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Temporary Work Contracts and Female Labor Market Outcomes *

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Abstract

How does initial placement in a temporary work contract affect workers' subsequent labor market outcomes? To provide insight on this question, we study a unique set of natural experiments: In the mid-1990s, the major firms in the Japanese airline industry changed personnel policy so that all newlyhired flight attendants were employed on temporary employment contracts, while incumbent workers remained on permanent employment contracts. Workers who were hired on temporary contracts and remained at the firms were transitioned to permanent contracts after three years; however, their salaries were approximately half of those permanent workers in their first three years, and the policy change made it difficult for workers to take parental leave for the first four years. The reverse policy change occurred in the mid-2010s: the major firms transitioned back to hiring their flight attendants on permanent contracts. The firms also transitioned all incumbent flight attendants on temporary contracts to permanent contracts. These industry-level hiring practices provide natural experiments that can be used to study whether starting on temporary contracts matters for long-run career and family outcomes for young workers. Our research design uses the universe of employment records from one of Japan's major airlines as well as government surveys to compare outcomes for cohorts of flight attendants hired just before to those hired just after these changes in industry policy. The first key outcome we study is job separation: we find that workers starting on temporary contracts were less likely to remain with the firm over time. These separations appear to have been initiated by workers, not by firms. We are also able to study the effects these policies had on family formation. We find that workers starting on temporary contracts are significantly less likely to have children within 10 years after starting the job. These findings do not appear to be the result of selection on observables.

Keywords: Temporary Work Contract, Separation, Family Formation

JEL classification: J08, J16, J63

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1 Introduction

Temporary work contracts promise firms and workers increased flexibility, particularly in labor markets characterized by high degrees of rigidity. At the same time, these contracts are typically a worse deal for workers relative to permanent contracts since they are associated with employment uncertainty, low pay, a lack of fringe benefits, and limited eligibility for social insurance. There is growing pressure from policymakers and workers to move away from using temporary contracts. For example, members of the United Auto Workers went on a 40-day strike against General Motors in 2019, in part to negotiate better compensation for temporary workers and a path to permanent employment.¹ Despite the growing interest in the consequences of temporary contracts, little is known about the effects of holding temporary contracts on young workers' subsequent labor market and family outcomes.

In this paper, we study the causal effect of starting a career on a temporary contract, as opposed to a permanent contract. We follow (1) labor market outcomes and (2) family formation of new graduates over 15 years. It is especially important to know the impacts of holding temporary contracts on young workers, since the first few years after entering the labor market are an important period for their subsequent career development, as shown by a number of studies.² Further, having a temporary contract as an initial job may affect young workers' family formation through multiple channels, a channel that has so far received limited empirical attention in the study of initial career placement. Fertility responds positively to income when children are assumed to be normal goods (Becker, 1960). Several studies in other contexts have found evidence that is consistent with this prediction: positive income shocks are associated with increased fertility (Lovenheim and Mumford, 2013), and adverse

¹It had become common practice at General Motors to hire workers on temporary contracts. The union sought to convert temporary employees to permanent employees and shorten the eight-year time period for a new worker at GM to reach full pay. Source: "UAW Reaches Tentative Labor Deal With GM." *Wall Street Journal.* 10/16/2019.

²See, for example, Topel and Ward (1992); Oyer (2006); Kahn (2010); Genda et al. (2010); Oreopoulos et al. (2012); Altonji et al. (2016); Schwandt and von Wachter (2019); von Wachter (2020) on the importance of initial jobs for subsequent labor market outcomes. In the first 10 years of employment, young workers experience steep wage growth (Card, 1999) and high job mobility (Topel and Ward, 1992).

income shocks such as unemployment are associated with decreased fertility (Del Bono et al., 2012; Currie and Schwandt, 2020). We predict that having a temporary contract, relative to a permanent contract, adversely affects labor market outcomes for young workers.

The key challenge to establish the causal effects of having a temporary contract as an initial job is that it is difficult to disentangle the effects of holding temp jobs from the selection that causes workers to hold temp jobs initially. To overcome this challenge, we study natural experiments where workers were subject to industry-wide changes in their contract type. As a result, workers' contract type was determined by the corporate policy of the firm, and was outside the control of the worker.

In particular, we study two related natural experiments that occurred decades apart. The first natural experiment we study comes from the mid-1990s, when the major firms in the Japanese airline industry cooperated on a new industry-wide hiring policy: all newly-hired flight attendants would be hired on temporary contracts instead of the standard permanent contract. Industry leaders cited global competitive forces for the change in hiring practices. Workers were promised a permanent contract after three years of continuous employment if they met standard performance goals; thus, long-run incentives were unchanged. There were no other major differences in work responsibilities; workers on temporary contracts performed the same tasks alongside workers hired on permanent contracts. Importantly, this variation in initial contract type was outside of the control of the job applicants since applicants would have already received a job offer by the time policy was implemented. And because the policy was applied to all new hires, assignment to temporary contracts was unrelated to worker characteristics.

The second natural experiment we study occurred in the mid-2010s, and is the reverse experiment. The major firms in the airline industry decided to again hire new flight attendants on permanent contracts, instead of using temporary contracts. In addition, all flight attendants who were still on temporary contracts were transitioned to a permanent contract. Again, this policy change was not correlated with workers' characteristics, and the timing was exogenous from the perspective of the workers.

These natural experiments provide an opportunity to estimate the causal effects of initial placement into temporary contracts. Our research design compares outcomes for cohorts hired in the years before to those hired after the change in industry policy. To study these policy changes, we use detailed personnel records from one of Japan's major airlines,³ along-side employer-employee matched survey data from government sources.

Our main findings are as follows: Women hired on temporary contracts are 18 percentage points (144 percent) less likely to stay with the firm after three years and 11 percentage points (27 percent) less likely after ten years. Workers on temporary contracts experience 58 percent deductions in earnings in the first three years, although these earnings differences fade away over time.

The personnel records allow us to decompose separations into four different reasons: contract ends, job-to-job transition, marriage, and other "personal reasons." We find that only a small number separate due to contractual reasons initiated by the firms. Instead, workers appear to initiate most separations: workers are 3 percentage points more likely to separate with a job-to-job transition within their first three years of employment and 6 percentage points more likely in their first 10 years. This rise in job-to-job transitions after the policy change may be explained by better outside options given the lower starting wage. Relatedly, some workers may find current wages below their reservation wage and exit the formal labor market. We find workers are 3 percentage points more likely to separate due to marriage after three years with the firm, and 8 percentage points more likely to separate due to personal reasons during this time.

We also find long-tenure workers hired on temporary contracts are 13 percentage points less likely to have a child, compared to those hired on a permanent contract in the immediate years prior. Combined with our large effects on retention, these large differences in childbirth outcomes may come from selection into who stays with the firm. These results are also

³As part of our data agreement, we cannot reveal the name of the company.

consistent with job-to-job transitions disrupting family formation, perhaps due to the need to train for a new career.

We next explore mechanisms behind our findings: starting salaries while on the temporary contract, timing of promotion, and the right to access parental leave during this period. Lower wages and limited promotion prospects may cause higher separation and delayed childbirth, as we discussed above. Japan has paid and job-protected parental leave since 1992, but it *only* covers workers on permanent contracts. Workers hired on temporary contracts after the policy change would not have been eligible for these benefits until four years after they were hired (i.e., one year after they became a permanent worker).⁴

This paper proceeds as follows: We begin with a brief discussion of related literature in Section 1.1. Section 2 discusses the datasets used in this paper. Section 3 provides institutional background on the Japanese airline industry, temporary contracts and family leave policies. Section 4 describes the details of the policy change in the airline industry. Section 5 lays out the empirical strategy and Section 6 presents our results. Section 8 concludes.

1.1 Related Literature

Our work is closely related to studies on initial job placement and long-run worker outcomes. Several studies have found initial job placement to be an important determinant of long term success in the labor market (Oyer, 2006; Kahn, 2010; Genda et al., 2010; Oreopoulos et al., 2012; Altonji et al., 2016; Borgschulte and Martorell, 2018; Schwandt and von Wachter, 2019).⁵ One vein of this research examines workers who graduate in a recession, and finds they experience lower wages and fill lower-level occupations over the course of their careers. Workers who started to work for lower-paying employers appear to gradually re-

⁴Temporary workers still had access to two months of maternity leave. Since 1958, Japan has had universal maternity leave and employment protection for the two months following birth. These benefits apply to all workers, including temporary workers. Parental leave benefits were eventually extended to temporary workers, but not until 2005.

⁵See, von Wachter (2020) for reviews of papers.

cover, mainly by eventually switching to better firms, but negative effects persist for at least a decade (Kahn, 2010; Oreopoulos et al., 2012). These adverse effects are observed among various socioeconomic groups,⁶ but persistent earnings and wage reductions are especially pronounced among workers from less advantaged backgrounds (Schwandt and von Wachter, 2019). This previous research would suggest that having a temporary contract as a first job will have long term consequences.

We will also investigate how initial placement affects subsequent family outcomes, such as the probability of having a child. Joint work and childbirth decisions are important to examine. A large and ever-growing literature finds that childbirth is an important source of the gender wage gap (e.g. Bertrand et al., 2010; Angelov et al., 2016; Adda et al., 2017; Kleven et al., 2019). To our knowledge, there are surprisingly few studies examining how initial job placement impacts work and childbirth decisions. Currie and Schwandt (2020) find that experiencing high rates of unemployment during childbearing years is associated with lower rates of childbirth. Schwandt and von Wachter (2020) find that the cohort graduating during the 1980-82 recessions are less likely to be married, more likely to be divorced, and experience higher rates of childbearness. As discussed in Currie and Schwandt (2020), one challenge facing the literature is that the causal effects of initial placement on family outcomes may be difficult to establish because of potential assortative mating among cohorts. This is not as much of an issue in our context because the policy change only impacted specific cohorts of women at our firm.

Since temporary workers work alongside permanent workers in our context, our paper also relates to the literature on relative pay in the workplace. Inequality in worker compensation among peers may affect workers' utilities (Clark and Oswald, 1996). Workers

⁶Earlier studies mostly focused on white men with a college degree (Kahn (2010) in the US and Oreopoulos et al. (2012) in Canada). Other studies focused on specific education and occupation groups, for example, military service members (Borgschulte and Martorell, 2018), Ph.D. economists (Oyer, 2006) in the US. Genda et al. (2010) included men with different education levels in the analysis, and Altonji et al. (2016) included college-educated women in the US. Schwandt and von Wachter (2019) investigated men and women with varying levels of education in the US.

respond to higher relative wages with increased work effort (Akerlof and Yellen, 1990).⁷ Recent studies have investigated how income relative to peers affects job satisfaction and job search intentions and happiness. Card et al. (2012) find that workers are more likely to search for a new job and have lower job satisfaction when they learn their earnings are lower than peers. Luttmer (2005) finds that higher earnings of neighbors are associated with lower self-reported happiness. Several lab-based experimental studies investigate the effects of relative peer wages on worker output and job separation. For example, Breza et al. (2017) run an experiment in India and find that workers reduce output when they are paid less than peers. Dube et al. (2019) find that job separations are highly responsive to an increase in the average peer wage among low-wage workers; a \$0.10 increase in the average among peers reduces tenure by one month.

