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Abstract

While it is generally agreed that reducing the gender wage gap is desirable, different policy measures would be effective in addressing the problem, depending on what causes the gap. This study measures the relationships between firms' compositions of workers, productivity, and wages—the "productivity-wage gap"—using panel data from 2015 to 2021 constructed from an original survey of Japanese firms linked with the Basic Survey of Japanese Business Structure and Activities. These results indicate that, on average, female workers' wages are not lower than their contributions to firm productivity. Second, we do not find female workers' wages to be higher than productivity in firms with labor unions and female directors on their boards. Third, part-time workers' wages are higher relative to their productivity levels. Fourth, the wages of highly educated workers are lower relative to their productivity levels. Fifth, when firm fixed effects are controlled for, the productivity-wage gap for female workers and highly educated workers cannot be precisely estimated, indicating that unobserved firm characteristics are behind the gap observed cross-sectionally.

Keywords: productivity-wage gap, female workers, part-time workers, labor union, female director

JEL classifications: J31, J71, D24

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Female Workers and Firms' Productivity and Wages

1. Introduction

With the increase in the number of female workers, many studies have analyzed the gender wage gap. Altonji and Blank (1999), Olivetti and Petrongolo (2016), Blau and Kahn (2017), and Cortes and Pan (2023) are representative surveys in the literature. Many studies confirm the existence of a gender wage gap and point to various factors as reasons for the gap, including discrimination in the labor market; the burden of childbirth and childcare; restrictions on working hours, including overtime; and negative compensatory wages due to a preference for amenities, such as flexible work.

In Japan, firms with more than 300 regular employees are required to disclose wage differences between male and female workers by 2022. In other countries, particularly European countries, firms are mandated to disclose wages by gender, and studies have been conducted on the effect of such a pay transparency policy on the gender wage gap (e.g., Bennedsen *et al*., 2022; Baggio and Marandola, 2023; Gulyas *et al*., 2023, Bamieh and Ziegler, 2024), with mixed results.[1]

Although many factors potentially affect wages, it is necessary to examine the relationship between productivity and wages to determine whether the observed wage gap is economically rational. In this respect, Baggio and Marandola (2023), for example, suggest that "pay transparency should be complemented by information on productivity." Even if females' wages are relatively low, the necessary policy actions will differ depending on whether they are less productive or are at an unreasonably low level that is not explained by their contribution to the productivity of the firm. If the relationship is productivity > wages, policies aimed at correcting the wage structure are likely to be effective. However, if the relationship between productivity and wages is productivity ≈ wages or productivity < wages, it is essential to adopt policies that directly affect productivity, such as promoting education and training. There is little disagreement that reducing the gender wage gap is desirable, but it is necessary to consider the kind of policies that are effective for this purpose based on empirical evidence.

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[1] Bennedsen *et al*. (2023) surveys the literature on the impact of pay transparency on gender wage gap.

It would be the best strategy if individual worker productivity could be compared with wages; however, measuring productivity at the worker level is generally difficult. For this reason, the approach pioneered by Hellerstein and Neumark (1995) uses information on employee composition at the firm level (e.g., the share of female employees) to compare the contribution of some types of workers share to firm productivity and its contribution to mean wages. Hellerstein and Neumark (1999, 2007), Hellerstein *et al*. (1999), Ilmakunnas *et al*. (2004), Ilmakunnas and Maliranta (2005), Haltiwanger *et al*. (2007), Vandenberghe (2013), Garnero *et al*. (2014), Sin *et al*. (2022), and Gallen (2024) are examples of studies employing such an approach to analyze gender wage gap.

The results of the relationship between productivity and wages for female workers vary from productivity ≈ wages (Hellerstein and Neumark, 1999), productivity > wages (Hellerstein *et al*., 1999; Hellerstein and Neumark, 2007; Haltiwanger *et al*., 2007; Garnero *et al*., 2014; Sin *et al*., 2022), and productivity < wages (Ilmakunnas and Maliranta, 2005 Vandenberghe, 2013). [2] In addition, there may be heterogeneity among females. Gallen (2024), a recent study in Denmark, shows that productivity ≈ wages for females with children, but productivity > wages for females without children.

