JILPT Research

- Report No. 236, pp. 123–151). The Japan Institute for Labour Policy and Training. (in Japanese).
- Leuven, E., & Sianesi, B. (2003). PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. Statistical Software Components S432001, Boston College Department of Economics, revised 01 Feb 2018.
- Moriyama, T. (2025). Korona ka ni okeru tenshoku saishushoku [Job mobility and reemployment during the COVID-19 pandemic]. In *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during the COVID-19 crisis] (JILPT Research Report No. 236, pp. 197–268). The Japan Institute for Labour Policy and Training. (in Japanese).
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41–55. <https://doi.org/10.1093/biomet/70.1.41>
- Rosenbaum, P. R., & Rubin, D. B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician*, 39(1), 33–38. <https://doi.org/10.1080/00031305.1985.10479383>
- Takamatsu, T., & Iwata, T. (2025). Korona tokurei-ka no koyo chosei joseikin no shikyu jokyō to jukyū jigyōsho no tokuchō [The distribution of the Employment Adjustment Subsidy under the special measures during the COVID-19 pandemic and the characteristics of recipient establishments]. In *Shin-gata korona uirusu kansensho no eikyo ni tomonau koyo chosei joseikin no tokurei sochi no koka kensho ni kansuru kenkyu* [Evaluating special measures for Employment Adjustment Subsidy during

the COVID-19 crisis] (JILPT Research Report No. 236, pp. 33–121). The Japan Institute for Labour Policy and Training. (in Japanese).

Yamamoto, I., & Kuroda, S. (2016). The effect of labor turnover on firm performance among Japanese firms. RIETI Discussion Paper Series 16-J-062. (in Japanese).

Zhang, J. (2017). *Koyo chosei joseikin oyobi sono kyoiku kunren hi ga koyo iji ni ataeru koka* [The effects of the Employment Adjustment Subsidy and its training premium on employment retention]. In *Koyo chosei joseikin no seisaku koka ni kansuru kenkyu* [Research on the policy effects of the Employment Adjustment Subsidy] (JILPT Research Report No. 187, pp. 225–240). The Japan Institute for Labour Policy and Training. (in Japanese).

Table 1: Summary statistics for covariates by EAS receipt status

Variable	Non-recipients	Recipients		
		Receipt ended in FY2020	Receipt ended in FY2021	Receipt ended in FY2022
Number of insured employees	27.492 (186.030)	73.010 (266.599)	58.093 (250.078)	47.884 (166.165)
Establishment age	23.204 (17.937)	24.947 (20.015)	24.338 (20.418)	26.763 (20.479)
Average age of employees	47.910 (11.236)	43.615 (8.745)	44.245 (9.146)	45.201 (8.715)
Share of female employees	42.365 (39.661)	44.503 (35.293)	38.156 (33.983)	39.795 (33.163)
Average years of tenure	9.660 (8.748)	7.417 (5.367)	7.165 (5.393)	8.381 (6.076)
Share of white-collar employees	43.521 (42.211)	35.093 (36.887)	26.605 (33.368)	28.745 (33.458)
Employment fluidity index	32.084 (50.991)	42.504 (51.620)	44.495 (55.546)	37.112 (46.123)
Construction	0.197 (0.398)	0.101 (0.301)	0.107 (0.309)	0.087 (0.282)
Manufacturing	0.107 (0.309)	0.225 (0.418)	0.234 (0.423)	0.285 (0.451)
Information and communications	0.026 (0.158)	0.029 (0.168)	0.029 (0.168)	0.033 (0.178)
Transport and postal services	0.036 (0.186)	0.039 (0.194)	0.069 (0.253)	0.068 (0.251)
Utilities and wholesale and retail trade	0.172 (0.378)	0.158 (0.365)	0.157 (0.364)	0.161 (0.368)
Professional and education services	0.093 (0.291)	0.078 (0.269)	0.045 (0.208)	0.051 (0.220)
Medical, health care and welfare	0.145 (0.352)	0.114 (0.318)	0.048 (0.215)	0.055 (0.227)
Accommodations, food, and personal services	0.063 (0.243)	0.145 (0.353)	0.219 (0.414)	0.179 (0.383)
Finance, real estate, and other services	0.160 (0.367)	0.110 (0.313)	0.092 (0.289)	0.082 (0.274)
Prefectural population density (1000 persons/km ²)	3.219 (3.416)	3.487 (3.406)	3.523 (3.428)	3.471 (3.476)
Hokkaido	0.045 (0.206)	0.024 (0.153)	0.038 (0.192)	0.027 (0.162)
Tohoku	0.075 (0.263)	0.063 (0.242)	0.053 (0.224)	0.064 (0.244)
Minami-Kanto	0.283 (0.451)	0.300 (0.458)	0.279 (0.449)	0.271 (0.445)
Kita-Kanto and Koshin	0.074 (0.262)	0.071 (0.256)	0.055 (0.228)	0.066 (0.248)
Hokuriku	0.044 (0.205)	0.051 (0.219)	0.051 (0.221)	0.056 (0.230)
Tokai	0.105 (0.307)	0.149 (0.356)	0.139 (0.346)	0.151 (0.358)
Kinki	0.156 (0.363)	0.176 (0.381)	0.202 (0.401)	0.180 (0.384)
Chugoku and Shikoku	0.093 (0.291)	0.074 (0.262)	0.085 (0.278)	0.087 (0.282)
Kyushu and Okinawa	0.125 (0.331)	0.093 (0.290)	0.098 (0.298)	0.098 (0.298)
Observations	35853	4764	3428	4044

Notes: Means and standard deviations are shown. The latter values are in parentheses.

Table 2: Summary statistics for covariates by training provision status among EAS recipients

Variable	Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
	No training provided	Training provided	No training provided	Training provided	No training provided	Training provided
Number of insured employees	64.346 (239.793)	280.464 (594.158)	51.653 (234.335)	221.468 (479.557)	45.447 (162.105)	144.995 (267.907)
Establishment age	24.552 (19.767)	34.393 (23.381)	24.102 (20.302)	30.323 (22.442)	26.705 (20.405)	29.040 (23.222)
Average age of employees	43.715 (8.832)	41.220 (5.843)	44.384 (9.187)	40.697 (7.202)	45.331 (8.711)	40.008 (7.145)
Share of female employees	44.922 (35.458)	34.457 (29.423)	38.251 (34.159)	35.753 (29.161)	39.858 (33.285)	37.292 (27.905)
Average years of tenure	7.374 (5.371)	8.447 (5.178)	7.146 (5.403)	7.645 (5.132)	8.395 (6.083)	7.834 (5.810)
Share of white-collar employees	34.860 (36.989)	40.675 (33.993)	26.114 (33.133)	39.062 (36.868)	28.327 (33.220)	45.421 (38.487)
Employment fluidity index	42.501 (51.504)	42.572 (54.469)	44.454 (55.885)	45.540 (46.273)	36.872 (46.185)	46.689 (42.701)
Construction	0.104 (0.305)	0.031 (0.175)	0.110 (0.313)	0.023 (0.151)	0.089 (0.284)	0.030 (0.172)
Manufacturing	0.217 (0.412)	0.408 (0.493)	0.230 (0.421)	0.323 (0.469)	0.286 (0.452)	0.242 (0.431)
Information and communications	0.026 (0.158)	0.110 (0.314)	0.025 (0.157)	0.131 (0.338)	0.028 (0.164)	0.232 (0.424)
Transport and postal services	0.040 (0.196)	0.021 (0.144)	0.068 (0.252)	0.092 (0.291)	0.065 (0.247)	0.162 (0.370)
Utilities and wholesale and retail trade	0.160 (0.367)	0.120 (0.326)	0.160 (0.367)	0.069 (0.255)	0.163 (0.370)	0.081 (0.274)
Professional and education services	0.079 (0.270)	0.063 (0.243)	0.044 (0.204)	0.085 (0.279)	0.051 (0.220)	0.051 (0.220)
Medical, health care and welfare	0.116 (0.320)	0.063 (0.243)	0.049 (0.216)	0.038 (0.193)	0.056 (0.229)	0.010 (0.101)
Accommodations, food, and personal services	0.148 (0.356)	0.073 (0.261)	0.223 (0.416)	0.115 (0.321)	0.180 (0.384)	0.111 (0.316)
Finance, real estate, and other services	0.110 (0.313)	0.110 (0.314)	0.091 (0.287)	0.123 (0.330)	0.082 (0.274)	0.081 (0.274)
Prefectural population density (1000 persons/km ²)	3.490 (3.405)	3.432 (3.443)	3.502 (3.419)	4.044 (3.647)	3.455 (3.465)	4.098 (3.854)
Hokkaido	0.024 (0.153)	0.031 (0.175)	0.039 (0.193)	0.023 (0.151)	0.027 (0.162)	0.020 (0.141)
Tohoku	0.063 (0.243)	0.047 (0.212)	0.053 (0.225)	0.038 (0.193)	0.063 (0.243)	0.101 (0.303)
Minami-Kanto	0.300 (0.458)	0.304 (0.461)	0.277 (0.448)	0.323 (0.469)	0.270 (0.444)	0.303 (0.462)
Kita-Kanto and Koshin	0.070 (0.256)	0.079 (0.270)	0.055 (0.229)	0.046 (0.211)	0.066 (0.249)	0.061 (0.240)
Hokuriku	0.050 (0.218)	0.068 (0.253)	0.052 (0.221)	0.046 (0.211)	0.057 (0.232)	0.010 (0.101)
Tokai	0.148 (0.355)	0.162 (0.370)	0.138 (0.345)	0.169 (0.376)	0.150 (0.357)	0.172 (0.379)
Kinki	0.179 (0.383)	0.120 (0.326)	0.201 (0.401)	0.208 (0.407)	0.181 (0.385)	0.131 (0.339)
Chugoku and Shikoku	0.074 (0.261)	0.089 (0.285)	0.085 (0.279)	0.077 (0.268)	0.087 (0.283)	0.061 (0.240)
Kyushu and Okinawa	0.092 (0.290)	0.099 (0.300)	0.099 (0.299)	0.069 (0.255)	0.097 (0.296)	0.141 (0.350)
Observations	4573	191	3298	130	3945	99

Notes: Means and standard deviations are shown. The latter values are in parentheses.

Table 3: Marginal effects of probit estimations on the determinants of EAS receipt and the provision of EAS-supported training

	EAS receipt			Provision of training		
	Receipt ended in FY2020 (1)	Receipt ended in FY2021 (2)	Receipt ended in FY2022 (3)	Receipt ended in FY2020 (4)	Receipt ended in FY2021 (5)	Receipt ended in FY2022 (6)
Number of insured employees (in hundreds)	0.0198*** (0.0019)	0.0081*** (0.0013)	0.0105*** (0.0020)	0.0111*** (0.0017)	0.0126*** (0.0020)	0.0133*** (0.0026)
Number of insured employees (in hundreds) squared	-0.0004*** (0.0001)	-0.0001*** (0.0000)	-0.0003*** (0.0001)	-0.0002*** (0.0001)	-0.0002*** (0.0001)	-0.0007*** (0.0002)
Establishment age (10-year)	0.0237*** (0.0030)	0.0136*** (0.0026)	0.0149*** (0.0028)	0.0073 (0.0053)	0.0098 (0.0064)	-0.0025 (0.0048)
Establishment age (10-year) squared	-0.0013*** (0.0004)	-0.0001 (0.0004)	-0.0001 (0.0004)	-0.0002 (0.0007)	-0.0007 (0.0008)	0.0007 (0.0006)
Average age of employees (10-year)	-0.0300*** (0.0017)	-0.0154*** (0.0015)	-0.0182*** (0.0016)	-0.0191*** (0.0041)	-0.0247*** (0.0053)	-0.0199*** (0.0035)
Share of female employees (10%)	0.0016*** (0.0005)	-0.0005 (0.0004)	0.0005 (0.0004)	-0.0031*** (0.0009)	-0.0012 (0.0010)	0.0001 (0.0008)
Average years of tenure (10-year)	-0.0518*** (0.0031)	-0.0501*** (0.0028)	-0.0372*** (0.0026)	-0.0106 (0.0083)	-0.0082 (0.0084)	0.0026 (0.0067)
Share of white-collar employees (10%)	-0.0051*** (0.0005)	-0.0052*** (0.0004)	-0.0054*** (0.0004)	0.0023** (0.0009)	0.0021** (0.0010)	0.0027*** (0.0007)
Employment fluidity index/10	0.0021*** (0.0003)	0.0019*** (0.0002)	0.0009*** (0.0003)	0.0007 (0.0006)	0.0001 (0.0005)	0.0009** (0.0004)
Industry dummies (Reference: Construction)						
Manufacturing	0.1430*** (0.0066)	0.1244*** (0.0061)	0.1666*** (0.0064)	0.0461*** (0.0095)	0.0415*** (0.0099)	0.0086 (0.0087)
Information and communications	0.0664*** (0.0110)	0.0627*** (0.0105)	0.0898*** (0.0113)	0.1037*** (0.0266)	0.1141*** (0.0311)	0.0819*** (0.0244)
Transport and postal services	0.0519*** (0.0085)	0.0851*** (0.0083)	0.1090*** (0.0091)	0.0096 (0.0124)	0.0341** (0.0145)	0.0613*** (0.0194)
Utilities and wholesale and retail trade	0.0442*** (0.0047)	0.0361*** (0.0040)	0.0492*** (0.0043)	0.0156* (0.0084)	0.0065 (0.0077)	-0.0007 (0.0087)
Professional and education services	0.0465*** (0.0066)	0.0126** (0.0052)	0.0258*** (0.0056)	0.0180 (0.0111)	0.0545*** (0.0203)	0.0009 (0.0100)
Medical, health care and welfare	0.0278*** (0.0055)	-0.0065 (0.0040)	0.0016 (0.0044)	0.0121 (0.0104)	0.0206 (0.0150)	-0.0105 (0.0081)
Accommodations, food, and personal services	0.1538*** (0.0082)	0.1796*** (0.0080)	0.1817*** (0.0082)	0.0141 (0.0086)	0.0122* (0.0073)	0.0021 (0.0083)
Finance, real estate, and other services	0.0234*** (0.0048)	0.0135*** (0.0040)	0.0154*** (0.0041)	0.0230** (0.0101)	0.0400*** (0.0133)	0.0097 (0.0107)
Prefectural population density (1000 persons/km2)	0.0023*** (0.0008)	0.0036*** (0.0007)	0.0056*** (0.0007)	0.0003 (0.0014)	0.0007 (0.0015)	0.0023 (0.0014)
Regional block dummies (Reference: Minami-Kanto)						
Hokkaido	-0.0545*** (0.0081)	-0.0021 (0.0080)	-0.0104 (0.0084)	0.0234 (0.0240)	0.0091 (0.0236)	0.0140 (0.0203)
Tohoku	-0.0185** (0.0080)	-0.0066 (0.0068)	0.0190** (0.0079)	-0.0018 (0.0146)	0.0146 (0.0205)	0.0600** (0.0256)
Kita-Kanto and Koshin	-0.0133* (0.0079)	-0.0086 (0.0067)	0.0116 (0.0074)	0.0056 (0.0144)	0.0126 (0.0188)	0.0223 (0.0169)
Hokuriku	0.0121 (0.0098)	0.0286*** (0.0089)	0.0531*** (0.0098)	0.0188 (0.0186)	0.0223 (0.0220)	-0.0040 (0.0103)
Tokai	0.0246*** (0.0073)	0.0295*** (0.0063)	0.0482*** (0.0068)	0.0043 (0.0113)	0.0133 (0.0132)	0.0191* (0.0116)
Kinki	0.0013 (0.0055)	0.0227*** (0.0047)	0.0215*** (0.0048)	-0.0090 (0.0083)	0.0060 (0.0090)	0.0033 (0.0060)
Chugoku and Shikoku	-0.0276*** (0.0072)	0.0049 (0.0066)	0.0162** (0.0071)	0.0108 (0.0147)	0.0086 (0.0154)	0.0122 (0.0133)
Kyushu and Okinawa	-0.0295*** (0.0068)	-0.0041 (0.0059)	0.0082 (0.0065)	0.0109 (0.0140)	0.0047 (0.0138)	0.0331** (0.0158)
Observations	40617	39281	39897	4764	3428	4044
Log pseudo likelihood	-13222.278	-10088.013	-11515.001	-688.166	-467.245	-364.800
Pseudo R2	0.099	0.133	0.120	0.141	0.155	0.216

Notes: Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: PSM results for probability of establishment closures

	Receipt ended in FY2020	Receipt ended in FY2021	Receipt ended in FY2022
k=1	-0.031** (0.016)	0.015* (0.009)	0.020 (0.016)
k=4	-0.016* (0.009)	0.008 (0.010)	0.015 (0.013)

Notes: Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. k indicates the k-nearest neighbor matching.