Our work is of course closely related to studies on the use and consequences of temporary contracts. Cahuc and Postel-Vinay (2002) formulate a search and matching model that incorporates temporary contracts with a possibility of permanent conversion, much like in our setting. In their model, facilitating the creation of more temporary jobs leads to an increase in job destruction. In equilibrium, they find temporary employment contracts, even if they can be converted to permanent, lead to separation rates that are higher than optimal. Consistent with these predictions, Daruich et al. (2018) evaluate policies in Italy that relax temporary contract restrictions and find that these policies increase temporary work, but not overall employment, precisely because separation rates increase.

A second vein of this literature examines outcomes for workers who take temporary jobs with those who do not and finds that holding a temporary job may benefit workers if the alternative option is unemployment. A series of studies have examined US government employment programs' effectiveness that gives participants the opportunity to work for temporary agency jobs (Katz and Krueger, 1999; Autor, 2001, 2003; Houseman et al., 2003).⁸

⁷This fair-wage effort hypothesis may explain why some firms prefer to outsource jobs to subcontractors rather than increasing the number of direct-hire workers who receive firm-specific wage rents. See, for example, Goldschmidt and Schmieder (2017).

⁸There is a recent literature estimating the value of flexible work arrangements, such as remote work,

These studies tend to find that temporary agency jobs may substitute for unemployment spells and provide a stepping stone for subsequent careers. One major challenge to estimate the causal effects of temporary work is that it is difficult to differentiate the effects of holding temporary jobs from unobservable worker attributes that lead to selection into temporary jobs. Recent papers using experiments that vary the availability of temporary contracts provide more insight into mechanisms. Autor and Houseman (2007, 2010) study mainly low-skilled, female minority workers in the city of Detroit's "Work First" program, which randomly assigned temporary contract work. The authors followed workers after initial placement and found that long-run employment outcomes were lower for workers placed in temporary jobs.

Finally, since temporary contracts have limited eligibility for parental leave, this paper is also related to the literature on parental leave and female employment outcomes. This literature has exploited three main sources of variation: implementation of leave programs (Baum, 2003; Klerman and Leibowitz, 1997), extensions of leave (Baker and Milligan, 2008; Schonberg and Ludsteck, 2007; Lalive and Zweimuller, 2009; Lalive et al., 2013), and increases in cash benefits (Asai, 2015; Bana et al., 2019). Outcomes typically studied include fertility, returning to work (at any employer), and job continuity (returning to the *same* employer). Studies examining the implementation of universal leave programs find that availability of leave with cash benefits increases job continuity. For instance, Baker et al. (2008) finds that extending job-protected leave in Canada induced women to return to their previous employers. Schonberg and Ludsteck (2007) find similar results looking at similar policy implementation in Germany. To our knowledge, no paper has used assignment to a temporary contract as a source of variation in parental leave benefit eligibility.

temporary work and part-time work (Eriksson and Kristensen, 2014; Katz and Krueger, 2016; Mas and Pallais, Forthcoming; Koustas, 2017).

2 Data

We rely on two datasets: proprietary company payroll records from one of Japan's major international airlines (personnel records, hereafter), and the Basic Survey on Wage Structure (BSWS), whose sample is drawn from Japan's economic census of firms. We have access to deidentified data from the BSWS, allowing us to identify the key companies in the airline industry. We describe the relative advantages and disadvantages of each of these datasets below.

The primary dataset we use in our analysis are personnel records from an anonymous firm in the airline industry. This dataset has several advantages. First, the data contain employment records (including start and end dates) for all workers since the 1950s. We also have information on separation reasons, as coded by company human resource officers, broken out into one of the following categories: (1) contract ends, (2) job-to-job transition, (3) marriage, and (4) personal reasons. Thus, if a worker leaves the firm for a job-to-job transition or marriage, we can identify this. The first of these, a contract ending, can be thought of as an involuntary separation, and the remainder are types of voluntary separation. As unemployment benefits provided by the government to workers depend on separation reasons filled by the firm, the firms are obligated to accurately record whether the separation is voluntary or involuntary.⁹ "Personal reasons" likely encompasses several different reasons. From our discussions with industry experts, we believe this reflects transitions out of the airline industry to not in the labor force, although individuals could always find another job later on. While we have complete promotion history, the firm was unable to provide hours and earnings data before the 2000s; therefore, we will supplement hours and earnings information from the BSWS. This is not as much of a limitation as it seems, at least for starting wages; starting wages are standard within occupation across a hiring cohort, and so should be well-captured in the BSWS within industry-occupation cells for workers with

 $^{^{9}}$ If a worker is separated from the firm due to a contract ending, a worker is eligible for unemployment benefits after 1 month, while a worker who separates for personal reasons has to wait 3 months to receive unemployment benefits.

short tenure at the firm. We discuss the BSWS in more detail in the next paragraph. The personnel records also contain complete birth records of all children born prior to employment or born while working at the company.

The BSWS, conducted every year by Japan's Ministry of Health, Labour, and Welfare, is an employer-employee matched dataset for a sample of establishments and their workers. About 6 percent of all establishments are surveyed each year. Among those, about 20 percent of establishments are surveyed for two consecutive years. Work hours and earnings are collected for a random sample of employees in each firm, as well as some basic demographics. The BSWS fortunately contains an occupation code that allows us to identify flight attendants. We have information on each current employee's start year, which we use to determine whether a flight attendant would have started on a permanent contract. We make use of each of these two datasets in our analysis that follows.

3 Institutional Background

In this section, we further discuss the Japanese airline industry, provide brief background on temporary employment contracts and on family leave programs.

3.1 Background on the Japanese Airline Industry

In the late 1980s, the Japanese airline industry consisted of three major international airlines and several smaller regional and domestic airlines. Two of the major international airlines merged in 2001, leaving two major international airlines. Each of them employ around 14,000 employees today.

While it may seem surprising to some readers from outside of Japan, the airline industry stands out as a highly desirable occupation for Japanese women. In the 1990s especially, becoming a flight attendant was considered a highly glamorous job for women coming out of college.¹⁰ Even today, the flight attendant occupation ranks high among young, collegeeducated women. Airline companies require job applicants to have at least a two-year college degree. Applicants are required to submit proof of English language proficiency skill, which attracts highly educated and skilled female workers.

Figure A1 shows the share of female and female college graduates (both 2-year and 4year college) among current employees across industries. Forty percent of employees in the airline industry are female. The female share of the airline industry is similar to those of the education, service, wholesale, and real-estate industries. In the 1990s, 75 percent of the industry's female workers were college graduates. In other industries, fewer than 50 percent of women are typically college graduates, although the share of female college graduates has increased across all industries over time.

One of the reasons why the airline industry attracts highly educated female workers is a relatively high salary. Salaries in the airline industry were highly competitive in the 1990s for female workers, even when on temporary contracts. (See, Figure A2 for the average log earnings for male and female workers in their 30s with a college degree by industry.)

In terms of employment tasks, the Japanese airline industry is, for the most part, very similar to the major airlines in other countries. One major difference between Japan and other countries is the share of females among flight attendants. In Japan in the 1990s, all flight attendants were female, and the female share remains significantly higher today than in other OECD countries. According to the US Census Bureau, 23% of flight attendants are male in the US in 2016. On the other hand, fewer than 1% of flight attendants are male in 2018.

Each year, new intake in the airline industry is about 5 percent of current employment, which is in line with most other industries (see, Figure A3 for the fraction of newly hired among employees and the fraction of college graduates among new hires by industry).

¹⁰See for example, Landers, Peter "In Japan, Flight Attendants Have an Air About Them," Los Angeles Times, May 12, 1996. Available at: https://www.latimes.com/archives/ la-xpm-1996-05-12-fi-3467-story.html

3.2 Temporary Contract

There are several differences between a typical worker on a permanent contract versus a temporary contract. Permanent employees are typically hired without a predetermined end date of employment and receive strong legal protections against firing. Permanent workers typically work full-time based on fixed scheduled hours and receive annual bonuses. Conversely, temporary employees tend to have part-time or fixed/short term contracts and are paid less, with the most significant difference in pay showing up in the lack of bonuses. This feature contrasts with other countries like the U.S., where there are no formal contract types. For this reason, it is difficult to identify contingent workers in U.S. data.¹¹ Because the Japanese contingent workforce has a contract with a firm, administrative data from Japanese firms contain both the contingent and permanent workforce and allow us to capture the contingent workforce and their career and life paths.

Figure A4 shows the share of temporary employment among total employment by age and gender for 1990 and 2015.¹² We see that temporary employment contracts are concentrated among younger and older of both sexes in 2015, but are much more common for women across the life-cycle. Over the life-cycle, women are more likely to become temporary workers starting from around childbearing age, a pattern which has only grown over time. The figure shows that the increase in the temporary contract share among women from 1990 to 2015 is about twice as large compared with men.

Contract types are closely tied to both the level and growth of earnings over the lifecycle. Figure A5 shows (a) monthly earnings and (b) hourly wages by age, gender and employment contracts in 2015. When we compare earnings at 35 and 50 in the cross-section, what stands out is that workers on temporary contracts have a flat earnings profile: men on temporary

¹¹In the U.S., this sector is only captured intermittently in the Contingent Worker Survey (Katz and Krueger, 2016), or unique datasets from credit and bank data (Koustas, 2017).

 $^{^{12}}$ The OECD defines temporary employment based on a contract length of one year or less. The OECD average share of workers on temporary contracts is around 12% in the 2010s, and Japan's share is 2 percentage points higher at about 14%. A more comprehensive definition includes all workers not on permanent contracts, which is the definition used in Figure A4.

contracts earn around 140,000 yen per month (\approx 1,400 US dollars), and women on temporary contracts earn around 100,000 yen per month (\approx 1,000 US dollars). On the other hand, men in permanent contracts experience steep earnings growth from age 35 to 50: they earn 295,000 yen at age 35, and earnings increase to 392,000 yen by age 50, i.e., a 33% increase. Women on permanent contracts experience a more modest increase in earnings: Earnings increase from 240,000 yen to 257,000 yen over the lifecycle. Temporary workers earn less than half of the permanent workers' earnings. As a result, the difference in earnings between those on permanent and temporary contracts widens with age, especially among men: permanent workers earn close to 3 times more than temporary workers. Hourly wages show a very similar pattern, suggesting these differences are not driven by hours worked.

3.3 Family Leave Programs

Japan has two forms of benefits for new mothers: a universal maternity leave (ML) program, and a parental leave (PL) program. ML provides paid leave from 42 days before to 56 days after childbirth and is part of standard health insurance benefits.¹³ PL was first introduced in 1992. PL is a social insurance benefit financed through payroll taxes and available for mothers up to 10 months (up to 16 months since 2005) after taking ML.¹⁴ In Japan, health insurance is mandatory for all workers, including temporary workers. Since the cash benefit for PL is paid through employment insurance in the form of income replacement, PL rights are available only to new mothers covered under employment insurance—that is, direct-hire employees on permanent contracts. Since 2005, temporary workers were made eligible for

 $^{^{13}}$ ML is mandated by the Labor Standards Act (1947), and it is illegal to work or to allow a new mother to work within 42 days of childbirth for maternal health reasons. During ML, income replacement is provided by the Health Insurance Program (1958-), and the rate was 60% of a mother's pre-birth income from its inception in 1958 until April 2007, when it was increased to two-thirds of the pre-birth income. ML is available to all working mothers, including temporary workers. PL is mandated under the Child Care and Family Care Leave Act (1992).