To conduct such analyses, employer-employee linked data have often been used in past studies, but this study uses firm survey data in which firms are asked about the number or composition of their employees by category. Specifically, we analyze the relationship between the ratio of female workers, the ratio of part-time workers, and the ratio of highly educated workers (the ratio of four-year university graduates and above) on the one hand, and firm productivity and mean wages on the other hand, using panel data for the fiscal years 2015, 2018, and 2021. [3]

In addition to estimating the productivity-wage gap for the sample as a whole, we also analyze it separately for the subsamples of (1) the presence of labor unions and (2) the presence of female board members. Because the presence of labor unions is generally thought to compress the overall wage gap, we examine whether such a relationship exists in the context of the gender wage gap. Several studies have discussed the role of unions in the gender wage gap (e.g., Blau and Kahn, 2017; Bruns, 2019; Biasi and Sarsons, 2022). Many studies have examined the trickle-down effect

[2] Kawaguchi (2007), in an approach to explain firms' profit rate, reports that most of the gender wage gap in Japan is due to the productivity difference.

[3] Morikawa (2017) analyzes cross-sectional data of 2015 and finds that wages for female workers are roughly balanced with their contribution to firms' productivity.

of female managers or directors on female workers within a firm (e.g., Matsa and Miller, 2011; Hensvik, 2014; Ahamed *et al*. 2019; Bertrand *et al*. 2019; Maida and Weber, 2022; Flabbi *et al*., 2022). While some studies suggest that the presence of females at the top management level contributes to narrowing the gender gap in firms' workforces, others do not find such an effect. This study investigates whether a trickle-down mechanism exists in Japan.

The main results of the analysis are as follows: First, we do not observe a relationship in which, on average, female workers' wages are lower than their contributions to firm productivity. Second, there is no relationship between higher wages for female workers and productivity in unionized firms or firms with female directors. If anything, the opposite is true. Third, part-time workers' wages are high relative to their contributions to firm productivity. Fourth, the wages of highly educated workers are low relative to their contributions to firm productivity. Fifth, the "productivity-wage gap" for female workers and highly educated workers cannot be confirmed when firm fixed effects are controlled, indicating that some unobserved firm characteristics are behind the cross-sectionally observed productivity-wage gap.

Section 2 describes the data and methodologies used in this study. Section 3 presents our estimation results. Finally, Section 4 summarizes the conclusions and discusses the implications and limitations of the analysis.

2. Data and Method of Analysis

This study uses panel data for the fiscal years 2015, 2018, and 2021 by linking our original survey of Japanese firms ("Survey of Corporate Management and Economic Policy: SCMEP)" with the "Basic Survey of Japanese Business Structure and Activities: BSJBSA," an official statistical survey conducted by the Ministry of Economy, Trade and Industry. The BSJBSA, an annual statistical survey that began in 1991, accumulates representative statistics for all listed and unlisted Japanese firms with 50 or more regular employees and with capital of 30 million yen or more engaged in the mining, manufacturing, electricity and gas, wholesale, retail, and several service industries to provide a comprehensive picture of Japanese firms. Since the BSJBSA is one of the "fundamental statistical surveys" designated by the Statistics Act, firms have obligations to report back. Approximately 30,000 firms are annually surveyed.

The SCMEP was designed by the author, and RIETI contracted Tokyo Shoko Research, Ltd. to conduct the survey. The SCMEP questionnaire was sent to 15,000 firms from the registered list of the BSJBSA, excluding firms classified as mining and utilities. The SCMEP was conducted during October–December 2015 for FY 2015, January–February 2019 for FY 2018, and October–December 2021 for FY 2021. The number of respondents was 3,438 in FY 2015, 2,520 in FY 2018, and 3,191 in FY 2021. The dataset is an unbalanced panel that includes many firms that responded repeatedly to two or three surveys.

While the SCMEP survey items cover a wide range of topics, each year it asks about the following characteristics of regular employees at the firm level: (1) the number of male and female employees and (2) the percentage of employees with a four-year university or higher education. Other information used in this study includes the existence of labor unions and the number of male and female directors. **Figure 1** depicts the distribution of the percentage of female employees and their changes over time based on the SCMEP data. The distribution of the ratio of female employees has shifted to the right over time. The average female sex ratio was 29.8% in FY 2015, 30.4% in FY 2018, and 31.4% in FY 2021.