Table 5: PSM results for establishment employment flows

		FY2019	FY2020	FY2021	FY2022	FY2023
Panel A: Receipt ended in FY2020						
Hiring rate	k=1	5.330*** (1.608)	8.622*** (2.557)	-3.329 (4.643)	-1.343 (2.436)	-0.320 (2.427)
	k=4	1.848 (2.707)	4.914** (2.494)	0.348 (1.873)	-3.050* (1.692)	-1.163 (1.556)
Job separation rate	k=1	1.453 (1.671)	-0.037 (2.801)	-1.726 (2.170)	0.564 (2.181)	-3.556 (2.202)
	k=4	1.314 (0.846)	0.685 (2.418)	-0.658 (1.440)	-1.709 (1.652)	-3.245** (1.300)
Net employment growth rate	k=1	3.877* (2.068)	8.659*** (2.067)	-1.603 (3.372)	-1.908 (2.160)	3.236 (2.271)
	k=4	0.535 (1.649)	4.229*** (1.482)	1.006 (1.622)	-1.341 (1.697)	2.082 (2.110)
Panel B: Receipt ended in FY2021						
Hiring rate	k=1	-0.835 (2.868)	1.965 (3.870)	-1.260 (5.666)	-9.688* (5.441)	4.321 (3.014)
	k=4	-2.129 (2.020)	-7.840 (5.478)	0.374 (2.821)	-5.409** (2.405)	3.083 (2.448)
Job separation rate	k=1	1.208 (2.394)	2.656 (1.980)	-6.378 (4.331)	-5.292 (3.226)	0.175 (2.427)
	k=4	-0.795 (1.368)	-0.056 (1.718)	-3.877** (1.964)	-3.638* (1.886)	0.299 (2.015)
Net employment growth rate	k=1	-2.043 (2.648)	-0.691 (3.723)	5.118 (3.291)	-4.396 (4.088)	4.146 (2.954)
	k=4	-1.334 (1.961)	-7.784* (4.706)	4.251* (2.478)	-1.771 (1.930)	2.784 (1.961)
Panel C: Receipt ended in FY2022						
Hiring rate	k=1	3.234** (1.462)	2.455 (2.722)	9.426** (4.651)	4.579*** (1.528)	3.273 (2.287)
	k=4	4.447 (3.257)	3.443* (2.083)	8.128** (3.691)	2.034*** (0.562)	2.225 (1.847)
Job separation rate	k=1	-3.422* (1.862)	1.975 (2.721)	3.054 (2.974)	3.187 (2.355)	1.505 (2.689)
	k=4	1.664 (2.477)	3.326 (2.483)	1.255 (1.825)	3.376** (1.701)	2.304 (1.453)
Net employment growth rate	k=1	6.655** (2.869)	0.481 (3.352)	6.372* (3.450)	1.392 (2.441)	1.768 (3.247)
	k=4	2.784 (2.728)	0.117 (2.423)	6.873** (2.996)	-1.342 (2.073)	-0.079 (2.114)

Notes: Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. k indicates the k-nearest neighbor matching.

Table 6: PSM results for business activity level

		Receipt ended in FY2020	Receipt ended in FY2021	Receipt ended in FY2022
Business activity level in 2020	k=1	1.718 (3.221)	-11.764*** (4.212)	-6.489* (3.930)
	k=4	-0.793 (2.278)	-5.016 (3.609)	-5.935* (3.396)
Business activity level in 2021	k=1	4.257 (4.023)	-8.949 (5.446)	-2.380 (5.894)
	k=4	1.344 (3.237)	-6.634 (5.112)	-4.597 (3.929)
Business activity level in 2022	k=1	4.906 (4.123)	-6.404 (4.380)	-8.224 (6.629)
	k=4	0.216 (2.974)	-7.996 (5.108)	-6.951 (4.805)

Notes: Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. k indicates the k-nearest neighbor matching.

Figure 1: Proportion of EAS recipient establishments and those providing EAS-supported training

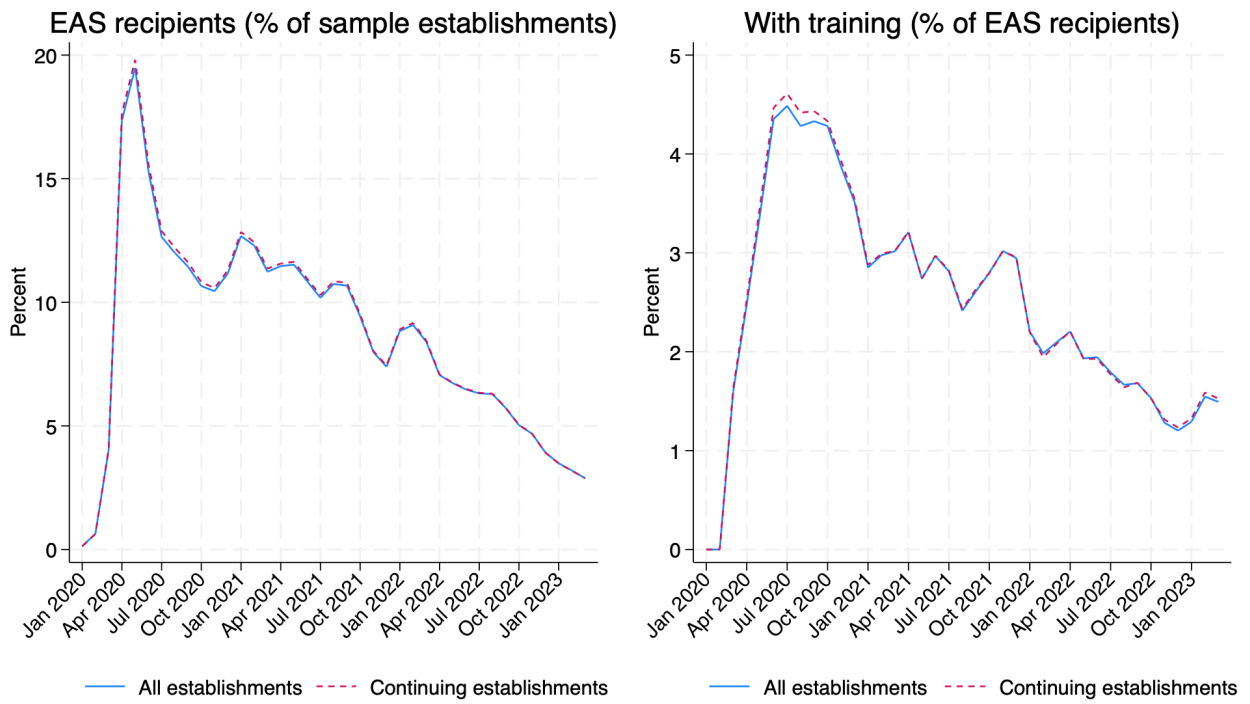


Figure 2: Distribution of duration in months of EAS receipt and EAS-supported training

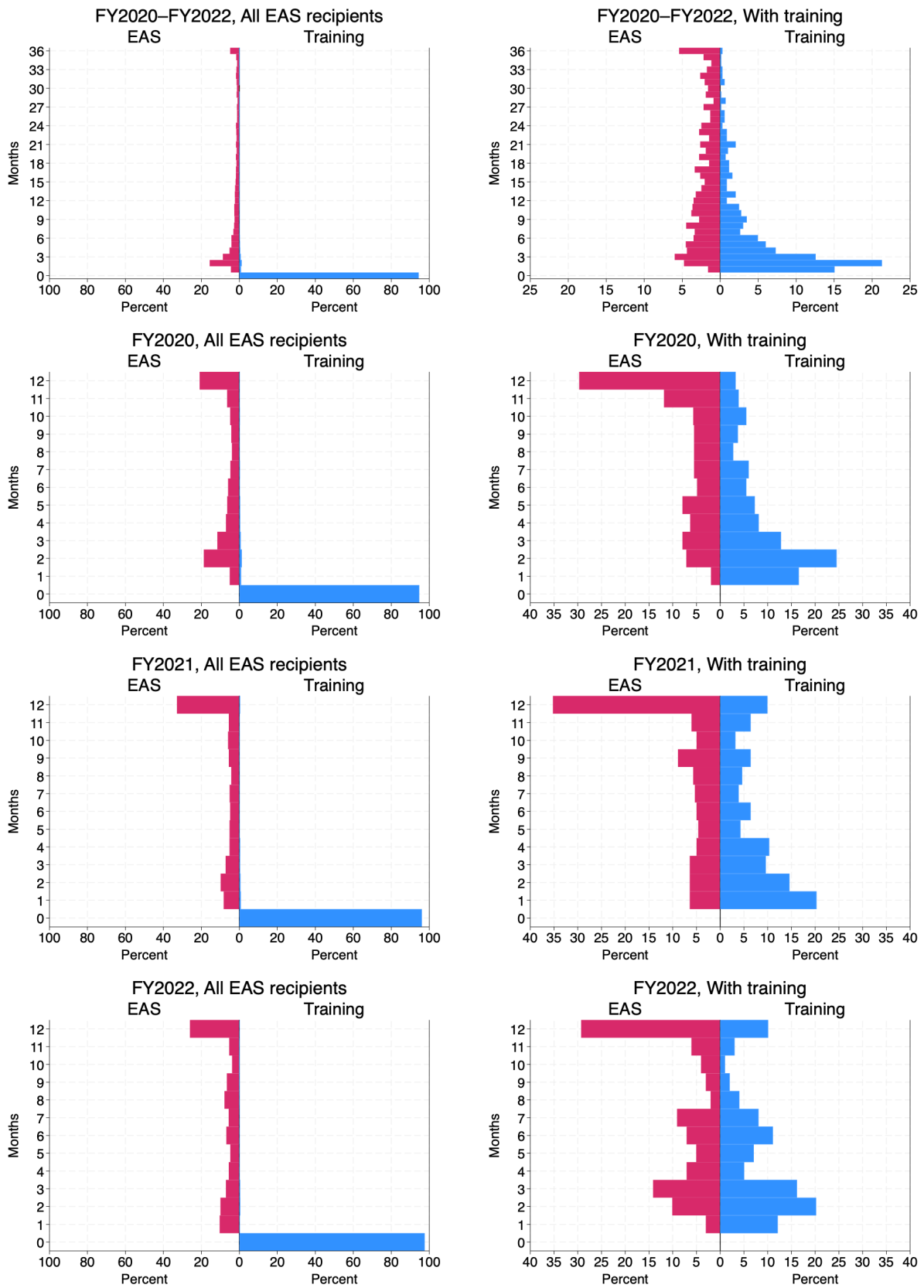
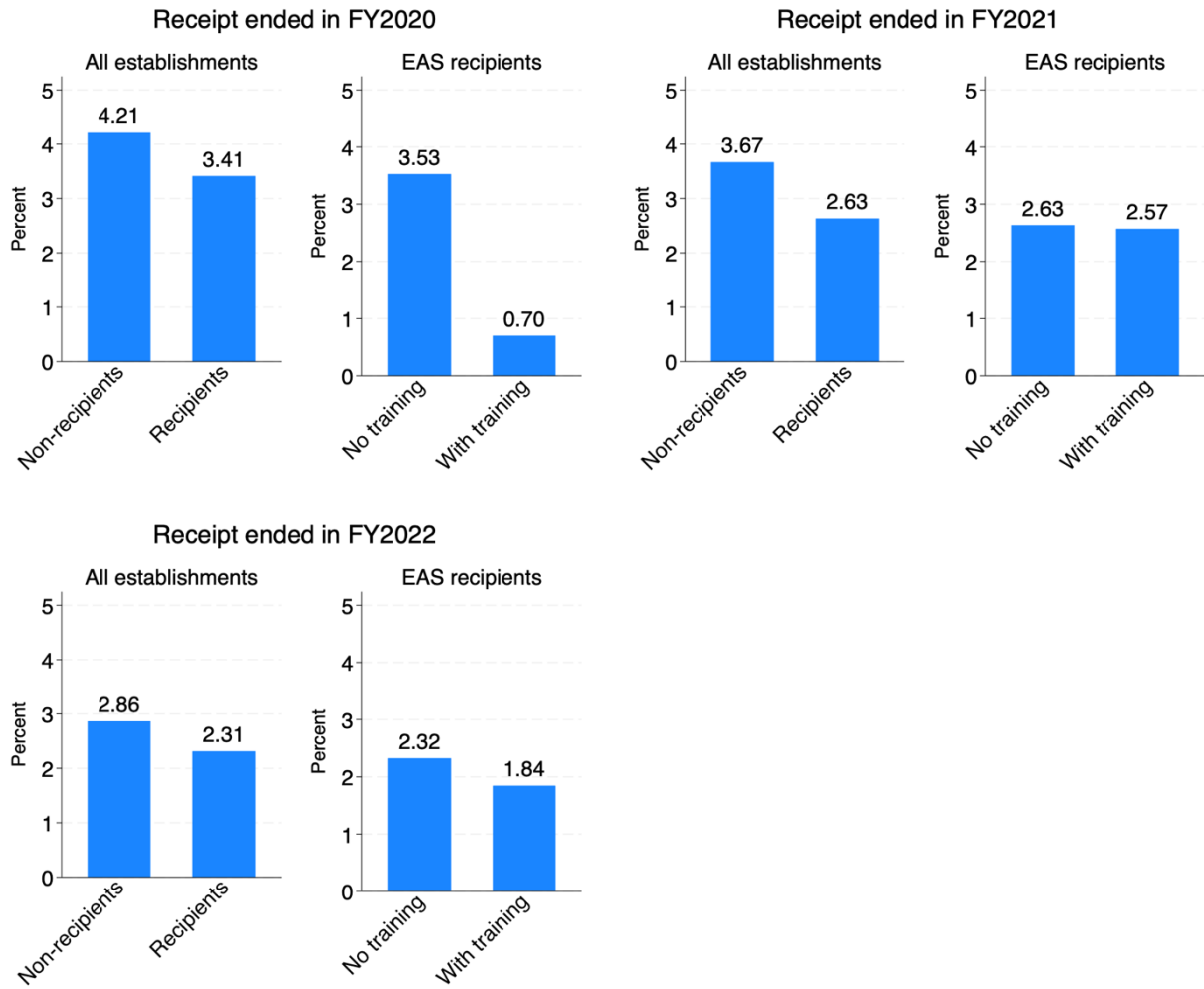


Figure 3: Proportion of establishment closures



Notes: Closure is defined as an establishment recorded as closed by March 2024.