¹⁴When PL was first introduced in 1992, it only provided job protection. PL became a paid program beginning in 1995. The cash benefit is determined by the mother's average monthly wage for the six months prior to childbirth and is non-taxable. The amount of cash benefits has changed over time: it was 25% income replacement in 1995 and has increased to 40% in 201, and 50% in 2007. Typically, only women take ML and PL, and men's take-up rate is under 3%. Women's ML take-up rate has been close to 100%. According to MHLW (2002), 64.0% of mothers who had a child during April 2001–March 2002 claimed PL.

parental leave. However, it is challenging to take parental leave as a temporary worker since you need to satisfy the following two criteria: (1) be on employment insurance at least a year before childbirth, and (2) submit proof of continuous employment after childbirth. Since most temporary workers' contracts are just 1-3 years, the typical temporary worker cannot satisfy the second criteria.

4 Research Design: Two Natural Experiments Varying Starting Contracts

In Section 3, we showed that the airline industry is a well-paid and desirable occupation for young female college graduates. In this section, we discuss our main source of identification we use to investigate the causal effects of holding a temporary contract: industry-wide natural experiments in the Japanese airline industry that provide quasi-experimental variation in the starting contracts of new hires. We begin by providing more context on hiring practices, which is necessary to understand our variation. We then discuss our two policy changes: the first policy change occurred in 1995 and introduced temporary contracts to the industry; the second policy change, occurring in the late 2010s, is the reverse experiment eliminating temporary contracts.

4.1 Hiring in Japan

The hiring process is highly structured and regulated. Since 1953, the Japan Business Federation and the Japan Chamber of Commerce and Industry have worked closely with the government to regulate the timing of the corporate hiring process. Most companies hire new graduates from the beginning of each fiscal year, April 1st. Until 1996, government regulation mandated that the selection of applicants start from exactly 8 months before the hiring date: i.e. a job starting on April 1st, 1995, would have started its selection process on August 1st, 1994. It also mandated that offers can only start to go out from October 1st: thus, for a job starting on April 1st, 1995, job candidates start to receive offers from October 1st, 1994. After 1997, the selection of applicants starts from exactly a year before the hiring date: so a job starting on April 1st, 1995, would have started its selection process on April 1st, 1994. Offers still go out from October 1st.

The hiring process for flight attendants, like most other professional jobs, follows this same pattern: (1) Selection starts from August (or April), (2) Offers go out in October or November depending on the year (3) Workers are expected to make decisions within a few weeks, (4) Work starts the following April.

4.2 1995 Policy Change Introducing Temporary Contracts

In the mid-1990s, all major firms in the Japanese airline industry changed personnel policy so that flight attendants would be hired on temporary employment contracts instead of permanent contracts (the "1995 policy change"). The flight attendants who were already working at the company remained on their permanent contracts. Thus, flight attendants with two different contract types shared the same job responsibilities and workplace (i.e., flights).

This is the first time temporary contracts were used on a large scale to hire workers in this occupation. The decision was made in response to increased global competition in the 1990s, leading to a hiring freeze first announced in 1993's hiring season. Industry representatives submitted a plan to the government to use temporary workers in early August 1994 for the 1994 hiring season (JILPT, 2008). Initially, the industry plan called for temporary contracts to be renewed each year, for up to three years. After three years, workers would then be released. This is commonly how temporary contracts are used in Japan and in many other countries.

However, the Ministry of Transportation quickly rejected the plan, citing concerns about air safety from having few experienced cabin staff. Bowing to political pressure, the firms announced a new plan at the end of September 1994. New workers would still be hired on temporary contracts. However, workers would then be transitioned to permanent contracts after three years provided standard performance goals were met. This revised plan received government approval. Only at this time plans were announced to workers. As discussed in Section 4.1, the selection process start 8 months before the hiring date, e.g., a job starting on April 1st, 1995, would have started its selection process on August 1st, 1994. Therefore the hiring process had already begin by this time. Approximately 2,500 women had already applied to be flight attendants by this point. Workers received offers early November and were hired by mid-November. Therefore, the incoming 1995 cohort would have had little time to react to the news.

Our natural experiment circumvents a key challenge in the literature to separate out the effects of a temporary contract from selection into temporary work. In our case, workers across cohorts assigned to jobs of different contracts would have been otherwise comparable. This provides an opportunity to estimate the causal effect of initial placement into temporary contracts.

4.3 2016 Policy Change Eliminating Temporary Contracts

Our second experiment comes from the mid-2010s, when the airline industry transitioned back to hiring new flight attendants on permanent contracts, providing an opportunity to study the reverse experiment. A major firm in the industry announced that they would be ending the practice of hiring flight attendants as temporary workers in August 2013, to be in effect from April 2014. The second major firm followed suit with a similar announcement in December 2015, to be in effect from April 2016 (the "2016 policy change"). Unlike the 1995 policy change, this policy change affected existing temporary workers, not just new hires: Every existing temporary worker became a permanent worker upon implementation, eliminating any contract differences among peers.

Figure 1 illustrates the key experiments for the major airline for which we have personnel records. The key dates the policy changes occurred for this company are 1995 and 2016.

The upper panel shows the share of flight attendants hired on a temporary contract at this company in the year indicated on the x-axis, while the bottom panel shows the number of the employees hired each year. As shown in the figures, no flight attendants hired before 1994 started on temporary contracts. In 1994, the industry had a hiring freeze. Beginning in 1995, 100 percent of flight attendants were hired on temporary contracts. As the company reversed the policy in 2016, the share of temporary contracts was down again to zero percent.¹⁵ Figure 2 shows the share with permanent contracts by hiring cohort by year. The flight attendants who are hired from 1995 to 2013 stay on temporary contracts for three years and transition to permanent contracts from the 4th year. The 1995 and 2013 cohorts are depicted by the blue and red lines in the figure, and intermediate cohorts all show the same pattern. On the other hand, flight attendants hired in 2014 remain temporary workers for two years and transition to permanent workers from the third year, which is depicted as the green line. Flight attendants who are hired in 2015 would be hired on a temporary contract for one year and transition to a permanent contract from the 2nd year, which is depicted as the orange line. From 2016, all flight attendants were again hired on permanent contracts. The variation in the duration of being on temporary contracts created by the 2016 policy change provides variation in being on a temporary contract for 1, 2, or 3 years from the start of a career. Figure A6 shows the share of men hired on temporary contracts for this firm. Men at the firm experienced only small increases in the share on temporary contracts after 1995.

5 Empirical Strategy

We are interested in the link between temporary work contracts and subsequent labor market outcomes. The ideal experiment would involve observing two similar workers hired in the same year, where one is randomly assigned a temporary contract. In the absence of this perfect experiment, we rely on the natural experiments described above of a change in

¹⁵The figure also shows some fluctuation in hiring across years. In 1994, 2000, 2010-11, the company had hiring freezes due to economic conditions.

industry hiring practices across cohorts: Workers hired from 1995 onwards are hired as temporary workers for the first three years and are promoted to a permanent worker after three years. In contrast, workers who were previously hired remained on a permanent contract. Workers who are hired on or after 2016 are hired as permanent workers. At the same time, all previously hired workers were transitioned to a permanent contract. Our setting, which focuses on newly-hired flight attendants in the airline industry, allows us to examine effects on young, female workers.

Our primary research design compares cohorts of flight attendants hired just before with those hired just after each policy change. To address confounding factors that might occur across years, such as macro-economic and other aggregate shocks, as well as any trends, we use women in administrative jobs and men in the industry as control groups. For the personnel records, we only report results using men as the control group because the airline industry hires only very few (a dozen or so) new female administrative workers per year in the 1990s. While men in the airline industry can also be hired on temp contracts, these men would not make a ideal control group. As we will show below, nearly all of the men hired on temporary contracts terminate their relationship with the company after three years. Unlike for women, there was no provision in their temporary contracts to convert to permanent during this time. We also exclude workers hired in 1994 because only a few hires occurred that year due to the hiring freeze.

We will examine several outcomes under both regimes, including pay and hours,¹⁶ the probability a woman stays with the firm, separation reasons, the probability of promotion, and childbirth outcomes. For the 1995 policy change, the main differences-in-differences framework we use is given as follows:

$$y_i^h = \beta^h temp_i + \gamma_{c(i)}^h + \delta^h X_i + e_i^h \tag{1}$$

 $^{^{16}\}mathrm{BSWS}$ data are currently only available through 2016, which only allows us to study the more recent policy change in the personnel records.

where y_i^h denotes an outcome for individual *i* with *h* years of tenure, $temp_i$ denotes an indicator for flight attendant cohort hired on temporary contract (essentially a treated × post interaction), X_{it} denotes control variables including education, a cubic in age (in months) at contract start, and a separate intercept for the control group in specifications that include a control group. $\gamma_{c(i)}$ are hiring cohort fixed-effects that are identified in specifications that include a control group. We run *h* separate regressions around 1995. We restrict the regression to narrow hiring windows around the reform. Our first window compares the 1993 cohort to the 1995 cohort. We also expand the window to compare 1991-1993 cohorts with 1995-1997 cohorts.

We modify our main specification to exploit the variation in the duration of being on a temporary contract created by the 2016 policy change, as follows:

$$y_i^h = \beta^h \text{YearsTemp}_i + \gamma_{c(i)}^h + \delta^h X_i + e_i^h \tag{2}$$

Where YearsTemp_i measures the number of years on a temp contract. The β^h coefficients on YearsTemp_i variable capture the impact of being on temporary contract for one year. We can also include our control group to identify hiring cohort fixed-effects, $\gamma^h_{c(i)}$. To estimate this regression, we pool cohorts hired from 2013-2018

5.1 Potential Threats to Identification

In this section, we address possible threats to our identification. The most obvious threat is that there may be differences across cohorts stemming from selection at the time of hiring. For example, if workers change their employment decisions based on the announcement of the policy change, the random assignment assumption would not be satisfied. As discussed in Section 4.1, the incoming 1995 cohort would have had little time to react to the introduction of temporary contracts.

To test this more explicitly, we test for selection on observables by comparing character-

istics of female workers before and after the policy change. Note that new cohorts may still have unobservable differences that we cannot detect. Since the latter cohort are hired on a temporary contract, if there is selection, we would expect it to be negative, i.e. the latter cohorts' education levels would be lower than the previous cohort.

Key characteristics of the cohorts three years before and after the 1995 policy change are shown in Appendix Tables A1 and A3. In the personnel records for our company, there is no change in the share with a university education. While the difference in age is statistically significant, it is only around 2 months. BSWS shows some differences with the personnel records, that may be due to how education is classified; however, the share with 4-year university education appears to increase, offsetting a decline in 2-year degrees. Appendix Table A2 also shows no differences in means in the personnel records before and after the 2016 policy change. For 2015-2016, the name of the university the workers attended is recorded for all workers. This allows us to also compare college quality. We rank schools based on admissions difficulty.¹⁷ We find no significant differences in the share graduating from top universities.

While we do not find any strong evidence of selection on observables and can control for the observables that we do see, the concern obviously remains about selection on unobservables, such as worker sorting based on wages and availability of benefits. While we cannot directly measure this, we would like to argue that any selection could also be thought of as an outcome and mechanism, rather than a problem. If, for instance, changes in corporate policy discourage women who want to have a child from applying and drive our results, then we view this as an interesting finding.