The BSJBSA is frequently used in empirical productivity studies on Japanese firms. In this study, firm-level total factor productivity (TFP) and mean wages (both expressed in logarithms) are calculated from the BSJBSA data and used as dependent variables. As the BSJBSA continuously surveys the number of part-time workers, this information is also used to calculate the ratio of part-time workers, which is then used as an explanatory variable.

TFP is measured non-parametrically for each three-digit industry of the BSJBSA using the index number method (see, for example, Caves *et al*., 1982), with value added as output, capital input, and labor input (hours) as inputs. Capital input is the amount of tangible fixed assets in the BSJBSA and labor input is the number of full-time workers multiplied by the average hours worked by full-time workers plus the number of part-time workers multiplied by the average hours worked by part-time workers. However, since the BSJBSA does not include information on working hours, the monthly working hours of full-time and part-time workers by industry are taken from the "Monthly Labour Survey" (Ministry of Health, Labour and Welfare).

Mean wages are log-transformed obtained by dividing the labor cost (total payroll plus welfare expenses) by the total hours worked. The calculation of total hours worked is the same as that of labor input for TFP. In empirical analyses of productivity across multiple time periods, the real values of TFP after adjusting for price changes are generally used; however, since the purpose of this study is to compare productivity with wages, TFP is used in nominal terms.

The method of analysis is simple ordinary least squares (OLS) estimation, in which firm-level TFP and mean wages are explained by the ratio of female workers, part-time workers, and highly educated (four-year university or higher) workers. For the baseline estimation, we pool three years of data and use firm size (log employees), industry (three-digit classification), and year dummies as control variables. Previous studies using methods closest to those used in this study are Ilmakunnas *et al*. (2004) and Ilmakunnas and Maliranta (2005) for the Finnish manufacturing industry. In addition to the baseline estimation, we include firm fixed effects to account for the effects of unobserved firm characteristics.

For several firms, some variables (e.g., ratio of workers with higher education) are missing in the dataset; therefore, samples for which TFP, mean wages, female worker ratio, part-time worker ratio, and highly educated worker ratio are available are used in the estimations to make accurate comparisons. This procedure results in 6,597 observations pooled over a three-year period. The variables used in the estimations and their summary statistics are presented in **Table 1**.

Our interest is in the extent to which the coefficient of the female worker ratio, for example, differs between estimates, with TFP and mean wages as the dependent variables (productivity-wage gap"). When calculating the "productivity-wage gap" by this approach, the estimated coefficient (φ) for productivity and the estimated coefficient (ρ) for mean wages cannot be simply compared. The coefficient for the worker composition (e.g., female worker ratio) on productivity should be divided by the labor share (φ/β) to compare it with the coefficient (ρ) on mean wages (Ilmakunnas *et al*., 2004; Ilmakunnas and Maliranta, 2005). [4] Intuitively, this is because the coefficient of labor composition on output (value-added) is underestimated in the estimation with productivity as the dependent variable because both labor and capital contribute to output (value-added).

3. Results

3.1. Estimation Results

[4] The equilibrium condition assuming a profit-maximizing behavior of firms is expressed as $pY(\partial \ln pY/\partial q)=wL(\partial \ln w/\partial q)$, $(\partial \ln pY/\partial q)/(wL/pY)=(\partial \ln w/\partial q)$. In this equation, pY is value added (nominal), L is labor input, w is wage, q is worker characteristics (e.g., female worker). If wL/ pY (the labor share) is denoted as β, we need to compare φ/β with ρ.

Prior to the estimation, we examined the relationship between the ratio of female employees in a firm and productivity/wages in scatter plots. Pooling the three-year data, **Figure 2** shows the relationship between the ratio of female employees and TFP, and **Figure 3** shows the relationship between the ratio of female employees and mean wages. Both figures show a weak downward relationship: firms with a higher percentage of female workers have lower TFP and mean wages. While this correlation is unsurprising, the question is: What differences exist in the relationships between the composition of workers, TFP, and mean wages after controlling for other factors? For example, because firms with a high ratio of female workers also have a high ratio of part-time workers, the relationship among the ratio of female employees, productivity, and wages is likely to differ when the ratio of part-time workers is controlled.