Figure 4: Trend in average hiring rate

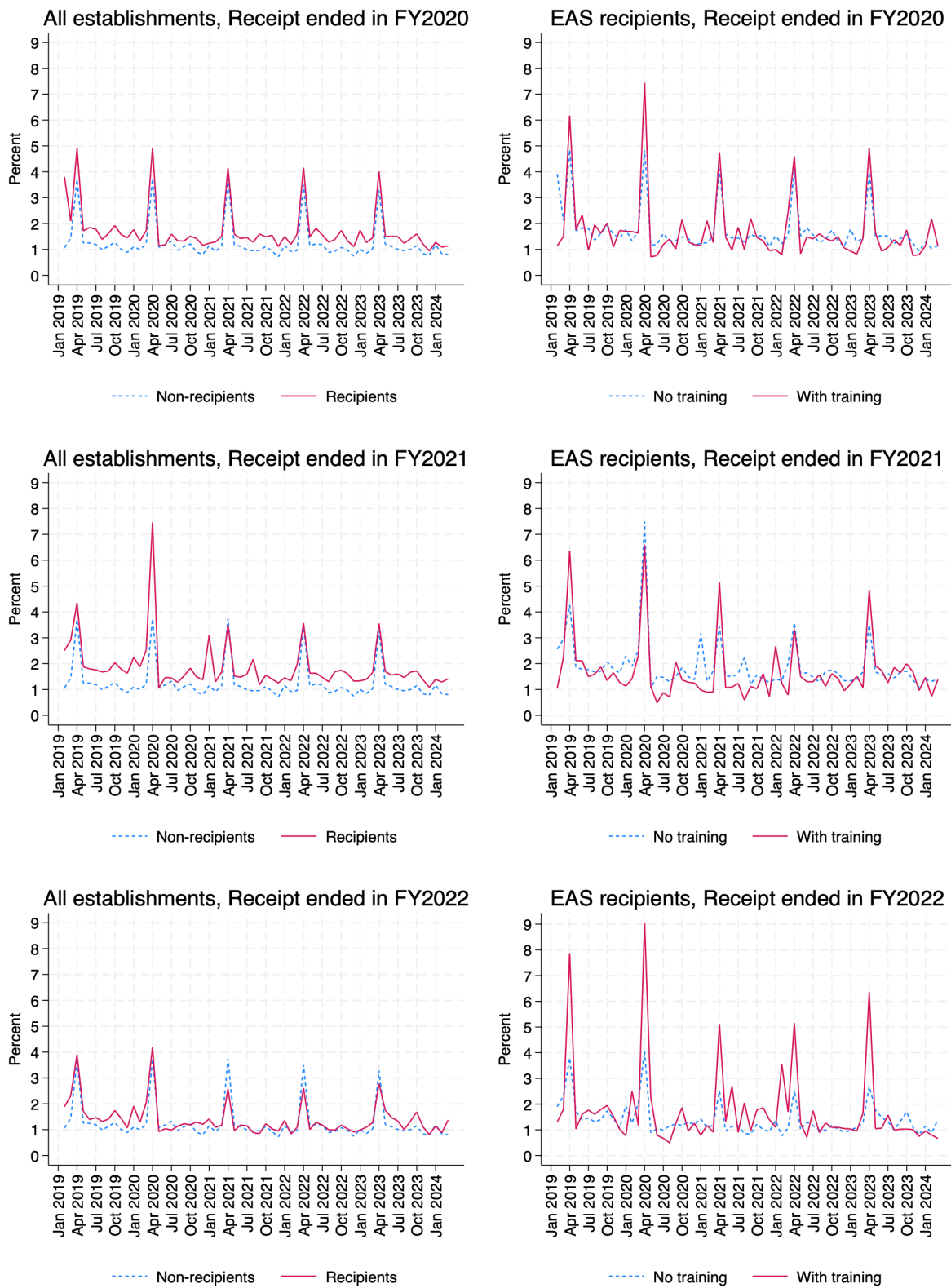


Figure 5: Trend in average job separation rate

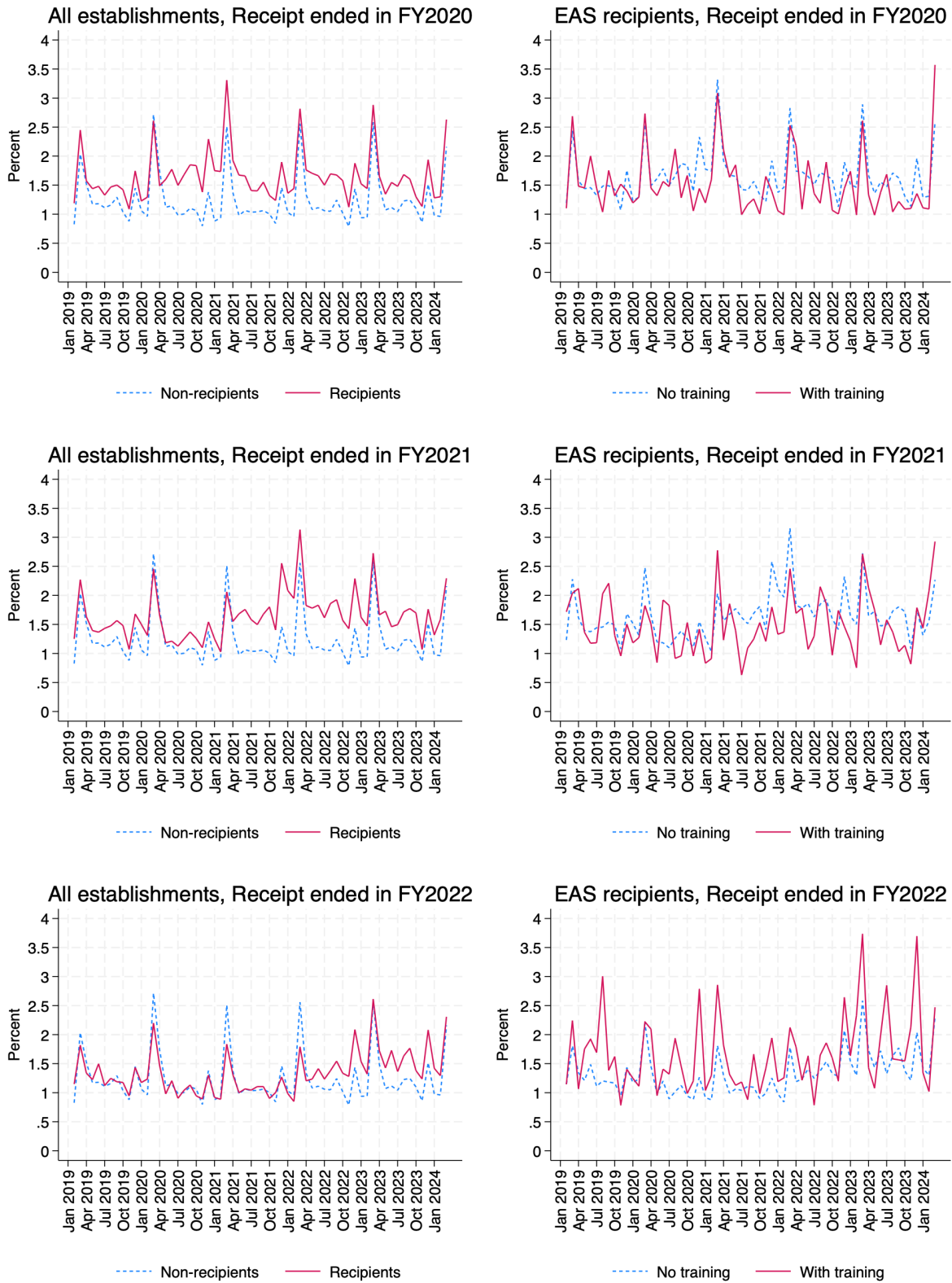
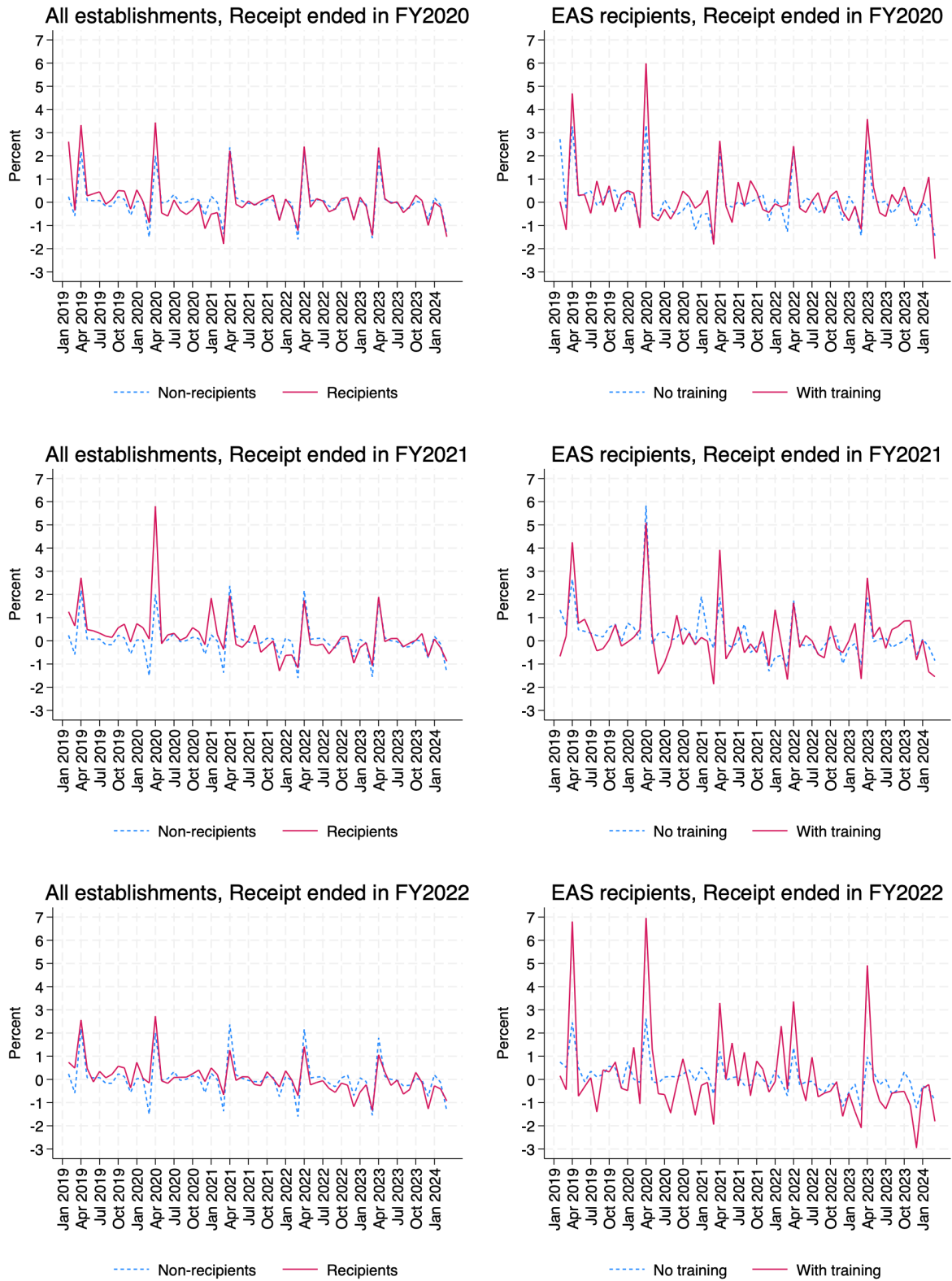


Figure 6: Trend in average net employment growth rate



Appendix A. Additional tables and figures

Table A1: Definitions of variables

Variable	Definition	Source
Number of insured employees	Average number of insured employees at the end of the month between April 2019 and March 2020.	EI data (establishment)
Establishment age	Years since establishment as of March 31, 2020.	EI data (establishment)
Average age of employees	Average age of insured employees as of March 31, 2020.	EI data (insured employee)
Share of female employees	Proportion of female insured employees.	EI data (insured employee)
Average years of tenure	Average years of tenure of insured employees as of March 31, 2020.	EI data (insured employee)
Share of white-collar employees	Proportion of insured employees in white-collar occupations. Three occupations (Administrative and managerial workers; Professional and engineering workers; and Clerical workers) are defined as white-collar occupations, while eight occupations (Sales workers; Service workers; Security workers; Agriculture, forestry and fishery workers; Manufacturing process workers; Transport and machine operation workers; Construction and mining workers; and Carrying, cleaning, packaging, and related workers) are defined as blue-collar occupations.	EI data (insured employee)
Employment fluidity index	Sum of the hiring rate and the job separation rate in FY2019.	EI data (establishment)
Industry dummies	The industrial classification is consolidated from the division (1-digit) level into nine sectors, as shown in the list below. The original industries included in the aggregated ones are shown in parentheses. Agriculture and forestry; Fisheries; and Mining and quarrying of stone are omitted from the sample. <ul style="list-style-type: none"> ● Construction ● Manufacturing ● Information and communications ● Transport and postal services ● Utilities and wholesale and retail trade (Electricity, gas, heat supply and water; Wholesale and retail trade) ● Professional and education services (Scientific research, professional and technical services; Education, learning support) ● Medical, health care and welfare ● Accommodations, food, and personal services (Accommodations, eating and drinking services; Living-related and personal services and amusement services) ● Finance, real estate, and other services (Finance and insurance; Real estate and goods rental and leasing; Compound services; Services, n.e.c.) 	EI data (establishment)
Prefectural population density	The number of persons divided by the inhabitable area as of 2019.	2019 Population Estimates, released by Statistics Bureau, Ministry of Internal Affairs and Communications
Regional block dummies	9 regional blocks: Hokkaido; Tohoku; Kita-Kanto and Koshin; Minami-Kanto; Hokuriku; Tokai; Kinki; Chugoku and Shikoku; and Kyushu and Okinawa.	EI data (establishment)

Notes: The average age of employees, proportion of female employees, average years of tenure, and proportion of white-collar employees are calculated based on insured employees who were affiliated with the establishment during any or all months between April 2019 and March 2020. If the same insured employee repeatedly enters and exits the establishment, a record with a longer tenure is utilized to prevent double-counting. EI data (establishment) and EI data (insured employee) represent administrative data on the Employment Insurance at the establishment and insured employee levels, respectively.