One other concern is that there might be an indirect effect on previous cohorts who were not affected by the policy change. For example, since earlier cohorts are hired on a permanent contract, they may have to work harder and increase separation rates. We will

¹⁷There are 11 top schools: Tokyo, Kyoto, Tohoku, Tokyo Tech, Kyusyu, Hokkaido, Nagoya, Osaka, Tsukuba, Keio, and Waseda. There are 86 National, 92 Public universities in 2018; 22% of all universities are National or Public Universities and are more competitive than private universities to get in.

show that previous cohorts do not appear to be affected in this way.

6 Results

In this section, we report our main results. We first examine separation rates and reasons, and move on to examine birth outcomes.

6.1 Separation Rates and Reasons

We begin by examining separation rates from the firm using the personnel records. We start by examining raw data. Because we know the exact starting and exit dates from the firm, we plot the share separated from the firm by the month since hire on the x-axis, for different hiring cohorts. Panel (a) of Figure 3 plots the share separated from the firm for each cohort hired from 1990-1995. As shown in the figure, there was a downward trend in the separation rate from 1990 to 1993. But with the 1995 cohort, who were now hired on temporary contracts, there was a dramatic increase in the rate of separating from the firm across the distribution of time since hire.

It is more complicated to plot the trends leading up to the 2016 policy change, since the cohorts after 2013 receive varying years of "treatment" with a temporary contact and there were no hires in 2010-11 due to hiring freezes. Figure (b) of 3 plots the separation rate by tenure for a cohort before and after each, i.e., the 1993, 1995, 2013, and 2016 cohorts. It is striking to see that the 2013 cohort's separation rate—that is, the last cohort hired on a temporary contract—is nearly identical to the one for the 1995 cohort, especially for the first three years, while the 2016 cohort's separation rate—the first cohort hired on a permanent contract—is similar to the one for the 1993 cohort, who were the last cohort hired on a permanent contract.

Proceeding with our regression estimates, we construct an indicator outcome that takes on a value of 1 if an individual has separated by year h and is 0 otherwise. Results for the 1995 policy change are reported in Table 1. We report results comparing the 1993 and 1995 cohorts in Panel (a) and results pooling 1991-1993 and 1995-1997 in Panel (b), controlling for worker characteristics. Compared to the 1993 cohort, the 1995 cohort is 2.8 percentage points more likely to separate from the firm by the end of their first year; the difference in separation rate goes up to 17.8 percentage points at the end of year 3. The difference in the separation rate closes slightly but remains 12.3 percentage points higher by year 9, and 10.7 percentage points by year 12. Pooled results in Panel (b) are similar, widening slightly at longer horizons. Panel (c) reports differences-in-differences estimates with men at the firm. The results are very similar to the panel (a).

In the personnel records, we are able to decompose the overall separation rate into four recorded separation reasons. As discussed above, separation from the firm is coded with one of four reasons: (1) Contract ends, (2) job-to-job transitions (3) Marriage, and (4) Personal Reasons. We interpret (1) as involuntary separations, and (2)-(4) as voluntary separations.¹⁸ While "personal reasons" are a bit of a black box, a job-to-job transition implies that a worker has remained in the labor force, whereas marriage, particularly in the 1990s, suggests the worker has indefinitely exited the labor force, and therefore motivates examining these flows separately.

Figure 4 shows the raw separation rates from the firm by tenure and by recorded reason for separation. The black line indicates the share for 1993, and the red line shows the share for 1995. Panel (a) shows the share who separate due to their contract ending. Strikingly, almost no flight attendant separates for this reason. Figure (b) shows the share with a jobto-job transition. We see that the 1995 cohort is more likely to leave for another job, but this only explains a small share of the increase in separations. Figure (c) and (d) reveal that the majority of separations are due to marriage and personal reasons.

For comparison, Figure 5 shows separation rates for men by hiring contract. Panel (a)

¹⁸The distinction between (2)-(4) is not required by the government and is based on employees' selfreporting. Therefore, some separations due to job-to-job transitions or for marriage may be misreported by workers as blanket personal reasons. This makes "personal reasons" more difficult to interpret while job-to-job transitions and marriage may be underreported.

shows that almost all men who start on temporary contracts leave because their contract ended; half of them leave 3 years after they started, and almost all leave after 10 years. The figure for men hired on temporary contracts appears more like a step function than the previous figures we have seen; this is because large groups of men have contracts expiring at the same time. Panel (b) shows men who start on permanent contracts. Separation rates for men on permanent contracts are very low, and actually decrease after the policy change, likely due to the ongoing recession. By definition, permanent contracts have no termination date.

We return again to our regression framework. Similar to the regressions for the overall separation rate, we construct indicator outcomes for each of the separation reasons. We omit results for separation due to contract ending, because almost no flight attendant separates for this reason (in contrast with men who start on temporary contracts.)

Results for the 1995 policy change are reported in Table 2. Again, Panel (a) reports results comparing 1993 with 1995, Panel (b) reports results pooling 1991-1993 and 1995-1997, and Panel (c) reports the results using men as a control group. The first row of each panel reports results for job-to-job transitions. Flight attendants starting on a temporary contract are 2-3 percentage points more likely to separate for another job within 3 years after being hired. The gap widens slightly before decreasing again, but a gap of 3-5 percentage points remains by 12 years since hire. The second row of each panel reports the change in separation rates due to marriage. The separation rate due to marriage increases by around 2.4 percentage points 2 years after hire and 4 percentage points after 3 years, but, unlike for the finding for job-to-job transitions, this increase fades away after 9 years. The third row shows the results for separation rate for personal reasons increases by around 5 percentage points 2 years since hire, and is 10-15 percentage points higher 6 years since hire, depending on the panel. Elevated separation rates for personal reasons fade somewhat over time, suggesting women are separating earlier but the overall rates of separation partially converge over time.

The results for the 2016 policy change using specification 2 are presented in Table 3. We pool data from 2012 to 2018. The first and second rows show the β^h coefficient on $YearsTemp_i$, for one and two-year separation rates, respectively. A one year increase in the length of being on a temporary contract is associated with 2 percentage point increase in the separation rate after 1 year, and a 6 percentage point increase in the separation rate after 2 years. The bottom panel shows the results including men as the control group. While in this case the results are somewhat mitigated, they still remain statistically significant at the 2 year horizon.

Separation reasons are explored in columns (3)-(8) of Table 3. A one year increase in the length of being on a temporary contract increases the 2-year separation rate from job-to-job transitions by 4.2 percentage points, and increases the 2-year separation due to personal reasons by 2.6 percentage points. Again, the bottom panel shows the results including men as the control group. A one year increase in being on the temporary contract is significantly associated with a 1.9 percentage point increase in the job-to-job transition rate. While we do not find any significant results for marriage, we saw in Figure 4 that many of the results for the 1995 policy change peaked after 3 years. Unfortunately, we currently do not have data beyond 2018 to study outcomes more than 2 years after the 2016 policy change.

6.2 Family Outcomes for Job Stayers

So far, we have found temporary contracts are associated with lower job attachment. These are key empirical moments that are commonly modeled in the search and matching literature with temporary contracts. Interestingly, we also found that most separations were not for job-to-job transitions, however, but come from marriage and personal reasons. On their surface, these reasons could be associated with increased family formation. We previously noted that cohorts starting on temporary contracts would not be eligible for 1 year of job protected parental leave until their fourth year of employment. This could also increase separations among women starting a family in these years. We next explore whether this could be driving the separations by examining childbirth outcomes for stayers at the firm using the personnel records.

We again begin by showing the raw data. So that our results are not driven by separations, Figure 6 panel (a) restricts to stayers of at least 5 years (3/4 of flight attendants in the period)after 1995), and Panel (b) restricts to stayers of 15 years (about half of flight attendants, and a period that covers most births we observe among stayers). Again, the 1993 hiring-year cohort—the last cohort hired on a permanent contract—is depicted by the black line, and the 1995 cohort—the first cohort hired on temp contracts—is depicted by the red line. While the 1993 cohort was more likely to have a child at any tenure than the previous cohorts, and this cohort would have been eligible for parental leave after 1 year of employment, just over 6 percent of stayers of at least five years had a child by year 5. One can imagine, however, that the women who select into becoming flight attendants did not plan to have children for at least a few years. For the 1993 cohort, childbirth really takes off starting in year 3. For the 1995 cohort, we do not see the same upward inflection point until 1 year later, which in this case is the year that these women would have first have been eligible for parental leave. By year 5 of tenure, the childbirth rate is about 2 percentage points lower. Because childbirth was not common in the first five years on the job, these results suggest parental leave availability may have been important to some women, but could only have played a limited role in driving overall separation rates.

Looking at the longer-run outcomes for stayers reveals an interesting pattern. After an initial delay, childbirth outcomes appear to converge for flight attendants of 7-8 years of tenure, before widening again. The narrowing at 7-8 years of tenure suggests delayed birth outcomes. But after 12 years of tenure, stayers who started on temporary contracts have fairly different outcomes.

Table 4 confirms these patterns in our regression framework. After 12 years of tenure, stayers who started on temporary contracts are 7 percentage points less likely to have childbirth at year 12 compared to the previous cohort. The results pooling 1991-1993 and 19951997, which is more likely to be affected by selection, shows an even larger difference of -13.4 percentage points. Starting on a temporary contract appears to have a long term effect on family outcomes while at the firm.

7 Mechanisms

This section explores earnings, hours, and promotion differences across the cohorts as potential mechanisms for higher separation rates and lower childbirth rates.

7.1 Earnings and Hours

We next compare earnings and hours profiles of flight attendants hired before and after the 1995 policy change. We also compare flight attendants to women hired in administrative positions during this same period. We rely on the BSWS for earnings and hours information.

We again begin by simply showing the raw data by year of hire. Figure 7, Panel (a) shows average log monthly earnings by start year. The first row is the result for the flight attendants, and the second row show results for women in administrative jobs across all industries. We clearly see a discontinuous drop in log earnings in 1995 for flight attendants hired in that year. Starting wages are about half of the previous year's cohort. The gap narrows 2-3 years since starting the job and appears to disappear by 8-9 years of tenure. There is no discontinuity for the women in other industries hired since 1995, so this drop is not driven by other shocks happening in that year outside the airline industry.

Figure 7, Panel (b), reports average log hours by start year. Unlike log earnings, log hours figures do not show the same discontinuous drop, suggesting the decline in earnings is a reduction in hourly wage and not driven by working fewer hours.

Results from the regression framework are shown in Table 5. We pool and compare the 1991-1993 hiring cohorts and the 1995-1997 hiring cohorts, using women hired in other administration jobs as an untreated control group, and examine outcome measures at various tenures. Panel (a) shows the results for log earnings per month. For workers hired on temporary contracts, starting wages were substantially lower, by -0.52 log points less than for earlier cohorts. However, this wage gap declines in subsequent years, so by 8-9 years, there is no statistically significant gap. Panel (b) shows log hours per day. Despite the difference in earnings, there is no significant difference in log hours worked between the treatment and control groups before and after the 1995 policy change.

7.2 Promotions

Another interesting outcome that we can uniquely observe in personnel records is promotions. We next examine the time to first promotion, i.e., promotion to lead cabin attendant, by starting cohort, in Figure 8. Table 6 shows corresponding regression results. Before 1995, spent 3-4 years until the promotion, while the cohorts after 1995 spent more than 70 months until their first promotion. Therefore, flight attendants who were hired on temporary contracts experienced a delay in their career ladder of around 3 years. Slower time to promotion could be part of the reason why the separation rate is higher for cohorts hired on temp contracts: not only is the pay lower, but the longer duration at lower status might also reduce attachment to the job.