The baseline OLS estimation results, pooling three years of data, are shown in **Table 2**, where the coefficients of the female ratio to TFP and mean wages are negative and approximately the same size, indicating that a higher ratio of female workers is associated with lower productivity and wages. The coefficients of the ratio of part-time workers are negative, and the coefficient of mean wages is quantitatively larger. The coefficients of the ratio of workers with higher education are positive, and the coefficient of TFP is quantitatively larger. All coefficients are statistically significant at the 1% level.

As noted in Section 2, to assess the productivity-wage gap, it is necessary to compare the coefficient on TFP divided by the labor share (φ/β) with the coefficient on wages (ρ). **Table 3** summarizes the results. In this table, ρ minus φ/β is converted to a percentage term; thus, a positive value means that wages are higher than the contribution to firm productivity, and a negative value means that wages are lower.

The productivity-wage gap for female workers is +10.8% when the three-year estimates are pooled (column (1) of the table), indicating that wages are higher than the contribution to firm productivity. However, the separate estimates for the sample years (columns (2)–(4) of the table) show that in 2015 and 2018, the coefficients were positive but quantitatively small, with wages roughly in line with the contribution to productivity. By contrast, the gap in 2021 has a large positive value of +35.4%. The results by year are shown in Appendix **Table A1**., which indicates that the coefficient of the ratio of female workers to TFP had a very large negative value in 2021. This may be due to the fact that in the COVID-19 crisis, controlling for three-digit industry and firm size, the production of firms with a high ratio of female workers fell significantly. However, we do not observe a relationship in which the wages of female workers are lower, at least on average, relative to their contribution to firm productivity.

The productivity-wage gap for part-time workers is +10.3%, indicating that part-time workers are not underpaid, on average, relative to their contribution to firm productivity; rather, their wages are relatively high.[5] The productivity-wage gap for highly educated workers is -15.3% in the baseline estimation pooled over three years, indicating that wages for highly educated workers are lower than their contributions to firm productivity. The magnitude of the gap varies annually; however, it is negative.

The fixed effects estimation results, including firm fixed effects, are reported in **Table 4**. In this case, none of the coefficients of the ratio of female workers to highly educated workers are statistically significant. In other words, considering the unobserved firm characteristics, there is no statistical relationship between the female worker ratio or the ratio of highly educated workers on the one hand, and productivity and wages on the other hand. One reason may be that the composition of employees by gender and education does not change significantly in the short term, which limits the time-series variation within firms. In any case, productivity > wages for the ratio of female workers and productivity < wages for the ratio of college graduates reported above are only cross-sectional relationships. Therefore, some unobservable firm characteristics are not included in the explanatory variables behind the cross-sectional relationships. Thus, the results should not be interpreted as follows: if a firm increases the ratio of female workers, TFP or mean wages will be reduced.

Even in the fixed-effects estimation, the coefficients for part-time workers are negative and statistically significant for both TFP and mean wages. Calculating the productivity-wage gap for part-time workers after adjusting for labor share based on the fixed effects estimation results yields a productivity-wage gap of +19.4%, which is larger in absolute value than the OLS estimation results. In other words, even when unobserved firm characteristics are considered, part-time workers' wages are higher, on average, relative to their contribution to productivity. While one might think that increasing the number of part-time workers would reduce labor costs for firms, the results suggest that it may further reduce productivity.

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[5] The productivity-wage gap for part-time workers varies considerably when estimated year by year: the gap is negative in 2021. However, the coefficient for the ratio of part-time workers in the 2021 TFP estimation is not statistically significant (see Appendix **Table A1**); thus, the results are not meaningful. The 2021 results may have been disturbed by the COVID-19 pandemic.