Table A2: Comparison of the probability of establishment closures before matching (t-test)

	Receipt ended in FY2020	Receipt ended in FY2021	Receipt ended in FY2022
Mean (T)	0.010	0.031	0.020
Mean (C)	0.058	0.038	0.027
Mean difference (T-C)	-0.047***	-0.007	-0.007
Standard error	0.017	0.017	0.016
Observations (T)	191	130	99
Observations (C)	4573	3297	3945

Notes: T and C represent establishments that provided and did not provide EAS-supported training, respectively. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A3: Comparison of establishment employment flows before matching (t-test)

		FY2019	FY2020	FY2021	FY2022	FY2023
Panel A: Receipt ended in FY2020						
Hiring rate	Mean (T)	23.434	22.224	19.689	18.034	18.722
	Mean (C)	23.260	19.952	19.984	20.293	18.645
	Mean difference (T-C)	0.174	2.271	-0.296	-2.260	0.077
	Standard error	2.410	3.175	2.558	2.548	3.202
Job separation rate	Mean (T)	19.138	20.474	18.712	18.569	16.992
	Mean (C)	19.241	22.307	20.552	20.838	19.496
	Mean difference (T-C)	-0.103	-1.833	-1.840	-2.269	-2.505
	Standard error	1.862	2.465	2.213	2.133	2.134
Net employment growth rate	Mean (T)	4.296	1.750	0.977	-0.536	1.730
	Mean (C)	4.019	-2.354	-0.568	-0.545	-0.851
	Mean difference (T-C)	0.277	4.104	1.544	0.010	2.581
	Standard error	2.002	2.869	2.145	2.172	2.638
	Observations (T)	191	191	190	190	188
	Observations (C)	4573	4565	4376	4275	4187
Panel B: Receipt ended in FY2021						
Hiring rate	Mean (T)	25.738	17.952	19.231	17.822	22.713
	Mean (C)	24.887	26.583	20.952	20.327	19.664
	Mean difference (T-C)	0.851	-8.631	-1.721	-2.505	3.049
	Standard error	3.205	14.740	6.668	3.135	3.069
Job separation rate	Mean (T)	19.802	16.497	17.869	18.436	20.774
	Mean (C)	19.567	17.836	23.119	22.178	20.005
	Mean difference (T-C)	0.235	-1.339	-5.250*	-3.742	0.769
	Standard error	2.367	3.833	2.991	2.644	2.483
Net employment growth rate	Mean (T)	5.937	1.454	1.362	-0.614	1.939
	Mean (C)	5.320	8.747	-2.167	-1.851	-0.341
	Mean difference (T-C)	0.617	-7.292	3.529	1.237	2.280
	Standard error	2.660	11.834	5.880	2.774	2.807
	Observations (T)	130	129	130	129	128
	Observations (C)	3298	3286	3285	3166	3079
Panel C: Receipt ended in FY2022						
Hiring rate	Mean (T)	26.360	20.450	25.934	17.816	17.657
	Mean (C)	20.538	16.844	13.704	14.263	16.936
	Mean difference (T-C)	5.822*	3.605	12.229***	3.553	0.722
	Standard error	3.213	3.723	2.955	2.675	6.104
Job separation rate	Mean (T)	20.329	19.451	18.257	21.790	21.147
	Mean (C)	16.333	13.973	13.888	18.104	19.256
	Mean difference (T-C)	3.995*	5.478**	4.370**	3.686	1.891
	Standard error	2.245	2.204	2.126	2.610	2.978
Net employment growth rate	Mean (T)	6.032	0.999	7.676	-3.974	-3.490
	Mean (C)	4.205	2.872	-0.183	-3.841	-2.321
	Mean difference (T-C)	1.827	-1.873	7.859***	-0.132	-1.169
	Standard error	2.953	3.133	2.299	2.646	5.575
	Observations (T)	99	98	98	99	97
	Observations (C)	3945	3931	3939	3943	3861

Notes: T and C represent establishments that provided and did not provide EAS-supported training, respectively. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A4: Comparison of business activity level before matching (t-test)

		Receipt ended in FY2020	Receipt ended in FY2021	Receipt ended in FY2022
Business activity level in 2020	Mean (T)	84.015	73.653	72.243
	Mean (C)	85.564	78.100	74.834
	Mean difference (T-C)	-1.549	-4.447	-2.591
	Standard error	2.064	3.243	3.607
	Observations (T)	82	47	40
	Observations (C)	951	688	838
Business activity level in 2021	Mean (T)	94.344	76.904	72.548
	Mean (C)	91.761	80.155	75.843
	Mean difference (T-C)	2.583	-3.250	-3.296
	Standard error	2.462	3.733	3.822
	Observations (T)	82	47	40
	Observations (C)	951	687	839
Business activity level in 2022	Mean (T)	97.965	87.446	79.450
	Mean (C)	95.169	90.484	82.028
	Mean difference (T-C)	2.796	-3.038	-2.578
	Standard error	2.905	4.244	4.192
	Observations (T)	81	46	38
	Observations (C)	945	685	837

Notes: T and C represent establishments that provided and did not provide EAS-supported training, respectively. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Figure A1: Number of establishments in the sample

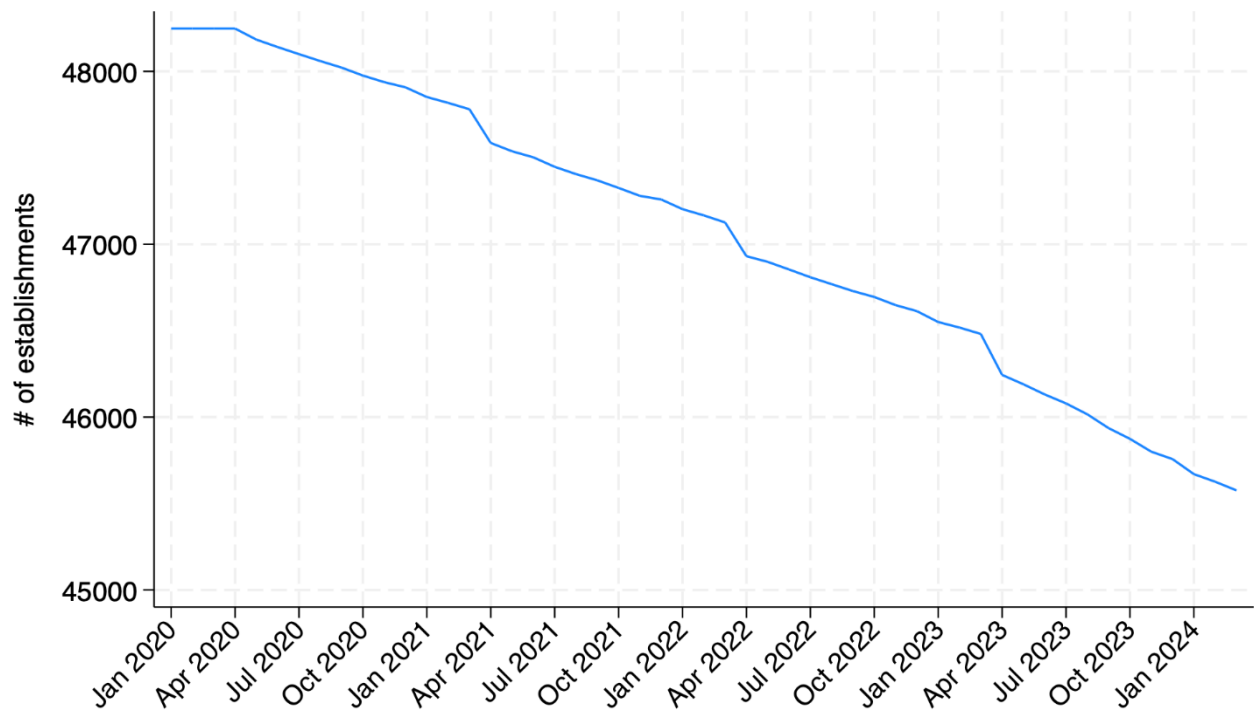


Figure A2: Number of EAS recipient establishments and those providing EAS-supported training

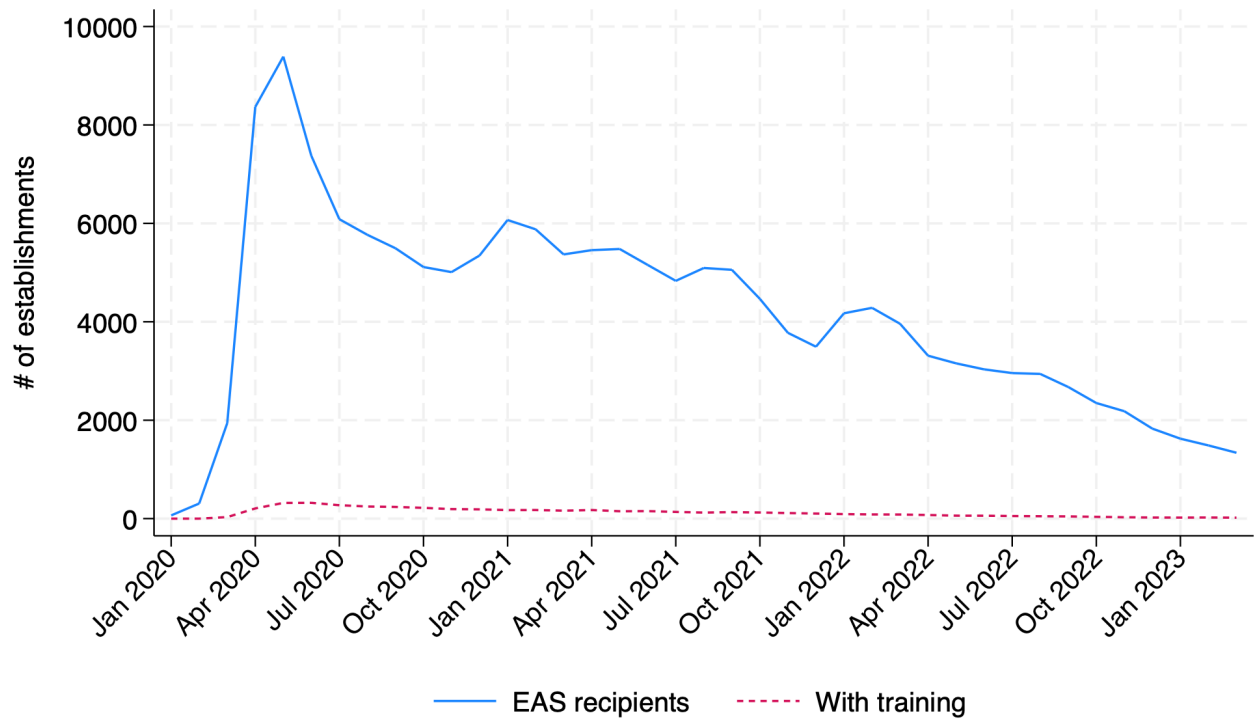


Figure A3: Persons and amount-based proportion of EAS recipient establishments and those providing EAS-supported training