8 Discussion and Conclusions

Exploiting a natural experiment for a particular industry switching between temporary and permanent contracts for new hires, and then back again, we find that new hires who are hired on temporary contracts are less attached to the firm. This result may not be surprising on its own: This result is consistent with the key predictions of the model by Cahuc and Postel-Vinay (2002) that separation rates will be higher in equilibrium in a world with temporary contracts, even if there is a path to a permanent contract. Wages on temporary contracts are also lower, consistent with the use of temporary contracts as a way to lower worker rents.

However, the main mechanism driving the higher separation rates is not contracts expiring, or even job-to-job transitions. While there is an increase in job-to-job transitions consistent with a search and matching framework, we also find that marriage and personal reasons are the largest drivers of increased separations. Separating for marriage means explicitly leaving the job to be married and to presumably start a family. Personal reasons—the largest source of separations—likely includes women exiting the labor force, some of whom return to the labor force looking for a new career. While the 2016 reversal appears to have a symmetric, opposite effect, only limited time has passed since this policy change.

We find the women who stay with the firm appear to delay first childbirth. Delays in parental leave availability may explain some small early differences we observe. But childbirth patterns widen for long-tenure flight attendants. Part of our finding may be due to selection in who stays with the firm over the long-run. Women who choose the profession of flight attendants may be more career oriented than the population at large. Still, many hope to eventually have a family and keep working. When their careers as flight attendants have lower initial reward and higher time to promotion, some appear to just give up these careers for "marriage."

Our findings on family formation are largely ignored in the search and matching framework used to study the welfare implications of temporary contracts. Some of the results, particularly for marriage, are unlikely to apply to men, but we see no reason to believe our results would not be externally valid to women in other settings. Our results on starting wages and job separation also have implications for gender wage and employment gaps. These gender differences in the effects of starting on a temporary contract seem to us an important area for future research, particularly as temporary contracts become more commonplace in OECD countries for young, often female, workers.

References

- Adda, J., Dustmann, C., Stevens, K., 2017. The career costs of children. Journal of Political Economy 125, 293–337.
- Akerlof, G., Yellen, J., 1990. The fair wage-effort hypothesis and unemployment. The Quarterly Journal of Economics 105, 255–283.
- Altonji, J., Kahn, L., Speer, J., 2016. Cashier or consultant? entry labor market conditions, field of study, and career success. Journal of Labor Economic 34, S360–S401.
- Angelov, N., Johansson, P., Lindahl, E., 2016. Parenthood and the gender gap in pay. Journal of Labor Economics 34, 545–79.
- Asai, Y., 2015. Parental leave reforms and the employment of new mothers: Quasiexperimental evidence from japan. Labour Economics 36, 72–83.
- Autor, D., 2001. Why do temporary help firms provide free general skills training? Quarterly Journal of Economics 116, 1409–1448.
- Autor, D., 2003. Outsourcing at will: The contribution of unjust dismissal doctrine to the growth of employment outsourcing. Journal of Labor Economics 21, 1–42.
- Autor, D., Houseman, S., 2007. Temporary agency employment: A way out of poverty?, Russell Sage Foundation. Working and Poor: How Economic and Policy Changes Are Affecting Low-Wage Workers edited by Blank, Rebecca, Danziger, Sheldon, and Schoeni, Robert, pp. 312–337.
- Autor, D., Houseman, S., 2010. Do temporary-help jobs improve labor market outcomes for low-skilled workers? evidence from "work first". American Economic Journal: Applied Economics 2, 96–128.
- Baker, M., Gruber, J., Milligan, K., 2008. Universal child care, maternal labor supply, and family well-being. Journal of Labor Economics 116, 709–745.

- Baker, M., Milligan, K., 2008. How does job-protected maternity leave affect mothers' employment? Journal of Labor Economics 26, 655–691.
- Bana, S., Bedard, K., Rossin-Slater, M., 2019. The impacts of paid family leave benefits: Regression kink evidence from california administrative data. NBER Working Paper No. 24438.
- Baum, C.L., 2003. The effect of state maternity leave legislation and the 1993 family and medical leave act on employment and wages. Labour Economics 10, 573–596.
- Becker, G., 1960. An economic analysis of fertility, in: Demographic and Economic Change in Developed Countries. Columbia University Press, pp. 209–240.
- Bertrand, M., Goldin, C., Katz, L., 2010. Dynamics of the gender gap for young professionals in the financial and corporate sectors. American Economic Journal: Applied Economics 2, 228–255.
- Borgschulte, M., Martorell, P., 2018. Paying to avoid recession: Using reenlistment to estimate the cost of unemployment. American Economic Journal: Applied Economics 10, 101–127.
- Breza, E., Kaur, S., Shamdasani, Y., 2017. The morale effects of pay inequality. The Quarterly Journal of Economics 133, 611–663.
- Cahuc, P., Postel-Vinay, F., 2002. Temporary jobs, employment protection and labor market performance. Labour Economics 9, 63–91.
- Card, D., 1999. The causal effect of education on earnings, Amsterdam and New York: North Holland. Handbook of Labor Economics in Volume 3A, ed, by Orley Ashenfelter and David Card, pp. 201–222.
- Card, D., Mas, A., Moretti, E., Saez, E., 2012. Inequality at work: The effect of peer salaries on job satisfaction. American Economic Review 102, 2981–3003.

- Clark, A., Oswald, A., 1996. Satisfaction and comparison income. Journal of Public Economics 61, 359–381.
- Currie, J., Schwandt, H., 2020. Short- and long-term effects of unemployment on fertility. Proceedings of the National Academy of Sciences 111, 14734–14739.
- Daruich, D., Addario, S.D., Saggio, R., 2018. The effects of partial employment protection reforms: Evidence from italy .
- Del Bono, E., Weber, A., Winter-Ebmer, R., 2012. Clash of career and family: Fertility decisions after job displacement. Journal of the European Economic Association 10, 659– 683.
- Dube, A., Giuliano, L., Leonard, J., 2019. Fairness and frictions: The impact of unequal raises on quit behavior. American Economic Review 109, 620–63.
- Eriksson, T., Kristensen, N., 2014. Wages or fringes? some evidence on trade-offs and sorting. Journal of Labor Economics 32, 899–928.
- Genda, Y., Kondo, A., Ohta, S., 2010. Long-term effects of a recession at labor market entry in japan and the united states. Journal of Human Resources 45, 157–196.
- Goldschmidt, D., Schmieder, J., 2017. The rise of domestic outsourcing and the evolution of the german wage structure. The Quarterly Journal of Economics 132, 1165–1217.
- Houseman, S., Kalleberg, A., Erickcek, G., 2003. The role of temporary help employment in tight labor market. Industrial and Labor Relations Review 57, 105–127.
- JILPT, 2008. Mineika kigyo niokeru hiseiki syain no katuyo to syogu kaizen ni kansuru jirei chosa (in japanese). JILPT Research Report , 1–68.
- Kahn, L., 2010. The long-term labor market consequences of graduating from college in a bad economy. Labour Economics 17, 303–316.

- Katz, L., Krueger, A., 1999. The high pressure u.s. labor market of the 1990s. Brookings Papers on Economic Activity.
- Katz, L., Krueger, A., 2016. The rise and nature of alternative work arrangements in the united states, 1995-2015. Princeton University.
- Klerman, A., Leibowitz, A., 1997. Labor supply effects of state maternity leave legislation, in: Gender and Family Issues in the Workplace Edited by Blau, F. and Ehrenberg, R.. Russell Sage Foundation. chapter 3, pp. 65–85.
- Kleven, H., Landais, C., Søgaard, J.E., 2019. Children and gender inequality: Evidence from denmark. American Economic Journal: Applied Economics 11, 181–209.
- Koustas, D., 2017. Consumption insurance and multiple jobs: Evidence from rideshare drivers. Job Market Paper, University of California Berkeley .
- Lalive, R., Schlosser, A., Steinhauer, A., Josef, Z., 2013. Parental leave and mothers' careers: The relative importance of job protection and cash benefits. Review of Economic Studies 93, 113–125.
- Lalive, R., Zweimuller, J., 2009. How does parental leave affect fertility and return to work? evidence from two natural experiments. The Quarterly Journal of Economics 124, 1363– 1402.
- Lovenheim, M., Mumford, K., 2013. Do family wealth shocks affect fertility choices? evidence from the housing market. The Review of Economics and Statistics 95, 464–475.
- Luttmer, E., 2005. Neighbors as negatives: Relative earnings and well-being. The Quarterly Journal of Economics 120, 963–1002.
- Mas, A., Pallais, A., Forthcoming. Valuing alternative work arrangements. American Economic Review .

- MHLW, 2002. Basic Survey of Gender Equality in Employment Management. The Ministry of Health, Labour and Welfare of Japan(MHLW).
- Oreopoulos, P., Wachter, T.v., Heisz, A., 2012. The short- and long-term career effects of graduating in a recession. American Economic Journal: Applied Economics 4, 1–29.
- Oyer, P., 2006. Initial labor market conditions and long-term outcomes for economists. Journal of Economic Perspectives 20, 143–160.
- Schonberg, U., Ludsteck, J., 2007. Maternity leave legislation, female labor supply, and the family wage gap. IZA Discussion Papers 2699.
- Schwandt, H., von Wachter, T., 2019. Unlucky cohorts: Estimating the long-term effects of entering the labor market in a recession in large cross-sectional data sets. Journal of Labor Economics 37, S161–S198.
- Schwandt, H., von Wachter, T., 2020. Socioeconomic decline and death: Midlife impacts of graduating in a recession. NBER Working Paper 26638.
- Topel, R., Ward, M., 1992. Job mobility and the careers of young men. The Quarterly Journal of Economics 107, 439–479.
- von Wachter, T., 2020. The persistent effects of initial labor market conditions for young adults and their sources. Journal of Economic Perspectives 34, 168–194.



Figure 1: The Key Experiments for the Major Airline In Our Study

Note: The top panel shows the share of new flight attendants on a temporary contract from 1985 to 2018. The share on temporary contracts was 0% until 1994 and jumped to 100% from 1995 due to the industry-level change in the hiring policy. From 2016, the policy reverses, and new flight attendants were again hired on permanent contracts. The bottom panel shows the number of flight attendants hired each year. No flight attendants were hired in 1994, 2000, 2010, 2011 due to hiring freezes.



Figure 2: Share on Permanent Contract by Year of Hire

Note: Figure shows the share of the cohort on permanent contracts by hiring cohort and year among those who remain with the firm. The blue line shows the share on permanent contracts for the 1995 cohort by year. Workers were on a temporary contract for three years and transitioned to permanent contract in the 4th year. The cohorts from 1996-2013 follow the same path as the 1995 cohort. The 2016 policy change transitioned all flight attendants from temporary contract to permanent contracts. Thus, the 2014 cohort, depicted in the green line, was on a temporary contract for two years and those remaining transitioned to a permanent contract at year 3. The 2015 cohort only stayed on a temporary contract for one year. Since 2016, cohorts are hired on a permanent contract from the first year.

Figure 3: Separation Rates, by Hiring Cohort and Months Elapsed Since Hire

Source: Personnel records, 1990-2019.

Note: Panel (a) shows share separated from the firm by tenure by year of hire. The 1991-1993 cohorts are hired on permanent contracts, and the 1995 cohort is hired on a temporary contract. Panel (b) compares separation rates for cohorts right before and after the 1995 and 2016 policy changes. The 1993 and 2016 cohorts are hired on a permanent contract, and the 1995 and 2013 cohorts are hired on temporary contracts for the first three years.