3.2. Estimations by Firm Characteristics

Table 5 shows the productivity-wage gap by firm characteristics from the OLS estimations, pooling the three-year period. The OLS estimation results for TFP and mean wages are shown in Appendix **Table A2** and **A3**. The results are broken down by (1) the presence of labor unions and (2) the presence of female directors. When divided by the presence or absence of labor unions, firms without labor unions have a larger positive gap for females than firms with labor unions (see column (1) of the table). In other words, unionized firms do not earn higher wages for female workers relative to productivity, but the opposite is true. The productivity-wage gap for part-time workers is positive in both categories and the difference between unionized and non-unionized firms is quantitatively small. The gap for highly educated workers is negative in both categories and the absolute value is larger for firms without labor unions.

When divided by the presence or absence of female directors, the sign of the productivity-wage gap for female workers is negative for firms with female directors and positive for those without (see column (2) of the table). Female workers' wages are not higher relative to productivity in firms with female directors; rather, the opposite is true. While some previous studies have shown a trickle-down effect of the presence or increase in the number of female board members, reducing the wage gap between males and females at the lower level of the workforce, no such relationship is observed here. The sample analyzed in this study includes many privately held firms, which may be related to the fact that Japanese family firms tend to have female directors (see Morikawa, 2016). The gap for part-time workers is positive and that for highly educated workers is negative. Firms with female directors have higher wages for part-time workers relative to productivity, as confirmed by the fixed-effects estimations.

However, with the exception of the ratio of part-time workers, the relationships between TFP and mean wages are generally insignificant when the estimates include firm fixed effects. Therefore, we cannot confirm a relationship whereby increasing the ratio of female workers or highly educated workers changes the TFP or wages. [6]

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[6] An exception is the ratio of female workers in firms with labor unions, where the coefficients on TFP and mean wages are both negative and statistically significant at the 10% or 5% levels in the fixed effects estimations. The resulting calculated productivity-wage gap is +7.4%.

4. Conclusion

This study uses panel data for the period 2015–2021 using an original survey of Japanese firms (SCMEP) linked with the BSJBSA to analyze the relationship between a firm's worker composition and productivity and wages—the "productivity-wage gap"—with a focus on female workers.

The main results are summarized as follows: First, there is a relationship in which, on average, female workers' wages are not lower relative to their contribution to firm productivity, and, if anything, their wages are somewhat higher. However, the COVID-19 pandemic has disturbed the estimation results, and if we consider only the period before the pandemic, female workers' wages will be roughly balanced by their productivity. Second, there is no relationship between higher wages for female workers relative to their productivity in firms with labor unions or female directors; the opposite is true. Third, part-time workers' wages are high relative to their contributions to firm productivity. This result is confirmed by the fixed effects estimation, which considers unobserved firm characteristics. Fourth, the wages of highly educated workers are low relative to their contribution to productivity. Fifth, the productivity-wage gap for female and highly educated workers cannot be confirmed when firm fixed effects are considered, indicating that unobserved firm characteristics underlie the observed cross-sectional relationships.

Based on the above results, if the policy goal is to reduce the gender wage gap, the effectiveness of a policy that encourages firms with relatively large gender wage gaps to change their wage structures through the disclosure of wage information is probably limited. However, it is necessary to analyze the actual changes that have occurred after the mandatory disclosure of wage differentials between male and female workers once data for the fiscal year 2023 and beyond become available.

Of course, the results in this study indicate only average relationships and may differ from firm to firm; it is also possible that some female and part-time workers have productivity > wages at the individual level. There are also limitations to the dataset used in this study, such that it does not include information on employee age structure and tenure, and that the sample is limited to firms with 50 or more regular employees that do not include very small firms. Further research is needed to clarify the relationship between wages and productivity, which is important for planning effective policies to encourage the contraction of the productivity-wage gap.

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Table 1. Variables and summary statistics

	Mean	Std. dev.	Obs
TFP (log)	-0.093	0.463	6,597
Mean wage (log)	-5.989	0.414	6,597
Female ratio	0.302	0.199	6,597
Part-time ratio	0.180	0.224	6,597
University of higher ratio	0.355	0.263	6,597
Labor share	0.728	0.461	6,597
Number of employees (log)	5.073	0.899	6,597

Note: The figures are pooled data for fiscal years 2015, 2018, and 2021.