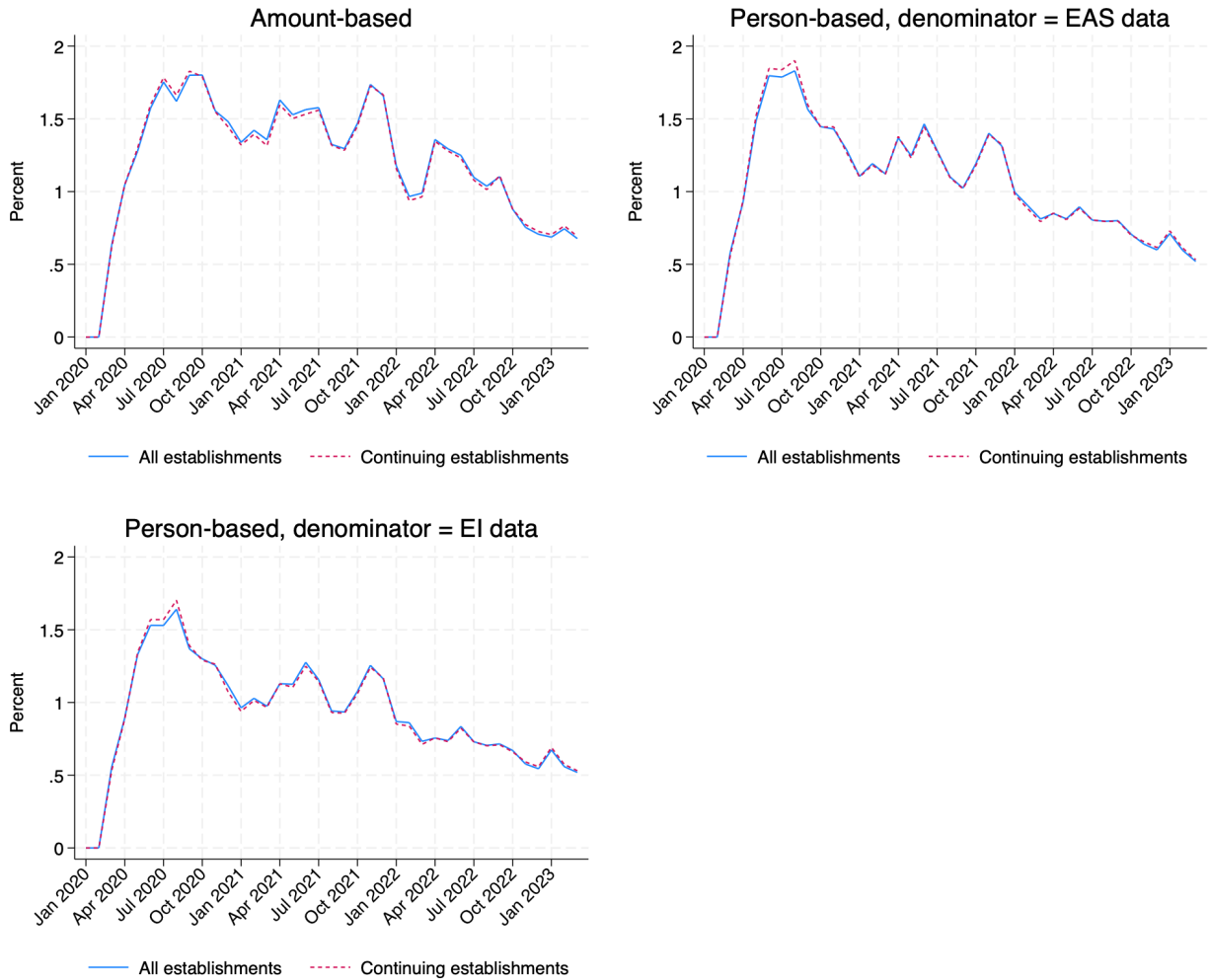


Figure A4: Fiscal yearly trend in average hiring rate

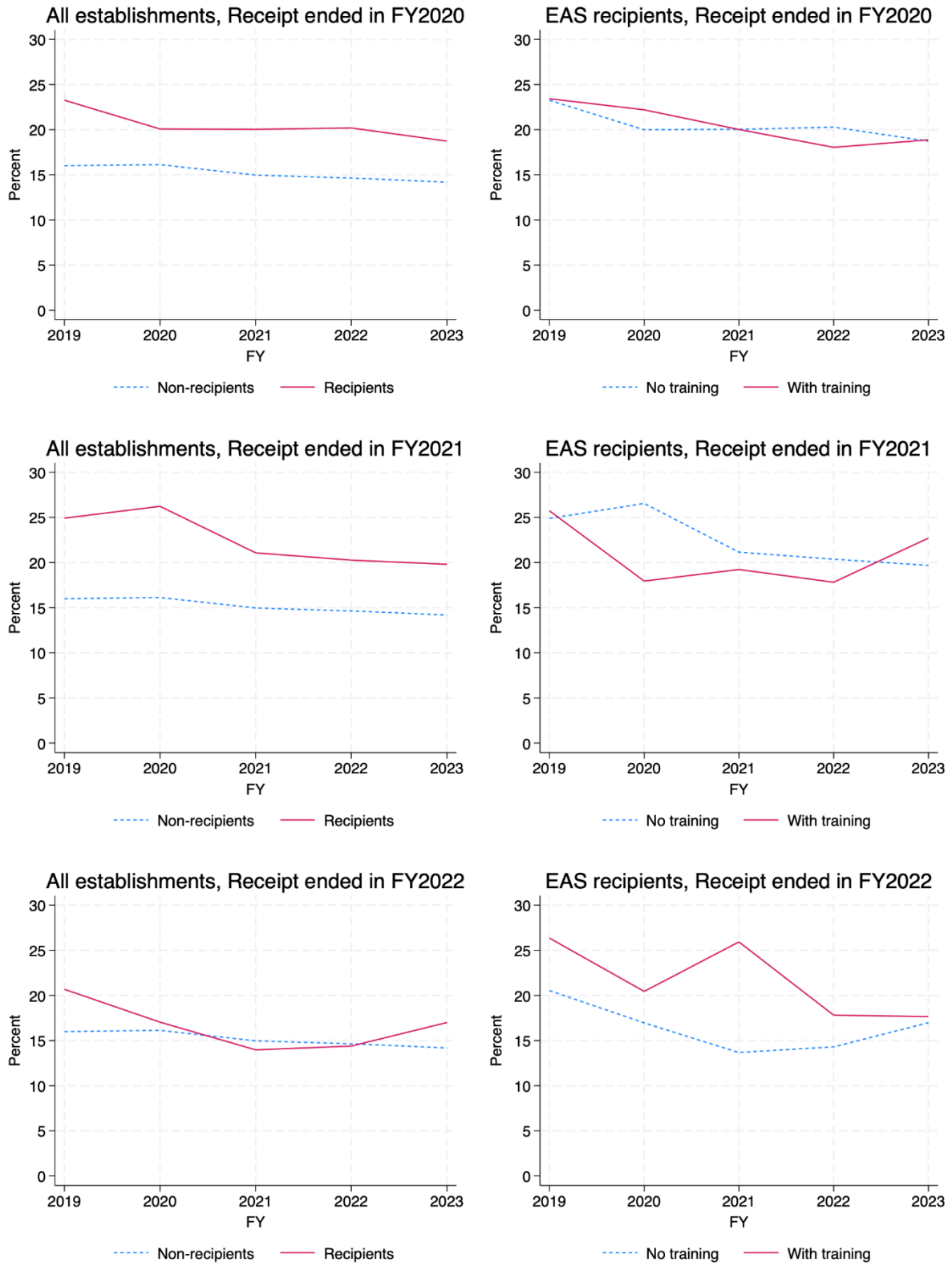


Figure A5: Fiscal yearly trend in average job separation rate

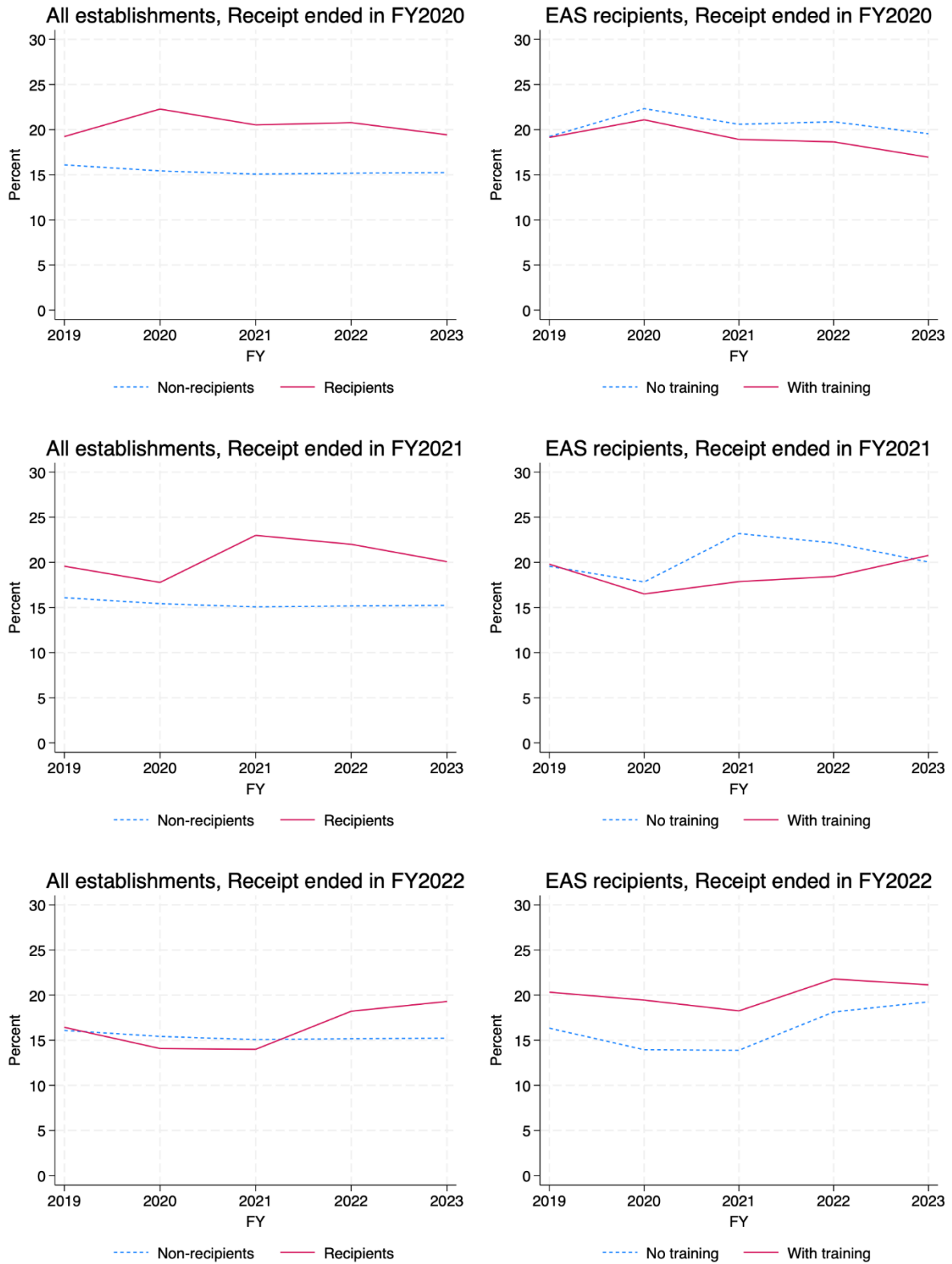
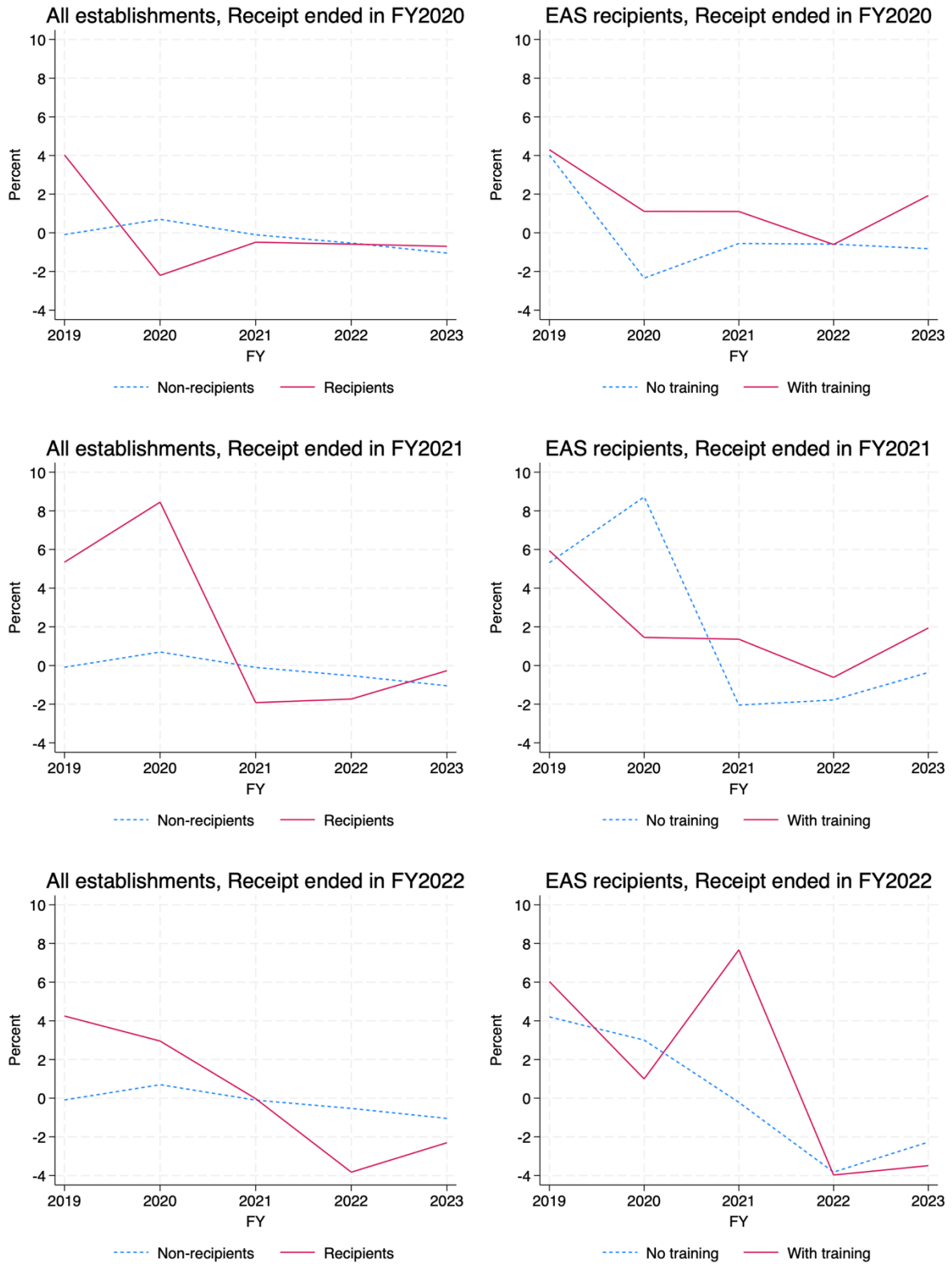