Figure 4: Reported Separation Reason for Flight Attendants, by Hiring Cohort and Months Elapsed Since Hire

Source: Personnel records 1990-2018.

Note: Figure shows the raw separation rates from the firm by tenure. Panels separate each reason for separation as recorded by the firm. Panel (a) shows the share who separate due to their contract ending, panel (b) shows the share with a job-to-job transition, panel (c) shows the share due to marriage, and panel (d) shows the share separated due to personal reasons. The black line indicates the share separating for the cohort hired in 1993, and the red line shows the share for the cohort hired in 1995.

Figure 5: Reported Separation Reasons for Men, by Hiring Cohort and Months Elapsed Since Hire, by Contract Type

Source: Personnel records 1993-2018.

Note: Figure shows the rates of separation from the firm due to contract end by tenure. Panel (a) is for men on temporary contract, and Panel (b) is for men on permanent contract. The black line indicates the share for 1993, and the red line shows the share for 1995.

Figure 6: Probability of Having a Child While Employed in the Firm

Source: Personnel records 1993-2018.

Note: Figures show the probability of having a child while employed in the firm. Panel (a) restricts to stayers of at least 5 years, and Panel (b) restricts to stayers of 15 years. The 1993 hiring-year cohort (the last cohort hired on a permanent contract) is depicted by the black line, and the 1995 cohort (the first cohort hired on temp contracts) is depicted by the red line.

Figure 7: Average Log Earnings and Hours by Start Year

(a) Log Earnings (Monthly)

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1991-2002). Note: Panel (a) shows average log monthly earnings by year of hire. The first row is the result for the flight attendants, and the second row show results for women in administrative jobs across all industries. Similarly, Panel (b) shows average log hours by start year. Monthly earnings are in a hundred yen, and hours are reported as the average hours per day in the month prior to the survey.

Figure 8: Time to Promotion to Lead Flight Attendant, by Year of Hire

Note: Figure shows months since entry to be promoted to a lead flight attendant by year of hire. The figure is restricted to flight attendants who are ever promoted.

	(1)	(2	2)	(3))	(4	4)	(5)	(6)
	Short-Run 1yr	2y	r	3yı	r	6	yr	Long-Run 9yr	12yr
Post 1995=1	0.0283***	0.10	5***	0.178	***	0.18	82***	0.123***	0.107***
	(0.00918)	(0.01)	L63)	(0.02)	12)	(0.0	275)	(0.0307)	(0.0326)
Mean	0.0192	0.06	669	0.12	24	0.2	228	0.311	0.401
Observations	1091	109	91	109	1	10	91	1091	1091
R-squared	0.0174	0.05	591	0.09	11	0.0	565	0.0291	0.0243
	(b) I	Pooling	g 199	1-1993	v .	1995-	1997		
	(1)	(2	2)	(3))	(4	4)	(5)	(6)
	Short-Run	,	/				· ·	Long-Run	
	$1 \mathrm{yr}$	2y	r	3yı	r	6	yr	$9 \mathrm{yr}$	12 yr
Post 1995=1	0.0237***	0.10'	7***	0.199	***	0.24	4***	0.176^{***}	0.141***
	(0.0139)	(0.02)	232)	(0.02)	91)	(0.0	397)	(0.0443)	(0.0467)
Mean	0.0222	0.06	663	0.11	2	0.2	235	0.334	0.436
Observations	3379	33'	79	337	9	33	79	3379	3379
R-squared	0.0163	0.04	145	0.06	17	0.0	337	0.0268	0.0239
		(c)	DID,	1993 v	. 199	5			
	(1)	(2)	(3)	(4)	(5)	(6)
	Shor 1	t-Run yr	2	yr	3	yr	6yr	Long-Run 9yr	12yr
Post 1995=1	0.0	0495	0.0)174	0.0	382*	0.112**	* 0.204***	0.296***
	(0.0)	0867)	(0.0	(155)	(0.0)	202)	(0.0268)	(0.0301)	(0.0320)
Flight Attendant	=1 -0.0	0111	-0.00	00859	0.0)248	-0.0149	9 -0.0335	-0.0318
	(0.0)	(129)	(0.0)	(230)	(0.0)	(301)	(0.0398)	(0.0448)	(0.0476)
Post $1995 \times \text{Flight}$	Attend. 0.02	296**	0.09	79***	0.15	4 ***	0.174**	• 0.138***	0.118**
	(0.0	0146)	(0.0)261)	(0.0	342)	(0.0452	2) (0.0508)	(0.0540)
Mean	0.0	129	0.0)449	0.0	836	0.159	0.219	0.281
Observations	16	527	16	627	16	627	1627	1627	1627
R-squared	0.0	215	0.0)744	0.1	114	0.113	0.120	0.162

Table 1: Regression Estimates Pre/Post 1995 Policy Change: Separation Rates

(a) **1993 v. 1995**

Note: Coefficients from Specification (1) where the outcome is an indicator for separating from the firm by the year since hire indicated in the column. Panel (a) compares flight attendants hired in 1993 to those hired 1995, and panel (b) compares flight attendants hired between 1991-1993 to those hired 1995-1997. In Panel (c), we compare flight attendants to men with permanent contracts in the firm. "Post 1995" is a dummy variable that takes on the value 1 if a worker starts after 1995 and 0 otherwise. "Flight Attendant" is dummy variable that takes on the value 1 for flight attendants and 0 for men on permanent contracts. Row 3 in Panel (c) shows the interaction of these two dummy variables, showing the treatment effect of the 1995 policy change for flight attendants. All regressions are estimated by OLS and include controls for education and age at hire. Robust standard errors reported in parentheses.