Table 2. Estimation results for TFP and mean wages

	(1) TFP			(2) Mean wage		
Female ratio	-0.248	(0.043)	***	-0.238	(0.031)	***
Part-time ratio	-0.468	(0.042)	***	-0.545	(0.036)	***
University of higher ratio	0.261	(0.027)	***	0.193	(0.020)	***
Firm size	yes			yes		
Industry	yes			yes		
Year	yes			yes		
Obs.	6,597			6,597		
Adjusted R^2	0.095			0.315		

Note: OLS estimations with robust standard errors are provided in parentheses. ***: p<0.01.

Table 3. Productivity-wage gaps

	(1) Pooled	(2) FY2015	(3) FY2018	(4) FY2021
Female ratio	10.8%	4.1%	2.0%	35.4%
Part-time ratio	10.3%	12.2%	30.0%	0.0%
University of higher ratio	-15.3%	-5.2%	-23.5%	-22.3%

Notes: Percentages are calculated from the results in **Table 2**. Positive figures indicate higher wages for workers in each category relative to productivity and negative figures indicate lower wages. The ratio of part-time workers in 2021 is statistically insignificant for TFP.

Table 4. Fixed-effects estimation result

	(1) TFP			(2) Mean wage		
Female ratio	0.009	(0.049)		-0.037	(0.044)	
Part-time ratio	-0.463	(0.080)	***	-0.459	(0.073)	***
University of higher ratio	0.048	(0.034)		0.016	(0.031)	
Firm size	yes			yes		
Industry	yes			yes		
Year	yes			yes		
Obs.	6,597			6,597		
R^2 (within)	0.023			0.052		

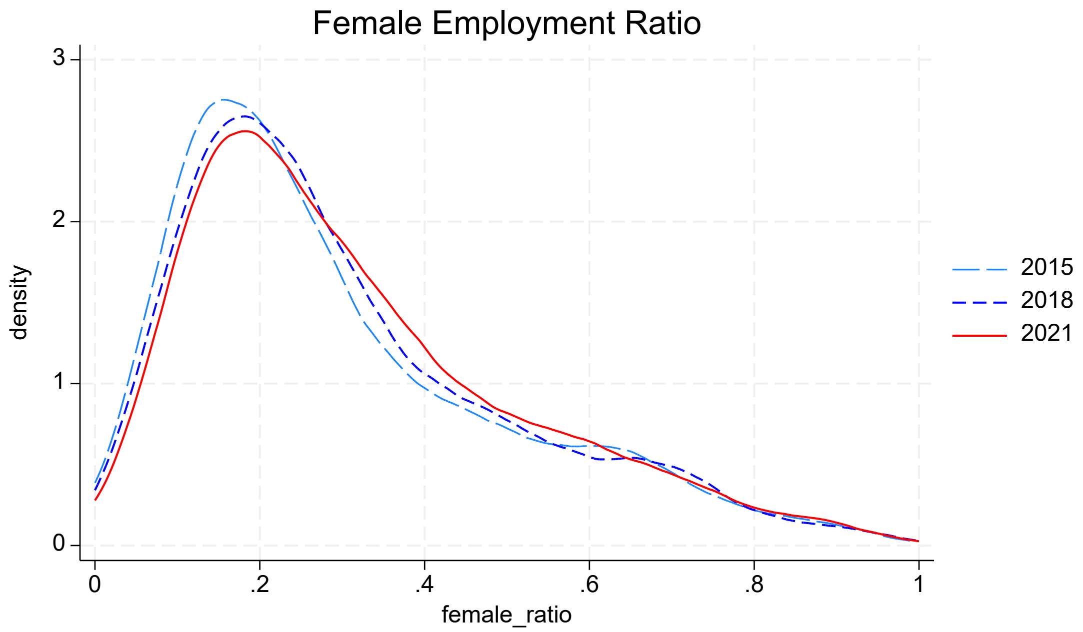
Note: Fixed-effects estimations with robust standard errors are shown in parentheses. p<0.01.