Figure A6: Fiscal yearly trend in average net employment growth rate



Appendix B. Balancing tests before and after PSM

Table B1: Balancing tests before and after PSM for establishment closure

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	47.7	0.000	45.0	0.000	45.0	0.000	47.7	0.000	45.0	0.000	45.0	0.000
	M	14.0	0.225	2.5	0.865	6.6	0.670	12.9	0.275	-0.7	0.964	0.0	0.998
Number of insured employees (in hundreds) squared	U	24.1	0.000	13.3	0.220	15.8	0.161	24.1	0.000	13.3	0.220	15.8	0.161
	M	14.0	0.137	3.7	0.593	7.8	0.451	12.3	0.206	1.5	0.845	2.1	0.855
Establishment age (10-year)	U	45.5	0.000	29.0	0.001	10.7	0.263	45.5	0.000	29.0	0.001	10.7	0.263
	M	-9.2	0.409	-11.2	0.387	-14.0	0.344	-1.2	0.914	-2.2	0.864	-18.5	0.221
Establishment age (10-year) squared	U	46.4	0.000	28.7	0.000	16.0	0.077	46.4	0.000	28.7	0.000	16.0	0.077
	M	-9.4	0.418	-9.5	0.488	-9.0	0.570	-1.5	0.899	-0.1	0.992	-16.5	0.304
Average age of employees (10-year)	U	-33.3	0.000	-44.7	0.000	-66.8	0.000	-33.3	0.000	-44.7	0.000	-66.8	0.000
	M	-1.3	0.887	-14.1	0.196	-10.4	0.414	5.7	0.520	-10.0	0.372	-8.6	0.513
Share of female employees (10%)	U	-32.1	0.000	-7.8	0.414	-8.4	0.447	-32.1	0.000	-7.8	0.414	-8.4	0.447
	M	12.9	0.154	9.9	0.402	-16.0	0.225	0.8	0.928	-1.0	0.928	-3.9	0.766
Average years of tenure (10-year)	U	20.3	0.007	9.4	0.302	-9.4	0.364	20.3	0.007	9.4	0.302	-9.4	0.364
	M	-3.1	0.762	-14.0	0.252	4.6	0.726	2.0	0.847	-3.9	0.746	-8.6	0.523
Share of white-collar employees (10%)	U	16.4	0.033	36.9	0.000	47.5	0.000	16.4	0.033	36.9	0.000	47.5	0.000
	M	6.8	0.498	-1.9	0.886	-8.4	0.586	-1.7	0.865	0.2	0.990	7.5	0.617
Employment fluidity index/10	U	0.1	0.985	2.1	0.829	22.1	0.036	0.1	0.985	2.1	0.829	22.1	0.036
	M	12.8	0.194	-11.8	0.354	-0.4	0.975	6.0	0.545	-3.3	0.786	13.7	0.312
Manufacturing	U	42.0	0.000	20.8	0.014	-9.8	0.346	42.0	0.000	20.8	0.014	-9.8	0.346
	M	-6.9	0.536	-19.0	0.158	-13.7	0.341	-0.9	0.938	-4.7	0.719	-14.3	0.322
Information and communications	U	34.0	0.000	40.0	0.000	63.6	0.000	34.0	0.000	40.0	0.000	63.6	0.000
	M	-4.2	0.749	0.0	1.000	0.0	1.000	-7.4	0.582	3.6	0.816	5.5	0.767
Transport and postal services	U	-11.0	0.188	9.0	0.282	30.6	0.000	-11.0	0.188	9.0	0.282	30.6	0.000
	M	3.1	0.704	2.8	0.828	16.1	0.303	1.5	0.854	6.4	0.616	-1.6	0.924
Utilities and wholesale and retail trade	U	-11.4	0.142	-28.7	0.005	-25.4	0.027	-11.4	0.142	-28.7	0.005	-25.4	0.027
	M	0.0	1.000	7.3	0.427	-18.6	0.177	0.8	0.937	6.7	0.470	-4.7	0.709
Professional and education services	U	-6.3	0.417	16.7	0.028	-0.3	0.975	-6.3	0.417	16.7	0.028	-0.3	0.975
	M	0.0	1.000	12.6	0.330	-13.8	0.392	0.0	1.000	10.2	0.438	-2.3	0.875
Medical, health care and welfare	U	-18.7	0.023	-5.1	0.589	-25.8	0.048	-18.7	0.023	-5.1	0.589	-25.8	0.048
	M	3.7	0.661	18.8	0.024	0.0	1.000	-0.9	0.917	1.9	0.869	2.9	0.684
Accommodations, food, and personal services	U	-24.1	0.004	-29.0	0.004	-19.6	0.076	-24.1	0.004	-29.0	0.004	-19.6	0.076
	M	8.4	0.283	8.3	0.410	23.0	0.027	5.0	0.536	-5.7	0.609	8.6	0.472
Finance, real estate, and other services	U	0.0	0.998	10.5	0.210	-0.4	0.969	0.0	0.998	10.5	0.210	-0.4	0.969
	M	0.0	1.000	-10.0	0.475	-3.7	0.801	0.0	1.000	-11.8	0.400	6.4	0.632
Prefectural population density (1000 persons/km2)	U	-1.7	0.819	15.3	0.077	17.5	0.069	-1.7	0.819	15.3	0.077	17.5	0.069
	M	2.9	0.769	-7.7	0.538	-3.1	0.839	2.6	0.804	-5.4	0.674	4.1	0.783
Hokkaido	U	4.6	0.504	-9.1	0.359	-4.5	0.675	4.6	0.504	-9.1	0.359	-4.5	0.675
	M	12.8	0.154	4.4	0.653	6.6	0.563	4.8	0.640	-3.3	0.771	5.0	0.677
Tohoku	U	-7.0	0.369	-7.1	0.456	13.9	0.125	-7.0	0.369	-7.1	0.456	13.9	0.125
	M	4.6	0.611	18.4	0.024	-14.7	0.386	-8.6	0.409	6.4	0.538	-8.3	0.615
Kita-Kanto and Koshin	U	3.1	0.668	-4.3	0.647	-2.3	0.826	3.1	0.668	-4.3	0.647	-2.3	0.826
	M	-11.9	0.295	-7.0	0.584	8.3	0.519	-5.0	0.648	-0.9	0.942	0.0	1.000
Hokuriku	U	7.7	0.261	-2.5	0.784	-26.3	0.045	7.7	0.261	-2.5	0.784	-26.3	0.045
	M	-2.2	0.842	-3.6	0.777	-5.7	0.563	0.6	0.959	-5.3	0.676	0.0	1.000
Tokai	U	3.9	0.593	8.6	0.313	5.8	0.557	3.9	0.593	8.6	0.313	5.8	0.557
	M	-1.4	0.891	17.0	0.152	0.0	1.000	1.1	0.917	3.2	0.802	-4.8	0.748
Kinki	U	-16.4	0.039	1.6	0.861	-13.8	0.202	-16.4	0.039	1.6	0.861	-13.8	0.202
	M	-7.4	0.453	-11.4	0.379	11.1	0.368	-3.7	0.702	-6.2	0.628	4.2	0.748
Chugoku and Shikoku	U	5.6	0.429	-2.9	0.748	-10.2	0.349	5.6	0.429	-2.9	0.748	-10.2	0.349
	M	5.7	0.575	5.6	0.627	3.9	0.758	1.4	0.892	4.2	0.719	-4.8	0.724
Kyushu and Okinawa	U	2.4	0.745	-10.8	0.260	13.6	0.146	2.4	0.745	-10.8	0.260	13.6	0.146
	M	-3.5	0.739	-16.6	0.200	-6.2	0.694	0.4	0.966	1.4	0.902	3.1	0.837

Notes: U and M denote samples before and after matching, respectively.

Table B2: Balancing tests before and after PSM for employment flows in FY2019

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	47.7	0.000	45.0	0.000	45.0	0.000	47.7	0.000	45.0	0.000	45.0	0.000
	M	14.0	0.225	3.1	0.834	6.6	0.670	12.9	0.275	0.7	0.966	0.0	0.998
Number of insured employees (in hundreds) squared	U	24.1	0.000	13.3	0.220	15.8	0.161	24.1	0.000	13.3	0.220	15.8	0.161
	M	14.0	0.137	4.1	0.548	7.8	0.451	12.3	0.206	1.6	0.832	2.1	0.855
Establishment age (10-year)	U	45.5	0.000	29.1	0.001	10.7	0.263	45.5	0.000	29.1	0.001	10.7	0.263
	M	-9.2	0.409	-1.7	0.898	-14.0	0.344	-1.2	0.914	3.5	0.786	-18.5	0.221
Establishment age (10-year) squared	U	46.4	0.000	28.7	0.000	16.0	0.077	46.4	0.000	28.7	0.000	16.0	0.077
	M	-9.4	0.418	-0.2	0.987	-9.0	0.570	-1.5	0.899	4.0	0.766	-16.5	0.304
Average age of employees (10-year)	U	-33.3	0.000	-44.7	0.000	-66.8	0.000	-33.3	0.000	-44.7	0.000	-66.8	0.000
	M	-1.3	0.887	-10.6	0.340	-10.4	0.414	5.7	0.520	-5.2	0.642	-8.6	0.513
Share of female employees (10%)	U	-32.1	0.000	-7.9	0.411	-8.4	0.447	-32.1	0.000	-7.9	0.411	-8.4	0.447
	M	12.9	0.154	4.3	0.713	-16.0	0.225	0.8	0.928	-4.8	0.683	-3.9	0.766
Average years of tenure (10-year)	U	20.3	0.007	9.5	0.301	-9.4	0.364	20.3	0.007	9.5	0.301	-9.4	0.364
	M	-3.1	0.762	-6.6	0.590	4.6	0.726	2.0	0.847	-0.4	0.973	-8.6	0.523
Share of white-collar employees (10%)	U	16.4	0.033	36.9	0.000	47.5	0.000	16.4	0.033	36.9	0.000	47.5	0.000
	M	6.8	0.498	3.3	0.796	-8.4	0.586	-1.7	0.865	-0.2	0.988	7.5	0.617
Employment fluidity index/10	U	0.1	0.985	2.1	0.827	22.1	0.036	0.1	0.985	2.1	0.827	22.1	0.036
	M	12.8	0.194	0.7	0.950	-0.4	0.975	6.0	0.545	-5.7	0.640	13.7	0.312
Manufacturing	U	42.0	0.000	20.8	0.014	-9.8	0.346	42.0	0.000	20.8	0.014	-9.8	0.346
	M	-6.9	0.536	-17.3	0.198	-13.7	0.341	-0.9	0.938	-4.7	0.719	-14.3	0.322
Information and communications	U	34.0	0.000	40.0	0.000	63.6	0.000	34.0	0.000	40.0	0.000	63.6	0.000
	M	-4.2	0.749	-2.9	0.856	0.0	1.000	-7.4	0.582	4.4	0.780	5.5	0.767
Transport and postal services	U	-11.0	0.188	9.0	0.282	30.6	0.000	-11.0	0.188	9.0	0.282	30.6	0.000
	M	3.1	0.704	11.3	0.354	16.1	0.303	1.5	0.854	7.8	0.535	-1.6	0.924
Utilities and wholesale and retail trade	U	-11.4	0.142	-28.8	0.005	-25.4	0.027	-11.4	0.142	-28.8	0.005	-25.4	0.027
	M	0.0	1.000	4.9	0.607	-18.6	0.177	0.8	0.937	6.1	0.514	-4.7	0.709
Professional and education services	U	-6.3	0.417	16.7	0.028	-0.3	0.975	-6.3	0.417	16.7	0.028	-0.3	0.975
	M	0.0	1.000	6.3	0.643	-13.8	0.392	0.0	1.000	4.7	0.731	-2.3	0.875
Medical, health care and welfare	U	-18.7	0.023	-5.1	0.590	-25.8	0.048	-18.7	0.023	-5.1	0.590	-25.8	0.048
	M	3.7	0.661	11.3	0.252	0.0	1.000	-0.9	0.917	2.8	0.803	2.9	0.684
Accommodations, food, and personal services	U	-24.1	0.004	-29.0	0.004	-19.6	0.076	-24.1	0.004	-29.0	0.004	-19.6	0.076
	M	8.4	0.283	8.3	0.410	23.0	0.027	5.0	0.536	-3.6	0.741	8.6	0.472
Finance, real estate, and other services	U	0.0	0.998	10.5	0.210	-0.4	0.969	0.0	0.998	10.5	0.210	-0.4	0.969
	M	0.0	1.000	-7.5	0.587	-3.7	0.801	0.0	1.000	-11.2	0.424	6.4	0.632
Prefectural population density (1000 persons/km2)	U	-1.7	0.819	15.3	0.077	17.5	0.069	-1.7	0.819	15.3	0.077	17.5	0.069
	M	2.9	0.769	-8.8	0.480	-3.1	0.839	2.6	0.804	-3.7	0.774	4.1	0.783
Hokkaido	U	4.6	0.504	-9.1	0.359	-4.5	0.675	4.6	0.504	-9.1	0.359	-4.5	0.675
	M	12.8	0.154	8.9	0.315	6.6	0.563	4.8	0.640	-1.1	0.920	5.0	0.677
Tohoku	U	-7.0	0.369	-7.1	0.456	13.9	0.125	-7.0	0.369	-7.1	0.456	13.9	0.125
	M	4.6	0.611	11.0	0.252	-14.7	0.386	-8.6	0.409	5.5	0.603	-8.3	0.615
Kita-Kanto and Koshin	U	3.1	0.668	-4.2	0.648	-2.3	0.826	3.1	0.668	-4.2	0.648	-2.3	0.826
	M	-11.9	0.295	3.5	0.759	8.3	0.519	-5.0	0.648	0.9	0.941	0.0	1.000
Hokuriku	U	7.7	0.261	-2.5	0.785	-26.3	0.045	7.7	0.261	-2.5	0.785	-26.3	0.045
	M	-2.2	0.842	-10.7	0.427	-5.7	0.563	0.6	0.959	-10.7	0.427	0.0	1.000
Tokai	U	3.9	0.593	8.7	0.312	5.8	0.557	3.9	0.593	8.7	0.312	5.8	0.557
	M	-1.4	0.891	10.7	0.387	0.0	1.000	1.1	0.917	4.3	0.737	-4.8	0.748
Kinki	U	-16.4	0.039	1.6	0.859	-13.8	0.202	-16.4	0.039	1.6	0.859	-13.8	0.202
	M	-7.4	0.453	-11.4	0.379	11.1	0.368	-3.7	0.702	-2.9	0.821	4.2	0.748
Chugoku and Shikoku	U	5.6	0.429	-2.9	0.749	-10.2	0.349	5.6	0.429	-2.9	0.749	-10.2	0.349
	M	5.7	0.575	2.8	0.813	3.9	0.758	1.4	0.892	0.0	1.000	-4.8	0.724
Kyushu and Okinawa	U	2.4	0.745	-10.9	0.256	13.6	0.146	2.4	0.745	-10.9	0.256	13.6	0.146
	M	-3.5	0.739	2.8	0.803	-6.2	0.694	0.4	0.966	-2.1	0.858	3.1	0.837

Notes: U and M denote samples before and after matching, respectively.