		(a) 1	993 v. 1995	1		
	(1) Short-Bun	(2)	(3)	(4)	(5) Long-Run	(6)
	lyr	$2 \mathrm{yr}$	$3 \mathrm{yr}$	$6 \mathrm{yr}$	9yr	12 yr
J2J						
	0.0051	0.0279^{***}	0.0364^{***}	0.0420^{***}	0.0441^{***}	0.0333^{**}
	(0.0041)	(0.0088)	(0.0102)	(0.0120)	(0.0123)	(0.0134)
Mean	0.0037	0.0174	0.0238	0.0330	0.0348	0.0412
R-squared	0.0058	0.0149	0.0159	0.0125	0.0121	0.0065
Marriage						
	0.0065^{*}	0.0237^{***}	0.0394^{***}	0.0444^{***}	0.0235	0.0178
	(0.0035)	(0.0085)	(0.0107)	(0.0163)	(0.0187)	(0.0199)
Mean	0.0028	0.0165	0.0266	0.0632	0.0843	0.0972
R-squared	0.0052	0.0172	0.0258	0.0157	0.0078	0.0071
Personal						
	0.0167^{**}	0.0532^{***}	0.0965^{***}	0.108^{***}	0.0673^{***}	0.0681^{**}
	(0.0076)	(0.0119)	(0.0168)	(0.0217)	(0.0258)	(0.0291)
Mean	0.0128	0.0330	0.0697	0.122	0.181	0.253
R-squared	0.0101	0.0262	0.0442	0.0331	0.0146	0.0124
Observations	1091	1091	1091	1091	1091	1091
	(b)]	Pooling 199	9 1-1993 v. 1	1995-1997		
	(1)	(2)	(3)	(4)	(5)	(6)
	Short-Run				Long-Run	
	lyr	2yr	3yr	6yr	9yr	12yr
J2J						
	0.0013	0.0239**	0.0346**	0.0473***	0.0494***	0.0345**
	0.0013 (0.0065)	0.0239^{**} (0.0119)	0.0346^{**} (0.0137)	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \end{array}$	0.0345^{**} (0.0175)
Mean	$\begin{array}{r} 0.0013 \\ (0.0065) \\ \hline 0.0047 \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \end{array}$	$\begin{array}{r} 0.0346^{**} \\ (0.0137) \\ \hline 0.0213 \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \end{array}$	$\begin{array}{r} 0.0494^{***} \\ (0.0162) \\ 0.0302 \end{array}$	$\begin{array}{r} 0.0345^{**} \\ (0.0175) \\ 0.0355 \end{array}$
Mean R-squared	$\begin{array}{r} 0.0013 \\ (0.0065) \\ \hline 0.0047 \\ 0.00757 \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \end{array}$
Mean R-squared Marriage	$\begin{array}{c} 0.0013 \\ (0.0065) \\ 0.0047 \\ 0.00757 \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ \hline 0.0302 \\ 0.0126 \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \end{array}$
Mean R-squared Marriage	$\begin{array}{r} 0.0013 \\ (0.0065) \\ 0.0047 \\ 0.00757 \\ \hline 0.0046 \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \\ \end{array}$
Mean R-squared Marriage	$\begin{array}{r} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.0046\\(0.00517)\\\hline\end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \\ 0.0242^{*} \\ (0.0126) \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \\ 0.0449^{***} \\ (0.0163) \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \\ 0.0644^{**} \\ (0.0263) \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \\ 0.0528^{*} \\ (0.0293) \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \\ \\ 0.0490 \\ (0.0309) \end{array}$
Mean R-squared Marriage Mean	$\begin{array}{r} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.0046\\(0.00517)\\\hline 0.0030\\ \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ \hline 0.0160 \\ 0.0127 \\ \hline 0.0242^{*} \\ (0.0126) \\ \hline 0.0181 \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ \hline 0.0213 \\ 0.0148 \\ \hline 0.0449^{***} \\ (0.0163) \\ \hline 0.0305 \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \\ 0.0644^{**} \\ (0.0263) \\ 0.0838 \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \hline \\ 0.0528^{*} \\ (0.0293) \\ 0.107 \end{array}$	$\begin{array}{c} 0.0345^{**}\\ (0.0175)\\ 0.0355\\ 0.0116\\ \end{array}\\ \begin{array}{c} 0.0490\\ (0.0309)\\ 0.120 \end{array}$
Mean R-squared Marriage Mean R-squared	$\begin{array}{r} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.0046\\(0.00517)\\\hline 0.0030\\0.0028\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \end{array}$ $\begin{array}{c} 0.0242^{*} \\ (0.0126) \\ 0.0181 \\ 0.0118 \\ \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \\ \hline \\ 0.0449^{***} \\ (0.0163) \\ 0.0305 \\ 0.0138 \\ \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \\ 0.0644^{**} \\ (0.0263) \\ 0.0838 \\ 0.0073 \\ \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \end{array}$ $\begin{array}{c} 0.0528^{*} \\ (0.0293) \\ 0.107 \\ 0.0071 \\ \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \\ \\ 0.0490 \\ (0.0309) \\ 0.120 \\ 0.0074 \end{array}$
Mean R-squared Marriage Mean R-squared Personal	$\begin{array}{c} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.0046\\(0.00517)\\\hline 0.0030\\0.0028\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ \hline 0.0160 \\ 0.0127 \\ \hline 0.0242^{*} \\ (0.0126) \\ \hline 0.0181 \\ 0.0118 \\ \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ \hline 0.0213 \\ 0.0148 \\ \hline 0.0449^{***} \\ (0.0163) \\ \hline 0.0305 \\ 0.0138 \\ \hline \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \hline \\ 0.0644^{**} \\ (0.0263) \\ 0.0838 \\ 0.0073 \\ \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \hline \\ 0.0528^{*} \\ (0.0293) \\ 0.107 \\ 0.0071 \\ \hline \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \\ \end{array}$ $\begin{array}{c} 0.0490 \\ (0.0309) \\ 0.120 \\ 0.0074 \end{array}$
Mean R-squared Marriage Mean R-squared Personal	$\begin{array}{c} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.0046\\(0.00517)\\\hline 0.0030\\0.0028\\\hline 0.0179\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \hline \\ 0.0242^{*} \\ (0.0126) \\ \hline \\ 0.0181 \\ 0.0118 \\ \hline \\ 0.0575^{***} \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \hline \\ 0.0449^{***} \\ (0.0163) \\ 0.0305 \\ 0.0138 \\ \hline \\ 0.113^{***} \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ \hline 0.0272 \\ 0.0114 \\ \hline 0.0644^{**} \\ (0.0263) \\ \hline 0.0838 \\ 0.0073 \\ \hline 0.146^{***} \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \hline \\ 0.0528^{*} \\ (0.0293) \\ 0.107 \\ 0.0071 \\ \hline \\ 0.0752^{**} \end{array}$	$\begin{array}{c} 0.0345^{**} \\ (0.0175) \\ 0.0355 \\ 0.0116 \\ \end{array} \\ \begin{array}{c} 0.0490 \\ (0.0309) \\ 0.120 \\ 0.0074 \\ \end{array} \\ \begin{array}{c} 0.0581 \end{array}$
Mean R-squared Marriage Mean R-squared Personal	$\begin{array}{c} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.00757\\\hline 0.0030\\0.0030\\0.0028\\\hline 0.0179\\(0.0113)\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \hline \\ 0.0242^{*} \\ (0.0126) \\ \hline \\ 0.0181 \\ 0.0118 \\ \hline \\ 0.0575^{***} \\ (0.0165) \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \hline \\ 0.0449^{***} \\ (0.0163) \\ 0.0305 \\ 0.0138 \\ \hline \\ 0.113^{***} \\ (0.0218) \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \hline \\ 0.0644^{**} \\ (0.0263) \\ 0.0838 \\ 0.0073 \\ \hline \\ 0.146^{***} \\ (0.0305) \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ \hline 0.0302 \\ 0.0126 \\ \hline \\ 0.0528^{*} \\ (0.0293) \\ \hline 0.107 \\ 0.0071 \\ \hline \\ 0.0752^{**} \\ (0.0361) \end{array}$	$\begin{array}{c} 0.0345^{**}\\ (0.0175)\\ \hline 0.0355\\ 0.0116\\ \hline 0.0490\\ (0.0309)\\ \hline 0.120\\ 0.0074\\ \hline 0.0581\\ (0.0415)\\ \end{array}$
Mean R-squared Marriage Mean R-squared Personal Mean	$\begin{array}{c} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.00757\\\hline 0.0046\\(0.00517)\\\hline 0.0030\\0.0028\\\hline 0.0179\\(0.0113)\\\hline 0.0145\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \end{array} \\ \begin{array}{c} 0.0242^{*} \\ (0.0126) \\ 0.0181 \\ 0.0118 \\ \end{array} \\ \begin{array}{c} 0.0575^{***} \\ (0.0165) \\ 0.0317 \end{array}$	$\begin{array}{c} 0.0346^{**} \\ (0.0137) \\ 0.0213 \\ 0.0148 \\ \end{array}$ $\begin{array}{c} 0.0449^{***} \\ (0.0163) \\ 0.0305 \\ 0.0138 \\ \end{array}$ $\begin{array}{c} 0.113^{***} \\ (0.0218) \\ 0.0571 \end{array}$	$\begin{array}{c} 0.0473^{***}\\ (0.0154)\\ 0.0272\\ 0.0114\\ \hline \\ 0.0644^{**}\\ (0.0263)\\ \hline \\ 0.0838\\ 0.0073\\ \hline \\ 0.146^{***}\\ (0.0305)\\ \hline \\ 0.119\\ \end{array}$	$\begin{array}{c} 0.0494^{***} \\ (0.0162) \\ 0.0302 \\ 0.0126 \\ \hline \\ 0.0528^{*} \\ (0.0293) \\ \hline \\ 0.107 \\ 0.0071 \\ \hline \\ 0.0752^{**} \\ (0.0361) \\ \hline \\ 0.177 \\ \end{array}$	$\begin{array}{c} 0.0345^{**}\\ (0.0175)\\ \hline 0.0355\\ 0.0116\\ \hline 0.0490\\ (0.0309)\\ \hline 0.120\\ 0.0074\\ \hline 0.0581\\ (0.0415)\\ \hline 0.260\\ \end{array}$
Mean R-squared Marriage Mean R-squared Personal Mean R-squared	$\begin{array}{c} 0.0013\\(0.0065)\\\hline 0.0047\\0.00757\\\hline 0.00757\\\hline 0.0030\\0.0028\\\hline 0.0179\\(0.0113)\\\hline 0.0145\\0.0077\\\hline \end{array}$	$\begin{array}{c} 0.0239^{**} \\ (0.0119) \\ 0.0160 \\ 0.0127 \\ \hline \\ 0.0242^{*} \\ (0.0126) \\ 0.0181 \\ 0.0118 \\ \hline \\ 0.0575^{***} \\ (0.0165) \\ \hline \\ 0.0317 \\ 0.0199 \\ \end{array}$	$\begin{array}{c} 0.0346^{**}\\ (0.0137)\\ \hline 0.0213\\ 0.0148\\ \hline 0.0449^{***}\\ (0.0163)\\ \hline 0.0305\\ 0.0138\\ \hline 0.113^{***}\\ (0.0218)\\ \hline 0.0571\\ 0.0288\\ \hline \end{array}$	$\begin{array}{c} 0.0473^{***} \\ (0.0154) \\ 0.0272 \\ 0.0114 \\ \hline \\ 0.0644^{**} \\ (0.0263) \\ 0.0838 \\ 0.0073 \\ \hline \\ 0.146^{***} \\ (0.0305) \\ \hline \\ 0.119 \\ 0.0190 \\ \end{array}$	$\begin{array}{c} 0.0494^{***}\\ (0.0162)\\ 0.0302\\ 0.0126\\ \hline \\ 0.0528^{*}\\ (0.0293)\\ 0.107\\ 0.0071\\ \hline \\ 0.0752^{**}\\ (0.0361)\\ \hline \\ 0.177\\ 0.0135\\ \hline \end{array}$	$\begin{array}{c} 0.0345^{**}\\ (0.0175)\\ 0.0355\\ 0.0116\\ \end{array}\\\\ 0.0490\\ (0.0309)\\ 0.120\\ 0.0074\\ \end{array}\\\\ 0.0581\\ (0.0415)\\ 0.260\\ 0.0114\\ \end{array}$

Table 2: Effect of 1995 Policy Change on Reported Separation Reason - Voluntary Separations

	(1)	(2)	(3)	(4)	(5)	(6)
	Short-Run				Long-Run	
	$1 \mathrm{yr}$	$2 \mathrm{yr}$	$3 \mathrm{yr}$	$6 \mathrm{yr}$	9yr	12 yr
J2J						
	0.00689	0.0255^{*}	0.0310^{*}	0.0507^{**}	0.0586^{***}	0.0493^{**}
	(0.00647)	(0.0139)	(0.0163)	(0.0209)	(0.0218)	(0.0234)
Mean	0.00246	0.0117	0.0160	0.0264	0.0289	0.0332
R-squared	0.00531	0.0189	0.0210	0.0141	0.0137	0.0108
Marriage						
	0.0043	0.0254^{*}	0.0385^{**}	0.0368	0.0234	0.0152
	(0.0056)	(0.0136)	(0.0171)	(0.0260)	(0.0297)	(0.0317)
Mean	0.0018	0.0111	0.0178	0.0424	0.0565	0.0652
R-squared	0.0041	0.0204	0.0318	0.0348	0.0368	0.0408
Personal						
	0.0184	0.0469^{***}	0.0772^{***}	0.0956^{***}	0.0588	0.0629
	(0.0120)	(0.0190)	(0.0269)	(0.0350)	(0.0417)	(0.0471)
Mean	0.0086	0.0221	0.0467	0.0830	0.124	0.173
R-squared	0.0127	0.0335	0.0577	0.0645	0.0697	0.0977
Observations	1627	1627	1627	1627	1627	1627

(c) **DID: 1993-1995**

Note: Coefficients from Specification (1). In each panel, each row reports results from the following different dependent variables: in the the first row, the dependent variable as an indicator for separation due to a jobto-job transition; in the second row the dependent variable is an indicator for separation due to marriage; and the third row is an indicator variable for separations due to personal reasons. Columns refer to the indicated number of years since hire. Panel (a) compares flight attendants hired in 1993 to those hired in 1995, and panel (b) compares flight attendants hired between 1991-1993 to those hired 1995-1997. In Panel (c), we compare flight attendants to men with permanent contracts in the firm. "Post 1995" is a dummy variable that takes on the value 1 for flight attendants and 0 for men on permanent contracts. Row 3 in Panel (c) shows the interaction of these two dummy variables, showing the treatment effect of the 1995 policy change for flight attendants. All models are estimated by OLS and include controls for education and age at hire. Robust standard errors reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total		J2J		Personal		Marriage	
	$1 \mathrm{yr}$	$2 \mathrm{yr}$						
Y ears Temp	0.0203**	0.0603***	0.0090	0.0417^{***}	0.0004	-0.0039	0.0069	0.0262^{*}
	(0.0099)	(0.0197)	(0.0061)	(0.0116)	(0.0024)	(0.0085)	(0.0072)	(0.0138)
Mean	0.0220	0.0692	0.0087	0.0232	0.0013	0.0124	0.0122	0.0334
Observations	2296	1855	2296	1855	2296	1855	2296	1855
R-squared	0.0022	0.0069	0.0022	0.0102	0.0008	0.0020	0.0018	0.0034
			(b) D	ID: Time, I	Men			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total		J2J		Personal	~ /	Marriage	
	$1 \mathrm{yr}$	$2 \mathrm{yr}$						
Y ears Temp	0.0072	0.0309^{***}	0.0046	0.0190^{***}	0.00008	0.0002	0.0015	0.0126
	(0.0057)	(0.0119)	(0.0035)	(0.0069)	(0.0014)	(0.0051)	(0.0042)	(0.0084)
Mean	0.0197	0.0598	0.0072	0.0193	0.0011	0.0103	0.0104	0.0283
Observations	2786	2224	2786	2224	2786	2224	2786	2224
R-squared	0.0045	0.0152	0.0032	0.0098	0.0007	0.0034	0.0029	0.0071

Table 3: Effect of 2016 Policy Change on Separation and Separation Reasons

(a) **Difference: Time**

Source: Personnel records 2012-2018.

Note: Table reports β^h coefficients on YearsTemp from Specification (2) and are thus interpreted as a the effect of one additional year on a temporary contract. Columns refer to the indicated outcome and number of years since hire. "Total" is an indicator for any separation. "J2J" is an indicator for separation due to a job-to-job transition. "Marriage" is an indicator for separation due to marriage. "Personal reasons" is an indicator for separation due to personal reasons. Panel (a) compares flight attendants hired over 2012-2018, and panel (b) compares flight attendants to men with permanent contracts in the firm. All models are estimated by OLS and include controls for education and age at hire. Robust standard errors reported in parentheses.

