

Wage Disparities Between Regular and Non-regular Employment in Japan in the 2010s

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Introduction

- This poster clarifies whether the wage disparity between regular and non-regular employment in Japan decreased in the 2010s, by focusing on different points on the wage distribution curve.
- The analysis also focuses on the role of regional minimum wages in reducing the wage penalty for non-regular employment during the 2010s.
- There exists a significant wage disparity between regular and non-regular employees in Japan, but whether this disparity is uniform or heterogeneous has not received sufficient attention.
- Theoretically, it follows that there is a wage premium at the top, and a wage penalty at the bottom, of the wage distribution for non-regular employment.
- As per observation from previous studies in many countries, there is no wage premium for non-regular employment, but the wage penalty for non-regular employment is greater at the lower end of the wage distribution.
- A previous study in Japan found that an increase in minimum wage raises wages for workers at the bottom of the wage distribution.
- In Japan, the government, labor unions, and employers' associations agreed to raise the minimum wage in 2008; since then, regional minimum wages have increased substantially. However, the impact of these institutional changes on wage disparity between regular and non-regular employees has not been examined.

Method

- This study uses unconditional quantile regression analysis (RIF regression analysis) with the Recentered Influence Function (RIF) of the quantiles as the objective variable (Firpo et al. 2009).
- RIF is the Influence Function (IF) of a statistic (e.g., quantile) adjusted (decentered), such that its expected value is that statistic. The IF and RIF of the quantiles are as follows:

$$IF(Y; q_\tau, F_Y) = \frac{\tau - 1\{Y \leq q_\tau\}}{f_Y(q_\tau)}$$
$$RIF(Y; q_\tau) = q_\tau + \frac{\tau - 1\{Y \leq q_\tau\}}{f_Y(q_\tau)}$$

Notation:

- Y is the natural logarithm of the hourly wage (the objective variable).
- τ is the quantile point;
- q_τ is the value of Y at the quantile point;
- F_Y denotes the distribution function of Y ;
- $f_Y(q_\tau)$ is the density function at point q_τ ;
- $1\{Y \leq q_\tau\}$ is a dummy variable indicating whether Y is below q_τ .
- RIF regression analysis is a method to model this conditional expectation of RIF, which can be estimated by OLS or logit model.

$$E(RIF(Y; q_\tau)) = X'\gamma$$

Data

- We extracted a sample of workers, aged 20–59 years, from the “General Survey on Diversified Types of Employment,” a nation-wide survey conducted by the Ministry of Health, Labor, and Welfare in Japan in 2010 and 2019.
- Dependent variable: Logarithm of hourly wages of individual employees.
- Focal Independent variables: Employment types (non-regular employment dummy) and logarithm of regional minimum wages
- Control variables: years of education, years of service, squares of years of service, occupation, industry, and firm size.
- We analyzed the data separately for male and female workers.

Data (cont'd)

- Table 1 presents the descriptive statistics.

Table 1. Descriptive Statistics (Selected)

	Male Workers				Female Workers			
	2010		2019		2010		2019	
	N	Mean	N	Mean	N	Mean	N	Mean
Logarithm of hourly wage	8,833	7.46	5,486	7.42	14,332	7.05	8,316	7.08
Regular Employment	5,315	60.17	3,012	54.90	2,698	18.83	1,707	20.53
Non-regular Employment	3,518	39.83	2,474	45.10	11,634	81.17	6,609	79.47
Contract Workers	1,408	15.94	727	13.25	2,253	15.72	1,099	13.22
Part-time workers	382	4.32	323	5.89	4,526	31.58	2,412	29.00
Dispatch Worker	653	7.39	780	14.22	2,551	17.80	1,949	23.44
Others	1,075	12.17	644	11.74	2,304	16.08	1,149	13.82
Logarithm of regional minimum wages	8,833	7.46	5,486	7.42	14,332	7.05	8,316	7.08

Results

- Focusing on the results of the OLS Model, we find that the wage penalty for non-regular employment decreased slightly between 2010 and 2019.
- The coefficient for the non-regular employment dummy in the male sample changed from -0.2432 (-21.6%) in 2010 to -0.2305 (-20.6%) in 2019, while that for the female sample changed from -0.3353 (-28.5%) in 2010 to -0.2683 (-23.5%) in 2019.

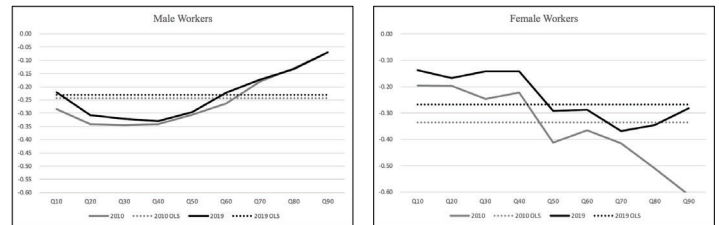


Figure 1. Wage Penalty of Non-regular Employment

- The results of the unconditional quantile regression indicate that the wage penalty is not uniform, depending on the location of the wage distribution.
- For male workers, the wage disparity between regular and non-regular employment is sizeable at the bottom and small at the top of the wage distribution curve.
- The wage disparity for female workers is small for those receiving lower wages and sizeable for those with higher remuneration.
- For female workers, the wage penalty for non-regular employment decreased across the entire wage distribution between 2010 and 2019.
- Additionally, regional minimum wages was found to increase the remuneration of low-wage workers to a larger extent in non-regular than in regular employment.

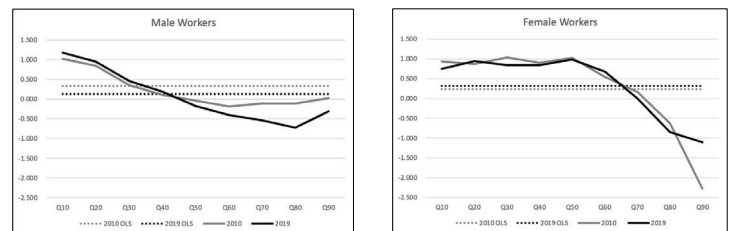


Figure 2. Interaction Effect of Non-regular Dummy and Log Regional Minimum Wages

Conclusion and Implication

- The wage penalty for non-regular employment decreased during the 2010s. The extent of the decline was greater for female than for male workers and was observed over a wide range of incomes among the former.
- Higher regional minimum wages reduce the wage penalty for non-regular employment at the lower end of the wage distribution. This result suggests that policies to increase minimum wages are effective in reducing the wage gap between regular and non-regular employment.

Reference: Firpo, Sergio, Nicole Fortin, and Thomas Lemieux, 2009, “Unconditional Quantile Regressions,” *Econometrica*, 77(3): 953-73.