Table B3: Balancing tests before and after PSM for employment flows in FY2020

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	47.7	0.000	45.3	0.000	45.4	0.000	47.7	0.000	45.3	0.000	45.4	0.000
	M	15.3	0.182	0.3	0.982	16.9	0.244	13.5	0.254	-4.1	0.792	1.9	0.908
Number of insured employees (in hundreds) squared	U	24.0	0.000	13.4	0.219	16.0	0.159	24.0	0.000	13.4	0.219	16.0	0.159
	M	14.8	0.115	4.0	0.552	13.0	0.161	12.3	0.205	0.6	0.936	2.9	0.800
Establishment age (10-year)	U	45.3	0.000	28.3	0.001	11.5	0.231	45.3	0.000	28.3	0.001	11.5	0.231
	M	-10.4	0.350	3.1	0.811	-6.9	0.649	0.7	0.951	-0.3	0.980	-11.2	0.466
Establishment age (10-year) squared	U	46.3	0.000	28.2	0.000	16.7	0.067	46.3	0.000	28.2	0.000	16.7	0.067
	M	-10.7	0.361	4.8	0.720	-4.7	0.760	1.1	0.923	1.6	0.907	-11.0	0.489
Average age of employees (10-year)	U	-33.5	0.000	-45.7	0.000	-67.1	0.000	-33.5	0.000	-45.7	0.000	-67.1	0.000
	M	-5.7	0.512	-15.1	0.152	-8.4	0.539	3.8	0.658	-14.3	0.200	-6.5	0.641
Share of female employees (10%)	U	-32.1	0.000	-9.6	0.322	-7.1	0.519	-32.1	0.000	-9.6	0.322	-7.1	0.519
	M	5.1	0.579	-15.0	0.221	-5.1	0.707	4.2	0.647	-4.6	0.701	-4.4	0.746
Average years of tenure (10-year)	U	20.2	0.007	9.3	0.310	-8.6	0.410	20.2	0.007	9.3	0.310	-8.6	0.410
	M	0.1	0.989	-9.1	0.437	1.6	0.904	3.1	0.761	-0.7	0.955	-3.3	0.810
Share of white-collar employees (10%)	U	16.4	0.033	37.8	0.000	48.8	0.000	16.4	0.033	37.8	0.000	48.8	0.000
	M	7.8	0.421	-35.4	0.009	-4.3	0.778	1.6	0.875	-6.7	0.614	3.4	0.828
Employment fluidity index/10	U	0.3	0.964	1.7	0.860	21.6	0.041	0.3	0.964	1.7	0.860	21.6	0.041
	M	5.8	0.562	16.9	0.107	-24.3	0.137	4.0	0.693	8.6	0.461	-12.9	0.435
Manufacturing	U	42.0	0.000	21.2	0.013	-9.4	0.366	42.0	0.000	21.2	0.013	-9.4	0.366
	M	-17.3	0.123	0.0	1.000	-4.6	0.745	-1.7	0.877	-3.5	0.793	-9.2	0.520
Information and communications	U	34.0	0.000	40.3	0.000	64.1	0.000	34.0	0.000	40.3	0.000	64.1	0.000
	M	4.2	0.739	23.4	0.099	0.0	1.000	-10.0	0.460	15.4	0.301	10.3	0.576
Transport and postal services	U	-11.0	0.186	9.1	0.275	31.0	0.000	-11.0	0.186	9.1	0.275	31.0	0.000
	M	0.0	1.000	19.9	0.080	-3.2	0.850	-1.5	0.863	8.5	0.496	-4.9	0.777
Utilities and wholesale and retail trade	U	-11.5	0.139	-31.5	0.003	-25.0	0.030	-11.5	0.139	-31.5	0.003	-25.0	0.030
	M	0.0	1.000	5.0	0.584	0.0	1.000	-7.5	0.453	6.9	0.440	3.9	0.737
Professional and education services	U	-6.1	0.431	17.0	0.025	-0.2	0.987	-6.1	0.431	17.0	0.025	-0.2	0.987
	M	12.3	0.148	-37.9	0.027	13.9	0.250	8.7	0.327	-11.9	0.438	-1.2	0.936
Medical, health care and welfare	U	-18.8	0.023	-4.8	0.606	-25.6	0.051	-18.8	0.023	-4.8	0.606	-25.6	0.051
	M	5.5	0.502	-22.7	0.122	0.0	1.000	3.2	0.703	-8.5	0.512	-4.3	0.651
Accommodations, food, and personal services	U	-24.0	0.004	-28.6	0.004	-19.0	0.087	-24.0	0.004	-28.6	0.004	-19.0	0.087
	M	8.4	0.283	0.0	1.000	0.0	1.000	4.6	0.572	-8.9	0.437	8.7	0.471
Finance, real estate, and other services	U	-0.1	0.992	10.7	0.203	-4.0	0.702	-0.1	0.992	10.7	0.203	-4.0	0.702
	M	-1.7	0.872	-2.5	0.853	-3.8	0.789	6.7	0.495	-0.6	0.963	-3.8	0.789
Prefectural population density (1000 persons/km2)	U	-1.7	0.815	16.1	0.065	16.1	0.097	-1.7	0.815	16.1	0.065	16.1	0.097
	M	15.5	0.126	6.6	0.598	6.7	0.658	-0.1	0.989	3.5	0.785	3.6	0.810
Hokkaido	U	4.7	0.492	-9.0	0.363	-4.5	0.682	4.7	0.492	-9.0	0.363	-4.5	0.682
	M	-6.4	0.587	4.5	0.653	-20.0	0.250	-5.6	0.632	-12.3	0.346	-6.7	0.653
Tohoku	U	-7.1	0.366	-7.0	0.462	14.1	0.120	-7.1	0.366	-7.0	0.462	14.1	0.120
	M	-18.3	0.105	-7.4	0.556	3.7	0.810	-5.7	0.571	-6.5	0.603	-10.2	0.542
Kita-Kanto and Koshin	U	3.0	0.673	-4.2	0.655	-2.1	0.839	3.0	0.673	-4.2	0.655	-2.1	0.839
	M	-8.0	0.474	-7.0	0.584	-16.7	0.299	-4.0	0.713	-5.3	0.676	-6.2	0.674
Hokuriku	U	7.8	0.257	-2.4	0.792	-26.3	0.046	7.8	0.257	-2.4	0.792	-26.3	0.046
	M	-15.6	0.203	-14.3	0.304	0.0	1.000	-0.6	0.960	-9.0	0.501	0.0	1.000
Tokai	U	3.8	0.600	9.0	0.293	6.2	0.533	3.8	0.600	9.0	0.293	6.2	0.533
	M	-10.1	0.353	12.9	0.294	5.5	0.701	-2.2	0.837	13.4	0.273	6.9	0.629
Kinki	U	-16.3	0.039	2.1	0.814	-13.3	0.217	-16.3	0.039	2.1	0.814	-13.3	0.217
	M	8.8	0.317	0.0	1.000	5.6	0.665	2.6	0.780	2.4	0.848	-1.4	0.917
Chugoku and Shikoku	U	5.6	0.426	-5.7	0.544	-9.8	0.370	5.6	0.426	-5.7	0.544	-9.8	0.370
	M	3.8	0.713	-8.7	0.496	15.6	0.150	5.7	0.575	-2.2	0.858	3.9	0.758
Kyushu and Okinawa	U	2.5	0.735	-10.7	0.266	13.9	0.139	2.5	0.735	-10.7	0.266	13.9	0.139
	M	10.7	0.269	8.4	0.427	-6.3	0.693	2.2	0.829	3.5	0.753	7.1	0.636

Notes: U and M denote samples before and after matching, respectively.

Table B4: Balancing tests before and after PSM for employment flows in FY2021

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	47.3	0.000	44.9	0.000	45.5	0.000	47.3	0.000	44.9	0.000	45.5	0.000
	M	14.5	0.219	-1.5	0.917	9.4	0.574	11.7	0.338	-3.9	0.809	1.7	0.922
Number of insured employees (in hundreds) squared	U	23.8	0.000	13.3	0.222	16.0	0.158	23.8	0.000	13.3	0.222	16.0	0.158
	M	12.8	0.187	3.7	0.588	4.0	0.728	9.6	0.364	-0.9	0.918	1.5	0.895
Establishment age (10-year)	U	42.6	0.000	28.7	0.001	11.8	0.218	42.6	0.000	28.7	0.001	11.8	0.218
	M	4.3	0.692	-7.0	0.578	-20.1	0.205	4.1	0.712	-3.7	0.778	-8.2	0.596
Establishment age (10-year) squared	U	44.2	0.000	28.4	0.000	16.8	0.064	44.2	0.000	28.4	0.000	16.8	0.064
	M	6.2	0.589	-2.7	0.834	-24.0	0.157	3.8	0.740	-2.5	0.855	-9.4	0.561
Average age of employees (10-year)	U	-35.0	0.000	-44.8	0.000	-65.9	0.000	-35.0	0.000	-44.8	0.000	-65.9	0.000
	M	11.9	0.174	-18.3	0.120	-4.4	0.738	8.5	0.332	-7.3	0.512	1.1	0.938
Share of female employees (10%)	U	-32.3	0.000	-7.9	0.410	-8.5	0.440	-32.3	0.000	-7.9	0.410	-8.5	0.440
	M	6.8	0.454	-9.2	0.425	-4.3	0.739	0.8	0.935	-2.5	0.832	-7.1	0.600
Average years of tenure (10-year)	U	17.5	0.021	9.1	0.319	-8.4	0.420	17.5	0.021	9.1	0.319	-8.4	0.420
	M	6.3	0.516	0.8	0.943	-16.0	0.257	-1.5	0.880	-0.6	0.961	-2.1	0.877
Share of white-collar employees (10%)	U	16.3	0.034	36.7	0.000	46.0	0.000	16.3	0.034	36.7	0.000	46.0	0.000
	M	11.5	0.248	-2.8	0.834	2.3	0.883	4.1	0.680	2.5	0.849	5.2	0.735
Employment fluidity index/10	U	1.2	0.870	2.7	0.782	21.9	0.038	1.2	0.870	2.7	0.782	21.9	0.038
	M	0.0	0.997	-18.7	0.165	-4.7	0.749	-1.5	0.885	-0.7	0.950	2.2	0.872
Manufacturing	U	40.3	0.000	20.6	0.015	-9.3	0.375	40.3	0.000	20.6	0.015	-9.3	0.375
	M	4.6	0.676	1.7	0.895	-13.8	0.340	2.6	0.814	-3.0	0.818	-4.0	0.775
Information and communications	U	33.9	0.000	40.0	0.000	61.8	0.000	33.9	0.000	40.0	0.000	61.8	0.000
	M	-10.6	0.437	5.8	0.707	-6.4	0.738	-15.3	0.269	8.0	0.602	7.2	0.696
Transport and postal services	U	-11.5	0.172	8.9	0.288	31.0	0.000	-11.5	0.172	8.9	0.288	31.0	0.000
	M	-12.2	0.242	0.0	1.000	6.5	0.693	-5.3	0.571	7.1	0.575	0.0	1.000
Utilities and wholesale and retail trade	U	-11.8	0.132	-28.7	0.005	-25.2	0.029	-11.8	0.132	-28.7	0.005	-25.2	0.029
	M	0.0	1.000	7.3	0.427	0.0	1.000	0.0	1.000	0.6	0.951	-1.6	0.898
Professional and education services	U	-6.1	0.431	16.6	0.028	-0.1	0.991	-6.1	0.431	16.6	0.028	-0.1	0.991
	M	2.0	0.830	-9.4	0.530	0.0	1.000	4.1	0.661	-0.8	0.956	2.3	0.869
Medical, health care and welfare	U	-19.2	0.020	-5.2	0.583	-25.7	0.050	-19.2	0.020	-5.2	0.583	-25.7	0.050
	M	1.8	0.830	11.3	0.252	0.0	1.000	4.1	0.620	8.5	0.414	1.4	0.850
Accommodations, food, and personal services	U	-20.7	0.012	-28.5	0.004	-19.1	0.086	-20.7	0.012	-28.5	0.004	-19.1	0.086
	M	5.2	0.536	-2.1	0.849	5.8	0.639	-3.9	0.671	-6.7	0.548	-5.1	0.703
Finance, real estate, and other services	U	-0.1	0.990	10.4	0.216	-0.1	0.990	-0.1	0.990	10.4	0.216	-0.1	0.990
	M	0.0	1.000	-9.9	0.475	11.1	0.392	5.0	0.613	-5.0	0.714	1.9	0.895
Prefectural population density (1000 persons/km2)	U	-2.3	0.757	15.4	0.076	16.0	0.099	-2.3	0.757	15.4	0.076	16.0	0.099
	M	6.9	0.506	-5.3	0.678	-14.9	0.329	4.0	0.695	0.7	0.958	-3.7	0.808
Hokkaido	U	4.6	0.506	-9.0	0.363	-4.4	0.684	4.6	0.506	-9.0	0.363	-4.4	0.684
	M	-6.4	0.587	-4.4	0.703	13.4	0.157	-1.6	0.886	-11.1	0.385	5.0	0.677
Tohoku	U	-6.8	0.387	-7.1	0.459	14.2	0.118	-6.8	0.387	-7.1	0.459	14.2	0.118
	M	0.0	1.000	0.0	1.000	3.7	0.810	0.6	0.952	2.8	0.803	-5.6	0.733
Kita-Kanto and Koshin	U	3.0	0.680	-4.2	0.650	-2.0	0.851	3.0	0.680	-4.2	0.650	-2.0	0.851
	M	-8.0	0.474	0.0	1.000	0.0	1.000	-7.5	0.500	4.4	0.698	0.0	1.000
Hokuriku	U	7.5	0.280	-2.6	0.777	-26.2	0.046	7.5	0.280	-2.6	0.777	-26.2	0.046
	M	4.4	0.674	-7.1	0.584	0.0	1.000	2.2	0.837	-8.0	0.542	0.0	1.000
Tokai	U	4.0	0.580	8.7	0.311	6.3	0.527	4.0	0.580	8.7	0.311	6.3	0.527
	M	-5.8	0.589	8.5	0.494	-5.5	0.714	-2.2	0.837	4.8	0.705	-2.1	0.889
Kinki	U	-15.8	0.046	1.5	0.864	-13.4	0.216	-15.8	0.046	1.5	0.864	-13.4	0.216
	M	10.4	0.238	9.5	0.430	0.0	1.000	-0.4	0.969	-5.7	0.654	1.4	0.916
Chugoku and Shikoku	U	5.8	0.414	-3.0	0.739	-10.0	0.360	5.8	0.414	-3.0	0.739	-10.0	0.360
	M	0.0	1.000	2.8	0.813	0.0	1.000	1.4	0.892	-0.7	0.954	5.8	0.636
Kyushu and Okinawa	U	2.6	0.721	-10.9	0.255	13.9	0.137	2.6	0.721	-10.9	0.255	13.9	0.137
	M	1.8	0.863	5.5	0.607	12.5	0.386	1.3	0.897	6.9	0.514	6.3	0.676

Notes: U and M denote samples before and after matching, respectively.