Table 5. Firm characteristics and productivity-wage gap

	(1) Labor union		(2) Female director	
	Yes	No	Yes	No
Female ratio	4.9%	14.7%	-6.6%	15.9%
Part-time ratio	8.9%	11.3%	14.1%	9.6%
University of higher ratio	-11.6%	-18.3%	-16.6%	-14.4%

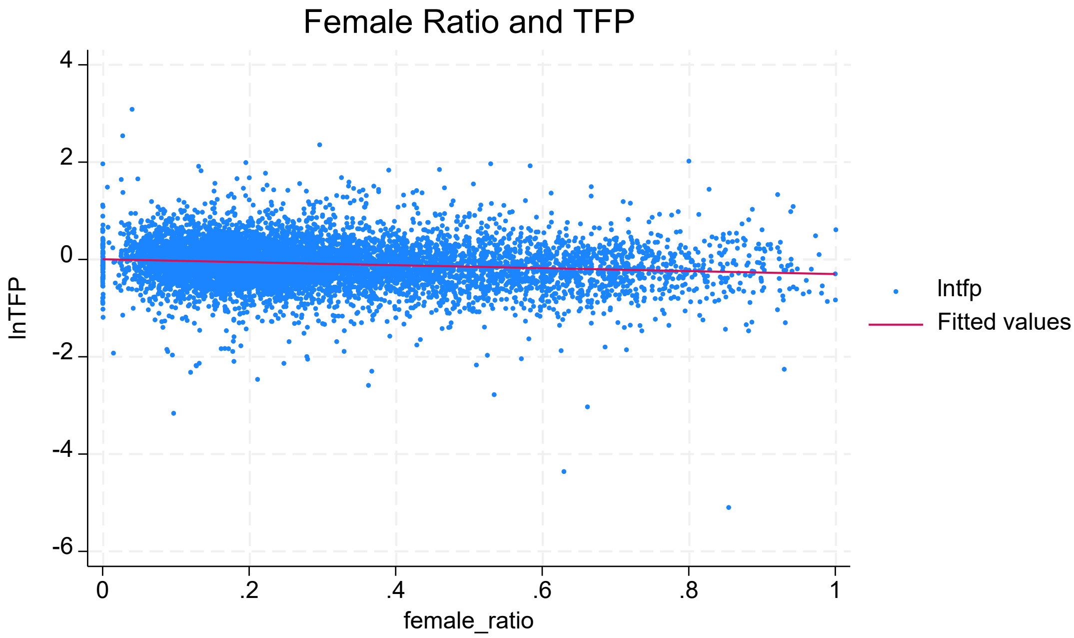
Note: Positive figures indicate higher wages for workers in each category relative to productivity and negative figures indicate lower wages.

Figure 1. Distribution of female worker ratio



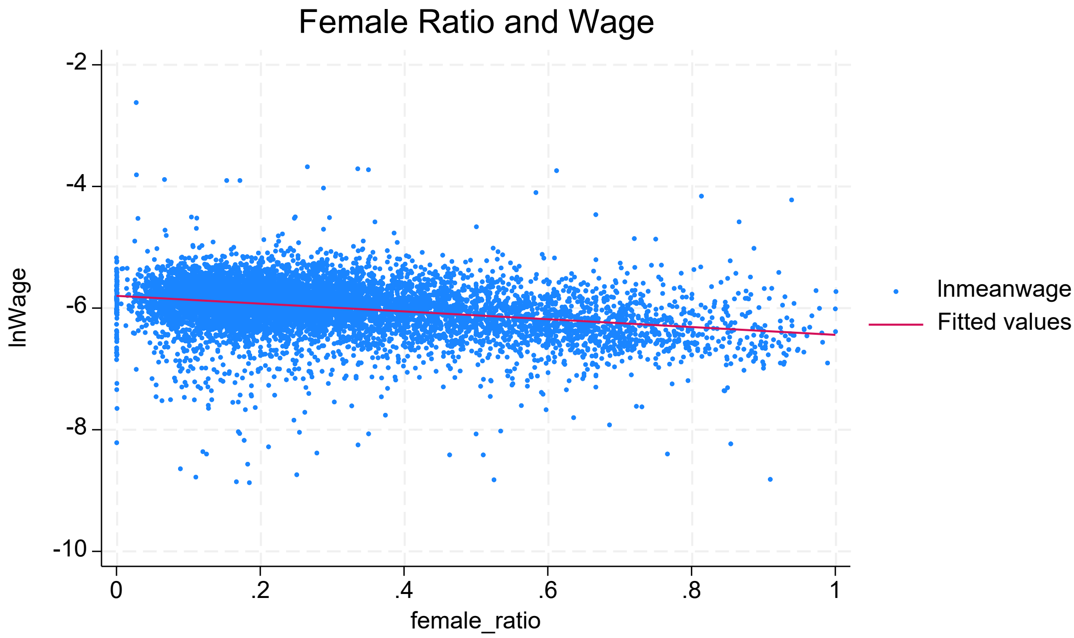
Note: The figure is depicted from the SCMEP.