	(1) Short-Run	(2)	(3) Long-Run	(4)
	3yr	byr	9yr	12yr
Post 1995=1	-0.00096	-0.00049	-0.0089	-0.0715^{*}
	(0.00304)	(0.0220)	(0.0340)	(0.0401)
Mean	0.00210	0.108	0.283	0.450
Observations	953	839	745	649
R-squared	0.0001	0.000001	0.0001	0.0049
	(b) Pool i	ing 1991-19	997	
	(1)	(2)	(3)	(4)
	Short-Run		Long-Run	
	$3 \mathrm{yr}$	$6 \mathrm{yr}$	$9 \mathrm{yr}$	12yr
Post 1995=1	-0.0097	-0.0350	-0.0527	-0.134**
	(0.0083)	(0.0323)	(0.0515)	(0.0614)
Mean	0.0067	0.0983	0.272	0.417
Observations	2992	2573	2235	1896
R-squared	0.0015	0.0037	0.0080	0.0110

Table 4: Effect of 1995 Policy Change on the Probability of Having a Child

(a) **1993-1995**

Source: Personnel records 1991-2018.

Note: Coefficients from Specification (1) where the outcome is an indicator for childbirth by the year since hire indicated in the column. Regressions are conditional on staying with the firm up until the indicated year since hire. Panel (a) compares flight attendants hired in 1993 to those hired in 1995, and panel (b) compares flight attendants hired between 1991-1993 to those hired 1995-1997. "Post 1995" is a dummy variable that takes on the value 1 if a worker starts after 1995 and 0 otherwise. All regressions are estimated by OLS and include controls for education and age at hire. Robust standard errors reported in parentheses. Table 5: Regression Estimates Pre/Post Policy Change: Monthly Log Earnings and Daily Log Hours

	(1)	(2)	(3) Long B un
	Short-Run 1 Year	2-3 Years	8-9 Years
Post 1995=1	0.0807***	0.0319^{**}	0.0102
	(0.0174)	(0.0156)	(0.0208)
Flight Attendant=1	0.423^{***}	0.505^{***}	0.194^{***}
	(0.0763)	(0.0822)	(0.0249)
Post 1995×Flight Attend.	-0.522***	-0.537^{***}	0.000978
	(0.139)	(0.0695)	(0.0503)
Mean	7.442	7.544	7.724
Observations	3943	8398	4104
R-squared	0.283	0.404	0.379

(a) Log Earnings (Monthly)

(b) Log Hours (Daily)

	(1) Short-Run 1 Year	(2) 2-3 Years	(3) Long-Run 8-9 Years
Post 1995=1	$0.0108 \\ (0.00989)$	$\begin{array}{c} 0.0330^{***} \\ (0.00949) \end{array}$	-0.0268 (0.0167)
Flight Attendant=1	-0.0830^{**} (0.0364)	-0.125^{***} (0.0274)	-0.153^{***} (0.0230)
Post 1995×Flight Attend.	$\begin{array}{c} 0.0323 \ (0.0274) \end{array}$	-0.00411 (0.0207)	$0.000836 \\ (0.0269)$
Mean Observations R-squared	2.055 3942 0.0522	$2.090 \\ 8392 \\ 0.153$	$2.102 \\ 4087 \\ 0.163$

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1991-1997). Note: Coefficients from Specification (1). All regressions compare workers hired from 1991-1993 to 1995-1997. "Post 1995" is a dummy variable that takes on the value 1 if a worker starts after 1995 and 0 otherwise. "Flight Attendant" is dummy variable that takes on the value 1 for flight attendants and 0 for women in administrative jobs in other industries. Row 3 shows the interaction of these two dummy variables, showing the treatment effect of the 1995 policy change for flight attendants. Panel (a) shows the coefficients from the regression on monthly log earnings (in a hundred yen) Similarly, Panel (b) shows the coefficients from the regression on daily log hours. All models are estimated by OLS and include entry-year fixed effects, age, age square, a cubic in age, education, experience, and establishment size. Standard errors clustered by establishment in parentheses.

	(1) 1993 vs. 1995	(2) Pooling
Post 1995=1	35.612***	32.385***
	(0.9569)	(0.5210)
Observation	630	1928
Mean	41.714	44.155
R-squared	0.7279	0.7080

Table 6: Effect of 1995 Policy Change on Time to Promotion to Lead Flight Attendant

Note: Coefficients from Specification (1) where the outcome is months since entry to be promoted to a lead flight attendant by year of hire. The regression is calculated among flight attendants who are ever promoted. Column (1) compares flight attendants hired in 1993 to those hired in 1995, and Column (2) compares flight attendants hired between 1991-1993 to those hired 1995-1997. "Post 1995" is a dummy variable that takes on the value 1 if a worker starts after 1995 and 0 otherwise. All regressions are estimated by OLS and include controls for education and age at hire. Robust standard errors reported in parentheses.

Figure A1: Share of Female and College Graduates by Industry

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1990-2017).

Note: Figures show the share of female workers and female college graduates by industry. The airline industry is denoted in red. Share of "Female" on the y-axis denotes the proportion of female workers in the firm. "Share College Graduates" on the x-axis indicates the percentage with some college degree, including 2-year college among employees. The "1990s" indicates averages from 1990-1999, "2000s" indicate averages from 2000-2009, and "2010s" shows averages from 2010-2017. The airline industry is marked as red. Shares are calculated for establishments with 50 or more employees.

Figure A2: Log Male Wage and Log Female Wage for College Graduates Age 30-39 by Industry

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1990-2017). Note: Figures show log male wage and log female wage for college graduates by industry. Each point indicates industry averages. The airline industry is denoted in red. The "1990s" indicates averages from 1990-1999, "2000s" indicate averages from 2000-2009, and "2010s" shows averages from 2010-2017. Log wages are calculated for college graduate workers in their 30s working for establishments with 50 or more employees.

Figure A3: The Share of New Hires among Employees and The Share of College Graduate among New Hires by Industry

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1990-2017). Note: Figures show the share of newly hired employees and the share of college graduates among new hires by industry. The airline industry is denoted in red. The "1990s" indicates averages from 1990-1999, "2000s" indicate averages from 2000-2009, and "2010s" shows averages from 2010-2017. The shares are calculated for establishments with 50 or more employees, and for workers ages 22-64.

Figure A4: Temporary Contract Share of Employment in Japan, by Age and Gender, 1990 and 2015

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1990, 2015). Note: Figure shows the share of temporary employment contracts among total employment by age and gender for 1990 and 2015. The share is calculated for working men and women from ages 21-64. Temporary contracts are defined as all workers not on permanent contracts.

Figure A5: Average Log Earnings and Wages by Employment Contract Type, Age and Gender in 2015

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (2015).

Note: Panel (a) shows monthly earnings by age, gender and employment contract, and panel (b) shows hourly wages by age, gender and employment contracts. Temporary contracts are defined as workers who are not on permanent contract. Monthly earnings and hourly wages are in 100 yen. Earnings and wages exclude bonus payments. Earnings and wages are calculated for workers ages 22-64.

Figure A6: Share of Men Hired on Temporary Contracts: The 1995 and 2016 Policy Changes

Source: Personnel records 1985-2018.

Note: Figure shows the share of men hired on temporary contract from 1985 to 2018, calculated from the personnel records. The two vertical lines show the 1995 and 2016 policy changes. The bottom panel shows the number hired each year. The shares are calculated for workers ages 22-64.

Table A1: Descriptive Statistics Around the	e 1995 Policy Change:	Personnel Records
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	(1)		(2)	(3)	
	Bef	ore	After		Difference	
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	22.41	1.05	23.20	1.54	-0.79^{***}	(17.69)
University	0.69	0.46	0.69	0.46	-0.00	(-0.11)
2-Year College	0.30	0.46	0.28	0.45	0.02	(1.27)
High school	0.01	0.07	0.02	0.15	-0.02***	(-4.75)
Education Missing	0.00	0.00	0.00	0.00	0.00	(.)
Observations	1369		2043			3412

(a) Flight Attendants

(b) Control Men

	(1)			2)	(3)	
	Before		Af	ter	Difference	
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	23.88	4.20	33.90	14.96	-10.02^{***}	(-16.76)
University	0.60	0.49	0.59	0.49	0.01	(0.40)
2-Year College	0.01	0.11	0.01	0.07	0.01^{*}	(1.76)
High school	0.39	0.49	0.41	0.49	-0.02	(-0.72)
Education Missing	0.00	0.05	0.00	0.04	0.00	(0.41)
Observations	1705		645		2350	

Source: Personnel records 1991-1997.

Note: Means and standard deviations of each variables shown in Table. "Before" includes women hired from 1991-1993, and "After" indicates women hired from 1995-1997. "Difference" reports the difference in means and t-statistics for statistical significance. We exclude 1994 since due to the hiring freeze.

	(1)	(2)	(3)	
	Befe	ore	After		Diffe	erence
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	23.60	1.56	23.41	1.44	0.19^{**}	(2.72)
University	0.96	0.19	0.97	0.16	-0.01	(-1.56)
2-Year College	0.04	0.19	0.03	0.16	0.01^{*}	(1.72)
High school	0.00	0.00	0.00	0.00	0.00	(.)
Education Missing	0.00	0.00	0.00	0.03	-0.00	(-1.00)
Observations	988		856		1844	

Table A2: Descriptive Statistics Around the $\mathbf{2016}$ Policy Change: $\mathbf{Personnel}\ \mathbf{Records}$

(a) **Flight Attendants**

(b) Control Men

	(1)		(2)		(3)	
	Before		After		Difference	
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	25.66	3.30	24.75	2.89	0.91^{**}	(3.28)
University	0.99	0.09	0.98	0.13	0.01	(0.94)
2-Year College	0.00	0.00	0.00	0.06	-0.00	(-1.00)
High school	0.00	0.00	0.00	0.06	-0.00	(-1.00)
Education Missing	0.01	0.09	0.01	0.10	-0.00	(.)
Observations	231		275		506	

Source: Personnel records 2012-2018.

Note: Means and standard deviations of each variables are shown in Table. "Before" includes women hired from 2012-2015, and "After" indicates women hired from 2016-2018. "Difference" shows the difference in means and t-statistics for statistical significance.

	(1) Before		(2) After		(3) Difference	
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	21.92	1.76	23.69	2.72	-1.77^{***}	(-16.60)
University	0.45	0.50	0.50	0.50	-0.05^{*}	(-2.34)
2-Year College	0.52	0.50	0.45	0.50	0.07^{**}	(3.19)
High school	0.03	0.18	0.05	0.22	-0.02^{*}	(-2.07)
Observations	1114		858		1972	

Table A3: Descriptive Statistics Around the 1995 Policy Change: BSWS(a) Flight Attendants

(b) Control Women

	(1)		(2)		(3)	
	Before		After		Difference	
	mean	sd	mean	sd	b	\mathbf{t}
Basic Characteristics						
Age at Start	24.34	7.36	25.89	7.76	-1.55^{***}	(-19.86)
University	0.21	0.41	0.27	0.44	-0.06***	(-12.93)
2-Year College	0.32	0.47	0.33	0.47	-0.01^{*}	(-2.39)
High school	0.47	0.50	0.40	0.49	0.07^{***}	(13.47)
Observations	19629		18268		37897	

Source: Ministry of Health, Labour, and Welfare, Basic Survey on Wage Structure (1991-1997). Note: Means and standard deviations of each variables shown in Table. "Before" includes women hired from 1991-1993, and "After" indicates women hired from 1995-1997. "Difference" reports the difference in means and t-statistics for statistical significance. We exclude 1994 since due to the hiring freeze.