Table B5: Balancing tests before and after PSM for employment flows in FY2022

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	46.9	0.000	44.6	0.000	44.9	0.000	46.9	0.000	44.6	0.000	44.9	0.000
	M	8.5	0.470	4.1	0.776	4.4	0.780	11.5	0.339	-4.1	0.797	0.4	0.979
Number of insured employees (in hundreds) squared	U	23.7	0.000	13.1	0.232	15.8	0.161	23.7	0.000	13.1	0.232	15.8	0.161
	M	11.4	0.239	4.8	0.477	6.3	0.548	10.8	0.293	-1.3	0.882	2.1	0.855
Establishment age (10-year)	U	41.5	0.000	26.9	0.002	10.6	0.265	41.5	0.000	26.9	0.002	10.6	0.265
	M	-4.6	0.677	-1.8	0.887	-11.7	0.433	4.8	0.662	3.9	0.767	-16.6	0.275
Establishment age (10-year) squared	U	43.2	0.000	27.1	0.001	16.0	0.078	43.2	0.000	27.1	0.001	16.0	0.078
	M	-3.5	0.760	0.1	0.996	-8.1	0.606	5.9	0.607	3.6	0.792	-14.9	0.352
Average age of employees (10-year)	U	-35.0	0.000	-44.5	0.000	-66.8	0.000	-35.0	0.000	-44.5	0.000	-66.8	0.000
	M	-0.8	0.929	-0.9	0.931	-4.8	0.716	4.8	0.587	-1.3	0.903	-6.8	0.604
Share of female employees (10%)	U	-32.6	0.000	-7.0	0.465	-8.4	0.447	-32.6	0.000	-7.0	0.465	-8.4	0.447
	M	5.8	0.520	1.2	0.918	-20.7	0.124	-4.0	0.668	-4.7	0.688	-7.0	0.595
Average years of tenure (10-year)	U	16.9	0.026	9.0	0.324	-9.5	0.363	16.9	0.026	9.0	0.324	-9.5	0.363
	M	-4.5	0.656	0.8	0.942	5.9	0.650	0.6	0.955	3.1	0.798	-7.3	0.588
Share of white-collar employees (10%)	U	15.9	0.039	35.4	0.000	47.5	0.000	15.9	0.039	35.4	0.000	47.5	0.000
	M	9.8	0.313	-2.9	0.820	1.8	0.909	-5.3	0.606	0.6	0.965	7.1	0.639
Employment fluidity index/10	U	0.8	0.915	1.9	0.846	22.1	0.036	0.8	0.915	1.9	0.846	22.1	0.036
	M	4.6	0.640	-4.5	0.725	-1.0	0.943	-3.4	0.744	-2.1	0.868	12.5	0.358
Manufacturing	U	39.7	0.000	20.4	0.017	-9.8	0.345	39.7	0.000	20.4	0.017	-9.8	0.345
	M	-3.5	0.755	-15.6	0.245	-11.4	0.425	4.6	0.676	-6.5	0.624	-9.2	0.521
Information and communications	U	33.8	0.000	38.3	0.000	63.6	0.000	33.8	0.000	38.3	0.000	63.6	0.000
	M	-2.1	0.872	0.0	1.000	-3.1	0.868	-14.8	0.285	6.0	0.699	3.1	0.866
Transport and postal services	U	-11.5	0.172	8.8	0.291	30.6	0.000	-11.5	0.172	8.8	0.291	30.6	0.000
	M	3.0	0.704	22.7	0.039	16.0	0.303	2.3	0.779	12.1	0.322	1.6	0.923
Utilities and wholesale and retail trade	U	-12.2	0.120	-28.4	0.006	-25.4	0.027	-12.2	0.120	-28.4	0.006	-25.4	0.027
	M	6.0	0.514	0.0	1.000	-18.6	0.177	5.7	0.542	0.6	0.951	-5.4	0.665
Professional and education services	U	-5.9	0.444	17.6	0.020	-0.3	0.974	-5.9	0.444	17.6	0.020	-0.3	0.974
	M	0.0	1.000	15.9	0.211	4.6	0.735	2.6	0.788	5.6	0.687	0.0	1.000
Medical, health care and welfare	U	-19.4	0.019	-5.4	0.567	-25.8	0.048	-19.4	0.019	-5.4	0.567	-25.8	0.048
	M	1.8	0.830	0.0	1.000	0.0	1.000	-3.7	0.685	-3.8	0.759	1.4	0.850
Accommodations, food, and personal services	U	-19.9	0.016	-27.2	0.006	-19.5	0.078	-19.9	0.016	-27.2	0.006	-19.5	0.078
	M	6.9	0.400	-2.1	0.849	11.5	0.325	-0.4	0.961	-10.5	0.365	4.3	0.728
Finance, real estate, and other services	U	-0.3	0.972	10.2	0.224	-0.4	0.968	-0.3	0.972	10.2	0.224	-0.4	0.968
	M	-6.7	0.531	-5.0	0.714	0.0	1.000	-0.4	0.968	2.5	0.849	1.8	0.895
Prefectural population density (1000 persons/km2)	U	-2.4	0.740	16.2	0.063	17.6	0.068	-2.4	0.740	16.2	0.063	17.6	0.068
	M	-7.0	0.511	-5.0	0.693	-8.6	0.570	1.8	0.860	6.0	0.635	4.3	0.775
Hokkaido	U	4.5	0.513	-9.3	0.350	-4.6	0.674	4.5	0.513	-9.3	0.350	-4.6	0.674
	M	12.8	0.154	4.4	0.653	6.6	0.563	4.0	0.700	-16.7	0.222	3.3	0.789
Tohoku	U	-6.5	0.405	-6.8	0.475	13.9	0.126	-6.5	0.405	-6.8	0.475	13.9	0.126
	M	-18.5	0.105	7.4	0.474	-7.4	0.653	-9.8	0.354	6.5	0.538	-9.2	0.578
Kita-Kanto and Koshin	U	2.6	0.719	-4.8	0.608	-2.3	0.825	2.6	0.719	-4.8	0.608	-2.3	0.825
	M	6.0	0.550	-14.0	0.304	8.3	0.519	1.5	0.886	-4.4	0.726	2.1	0.880
Hokuriku	U	7.6	0.274	-2.7	0.767	-26.3	0.045	7.6	0.274	-2.7	0.767	-26.3	0.045
	M	-11.1	0.350	7.1	0.521	0.0	1.000	-2.2	0.842	0.9	0.941	-1.4	0.868
Tokai	U	4.0	0.580	6.8	0.432	5.8	0.558	4.0	0.580	6.8	0.432	5.8	0.558
	M	-1.4	0.891	6.5	0.604	5.5	0.701	-4.7	0.659	3.8	0.765	-2.1	0.889
Kinki	U	-16.0	0.043	2.1	0.815	-13.8	0.201	-16.0	0.043	2.1	0.815	-13.8	0.201
	M	4.4	0.628	0.0	1.000	-2.8	0.837	1.8	0.843	-5.3	0.681	4.2	0.748
Chugoku and Shikoku	U	5.8	0.417	-3.2	0.729	-10.3	0.348	5.8	0.417	-3.2	0.729	-10.3	0.348
	M	7.7	0.448	-14.1	0.295	11.6	0.308	5.3	0.609	-6.4	0.619	-4.8	0.724
Kyushu and Okinawa	U	3.1	0.673	-10.2	0.289	13.6	0.147	3.1	0.673	-10.2	0.289	13.6	0.147
	M	1.8	0.863	2.8	0.803	-9.3	0.560	-3.1	0.770	5.6	0.607	0.8	0.959

Notes: U and M denote samples before and after matching, respectively.

Table B6: Balancing tests before and after PSM for employment flows in FY2023

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	46.8	0.000	44.4	0.000	45.3	0.000	46.8	0.000	44.4	0.000	45.3	0.000
	M	10.2	0.385	-11.4	0.514	11.5	0.458	14.6	0.219	-5.9	0.722	-5.4	0.767
Number of insured employees (in hundreds) squared	U	23.7	0.000	13.0	0.239	16.0	0.162	23.7	0.000	13.0	0.239	16.0	0.162
	M	12.6	0.188	-7.5	0.500	8.9	0.380	12.7	0.210	-3.7	0.714	-4.6	0.723
Establishment age (10-year)	U	40.3	0.000	26.0	0.002	11.9	0.216	40.3	0.000	26.0	0.002	11.9	0.216
	M	16.1	0.141	-15.8	0.240	-18.2	0.255	6.6	0.552	-4.4	0.737	-14.3	0.360
Establishment age (10-year) squared	U	41.9	0.000	26.6	0.001	16.9	0.064	41.9	0.000	26.6	0.001	16.9	0.064
	M	16.0	0.157	-17.2	0.222	-22.5	0.191	5.4	0.641	-4.6	0.741	-15.1	0.355
Average age of employees (10-year)	U	-35.1	0.000	-48.2	0.000	-65.6	0.000	-35.1	0.000	-48.2	0.000	-65.6	0.000
	M	8.0	0.382	-12.1	0.268	-0.5	0.972	10.4	0.254	-2.3	0.836	-3.2	0.812
Share of female employees (10%)	U	-32.5	0.000	-8.8	0.364	-7.2	0.513	-32.5	0.000	-8.8	0.364	-7.2	0.513
	M	-6.6	0.491	-2.9	0.809	17.4	0.195	-7.2	0.440	-2.9	0.808	-0.2	0.986
Average years of tenure (10-year)	U	16.3	0.033	7.9	0.389	-8.1	0.438	16.3	0.033	7.9	0.389	-8.1	0.438
	M	7.1	0.486	-13.9	0.279	-9.5	0.502	3.8	0.705	-0.9	0.939	-9.2	0.503
Share of white-collar employees (10%)	U	16.3	0.035	35.9	0.000	44.7	0.000	16.3	0.035	35.9	0.000	44.7	0.000
	M	-8.9	0.393	-2.6	0.844	28.9	0.053	-4.6	0.656	4.1	0.752	12.9	0.399
Employment fluidity index/10	U	1.9	0.796	2.3	0.810	21.7	0.040	1.9	0.796	2.3	0.810	21.7	0.040
	M	-10.5	0.341	7.6	0.518	-8.9	0.604	-2.6	0.806	1.0	0.935	0.3	0.984
Manufacturing	U	38.8	0.000	20.0	0.020	-9.1	0.386	38.8	0.000	20.0	0.020	-9.1	0.386
	M	12.8	0.242	-15.7	0.244	-4.7	0.744	4.1	0.713	-8.3	0.535	-5.2	0.714
Information and communications	U	34.1	0.000	38.4	0.000	62.3	0.000	34.1	0.000	38.4	0.000	62.3	0.000
	M	-17.0	0.225	6.0	0.699	19.4	0.280	-16.5	0.239	9.0	0.556	9.7	0.600
Transport and postal services	U	-11.4	0.177	8.8	0.294	31.1	0.000	-11.4	0.177	8.8	0.294	31.1	0.000
	M	3.1	0.704	17.1	0.144	-16.3	0.363	1.5	0.854	10.0	0.422	-0.8	0.962
Utilities and wholesale and retail trade	U	-11.7	0.137	-28.2	0.006	-24.9	0.031	-11.7	0.137	-28.2	0.006	-24.9	0.031
	M	0.0	1.000	2.5	0.803	3.2	0.789	3.8	0.688	1.9	0.852	-2.4	0.849
Professional and education services	U	-5.9	0.448	17.9	0.018	0.9	0.926	-5.9	0.448	17.9	0.018	0.9	0.926
	M	6.2	0.502	3.2	0.821	0.0	1.000	2.1	0.830	-0.8	0.956	4.7	0.734
Medical, health care and welfare	U	-19.2	0.021	-5.6	0.556	-25.8	0.050	-19.2	0.021	-5.6	0.556	-25.8	0.050
	M	1.9	0.830	0.0	1.000	5.8	0.319	3.2	0.703	-0.9	0.937	1.4	0.850
Accommodations, food, and personal services	U	-20.7	0.013	-28.3	0.005	-18.3	0.101	-20.7	0.013	-28.3	0.005	-18.3	0.101
	M	0.0	1.000	-8.6	0.452	-5.9	0.665	-4.9	0.595	-10.7	0.353	-5.9	0.665
Finance, real estate, and other services	U	-0.3	0.965	10.5	0.212	-3.7	0.724	-0.3	0.965	10.5	0.212	-3.7	0.724
	M	-13.5	0.225	5.0	0.699	7.7	0.554	-1.3	0.903	6.9	0.591	2.9	0.832
Prefectural population density (1000 persons/km2)	U	-1.9	0.795	17.6	0.044	17.0	0.082	-1.9	0.795	17.6	0.044	17.0	0.082
	M	-11.8	0.269	-14.4	0.264	21.1	0.147	-1.5	0.889	-4.0	0.759	7.8	0.600
Hokkaido	U	5.0	0.469	-9.1	0.362	-4.1	0.704	5.0	0.469	-9.1	0.362	-4.1	0.704
	M	0.0	1.000	0.0	1.000	6.8	0.563	-3.2	0.778	-4.5	0.703	1.7	0.897
Tohoku	U	-9.1	0.260	-6.5	0.499	11.1	0.235	-9.1	0.260	-6.5	0.499	11.1	0.235
	M	-2.4	0.805	0.0	1.000	-30.7	0.093	-4.2	0.671	0.9	0.935	-13.4	0.426
Kita-Kanto and Koshin	U	2.9	0.692	-4.9	0.602	-2.0	0.847	2.9	0.692	-4.9	0.602	-2.0	0.847
	M	6.0	0.550	3.5	0.759	-8.4	0.581	-3.5	0.746	5.3	0.638	2.1	0.880
Hokuriku	U	7.4	0.290	-2.8	0.764	-26.3	0.047	7.4	0.290	-2.8	0.764	-26.3	0.047
	M	-8.9	0.448	3.6	0.759	0.0	1.000	-1.7	0.881	0.0	1.000	1.4	0.850
Tokai	U	4.4	0.551	6.7	0.443	6.6	0.506	4.4	0.551	6.7	0.443	6.6	0.506
	M	7.3	0.473	10.9	0.376	-2.8	0.853	-0.4	0.972	0.5	0.966	2.1	0.887
Kinki	U	-15.8	0.047	2.5	0.777	-13.0	0.229	-15.8	0.047	2.5	0.777	-13.0	0.229
	M	-1.5	0.876	-1.9	0.880	-5.7	0.685	1.1	0.906	-2.4	0.850	2.1	0.874
Chugoku and Shikoku	U	6.8	0.338	-3.0	0.744	-9.9	0.371	6.8	0.338	-3.0	0.744	-9.9	0.371
	M	21.4	0.018	-2.8	0.821	11.7	0.308	7.3	0.478	2.8	0.812	-2.0	0.884
Kyushu and Okinawa	U	3.4	0.639	-12.9	0.189	14.7	0.116	3.4	0.639	-12.9	0.189	14.7	0.116
	M	1.8	0.863	0.0	1.000	0.0	1.000	3.2	0.761	-2.9	0.803	-3.2	0.841

Notes: U and M denote samples before and after matching, respectively.

Table B7: Balancing tests before and after PSM for business activity level

Variable		k=1						k=4					
		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022		Receipt ended in FY2020		Receipt ended in FY2021		Receipt ended in FY2022	
		Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)	Std. bias (%)	t-test (p-value)
Number of insured employees (in hundreds)	U	37.3	0.000	35.5	0.015	42.3	0.007	37.3	0.000	35.5	0.015	42.3	0.007
	M	2.5	0.883	-9.7	0.658	-4.5	0.864	6.5	0.699	-4.3	0.843	9.9	0.671
Number of insured employees (in hundreds) squared	U	12.6	0.349	3.8	0.851	10.7	0.606	12.6	0.349	3.8	0.851	10.7	0.606
	M	4.2	0.667	-0.8	0.891	-6.2	0.719	5.2	0.606	-0.1	0.985	4.8	0.731
Establishment age (10-year)	U	16.7	0.129	14.8	0.311	-11.2	0.499	16.7	0.129	14.8	0.311	-11.2	0.499
	M	19.8	0.226	-10.0	0.634	6.6	0.789	0.6	0.973	-0.7	0.974	4.0	0.864
Establishment age (10-year) squared	U	22.2	0.040	19.3	0.178	-11.1	0.502	22.2	0.040	19.3	0.178	-11.1	0.502
	M	21.1	0.197	-4.9	0.826	-2.4	0.921	0.6	0.970	2.5	0.910	2.3	0.922
Average age of employees (10-year)	U	-42.1	0.001	-71.5	0.000	-79.8	0.000	-42.1	0.001	-71.5	0.000	-79.8	0.000
	M	14.2	0.329	-7.2	0.676	18.3	0.361	6.0	0.668	-8.5	0.650	12.8	0.543
Share of female employees (10%)	U	-38.5	0.001	-34.6	0.030	-1.5	0.932	-38.5	0.001	-34.6	0.030	-1.5	0.932
	M	-15.4	0.296	-22.0	0.305	-10.0	0.637	-8.6	0.563	-5.9	0.769	-1.1	0.962
Average years of tenure (10-year)	U	9.8	0.404	18.0	0.217	-9.3	0.571	9.8	0.404	18.0	0.217	-9.3	0.571
	M	26.2	0.101	1.2	0.952	24.6	0.245	5.9	0.715	-4.1	0.857	21.8	0.307
Share of white-collar employees (10%)	U	23.4	0.040	36.8	0.011	29.0	0.051	23.4	0.040	36.8	0.011	29.0	0.051
	M	-3.2	0.852	-10.3	0.654	21.9	0.378	-8.1	0.623	4.6	0.839	10.4	0.678
Employment fluidity index/10	U	5.4	0.582	-12.9	0.453	14.7	0.328	5.4	0.582	-12.9	0.453	14.7	0.328
	M	-20.1	0.267	9.7	0.564	-14.8	0.540	-4.4	0.802	-3.9	0.833	-7.1	0.759
Prefectural population density (1000 persons/km2)	U	0.9	0.937	14.3	0.355	12.0	0.456	0.9	0.937	14.3	0.355	12.0	0.456
	M	-27.1	0.117	24.4	0.260	9.4	0.690	-12.5	0.448	15.3	0.463	4.3	0.856

Notes: U and M denote samples before and after matching, respectively.