Figure 2. Female worker ratio and TFP



Note: The figure is depicted from the panel data for the three years.

Figure 3. Female worker ratio and mean wages



Note: The figure is depicted from the panel data for the three years.

Appendix Tables

Table A1. Estimation results by year

	(1) FY2015				(2) FY2018			
	TFP		Mean wage		TFP		Mean wage	
Female ratio	-0.100	(0.053) *	-0.099	(0.040) **	-0.292	(0.094) ***	-0.391	(0.066) ***
Part-time ratio	-0.591	(0.068) ***	-0.713	(0.051) ***	-0.522	(0.078) ***	-0.471	(0.066) ***
University of higher ratio	0.080	(0.037) **	0.058	(0.029) **	0.440	(0.057) ***	0.352	(0.039) ***
Firm size	yes		yes		yes		yes	
Industry	yes		yes		yes		yes	
Obs.	2,392		2,392		1,874		1,874	
Adjusted R^2	0.103		0.366		0.139		0.423	

	(3) FY2021			
	TFP		Mean wage	
Female ratio	-0.602	(0.118) ***	-0.494	(0.080) ***
Part-time ratio	-0.108	(0.080)	-0.230	(0.070) ***
University of higher ratio	0.451	(0.057) ***	0.345	(0.041) ***
Firm size	yes		yes	
Industry	yes		yes	
Obs.	2,331		2,331	
Adjusted R^2	0.099		0.243	

Notes. Ordinary least squares (OLS) estimates with robust standard errors are shown in parentheses. ***: p<0.01, **: p<0.05, *: p<0.10.

Table A2. Estimation results by the presence of labor union

	(1) Firms with labor union				(2) Firms without labor union			
	TFP		Mean wage		TFP		Mean wage	
Female ratio	-0.243	(0.078) ***	-0.294	(0.060) ***	-0.250	(0.055) ***	-0.202	(0.038) ***
Part-time ratio	-0.415	(0.079) ***	-0.498	(0.067) ***	-0.455	(0.051) ***	-0.511	(0.043) ***
University of higher ratio	0.236	(0.048) ***	0.209	(0.037) ***	0.289	(0.033) ***	0.191	(0.025) ***
Firm size	yes		yes		yes		yes	
Industry	yes		yes		yes		yes	
Year	yes		yes		yes		yes	
Obs.	2,054		2,054		4,498		4,498	
Adjusted R^2	0.114		0.374		0.100		0.296	

Notes: Notes. Ordinary least squares (OLS) estimates with robust standard errors are shown in parentheses. ***: p<0.01.

Table A3. Estimation results by the presence of female directors

	(1) Firms with female director				(2) Firms without female director			
	TFP		Mean wage		TFP		Mean wage	
Female ratio	-0.145	(0.080) *	-0.265	(0.056) ***	-0.265	(0.054) ***	-0.218	(0.038) ***
Part-time ratio	-0.426	(0.068) ***	-0.445	(0.060) ***	-0.483	(0.052) ***	-0.576	(0.045) ***
University of higher ratio	0.265	(0.062) ***	0.177	(0.042) ***	0.247	(0.031) ***	0.185	(0.023) ***
Firm size	yes		yes		yes		yes	
Industry	yes		yes		yes		yes	
Year	yes		yes		yes		yes	
Obs.	1,457		1,457		5,128		5,128	
Adjusted R^2	0.148		0.369		0.089		0.300	

Notes: Notes. Ordinary least squares (OLS) estimates with robust standard errors are shown in parentheses. ***: p<0.01, p<0.10.