

# Gender Inequality in the Workplace

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## ABSTRACT

This paper examines gender wage gap across various industries and occupations in Japan. Semipublic, service-oriented industries tend to have smaller gender differences, while male-dominated profit-oriented industries show wider wage gaps. The inequality is more severe for blue-collar workers, and the pay gap does not diminish but rises with years of service. Women have a better chance at pay equity when they are highly educated and have some type of qualification.

## 1. Introduction

Gender inequality takes many forms across countries. Japan is known to lag behind in gender equality, especially in politics and business, compared to other industrialized nations. According to the Gender Inequality Index (GII) of 2011, a composite index introduced by the United Nations Development program, Japan is the 14<sup>th</sup> highest ranked country among 187 countries in terms of gender equality. This, however, is due primarily to Japan's high level of education and reproductive health system, not to the political or economic opportunities for women. Components of GII indicate that among 47 countries with the highest human development, Japan ranks 41<sup>st</sup> in the percentage of seats held by women in national parliament, and 37<sup>th</sup> in the labor force participation rate of women.

Other studies have also found Japan to be a country with noticeable gender disparity. Focusing on the economic opportunities for women, the Global Gender Gap Report 2012 by the World Economic Forum states that Japan ranks 78<sup>th</sup> among 134 countries in female labor force participation, is ranked 97<sup>th</sup> among 129 countries as regards wage equality survey, and is 80<sup>th</sup> among 134 countries in estimated earned income (female-to-male ratio). And according to Gender, Institutions and Development Database 2009 of OECD, Japan has the second highest gender pay gap in average earnings of full-time employees among the 25 OECD countries, the only country surpassing Japan in inequality being South Korea.

Part of the reason for the gender disparity in Japan can be traced back to its patriarchal social system. Note

that Japan is one of the few countries that still do not allow husband and wife to retain separate family names. Historically, there has been a clear “division of labor” by gender in Japanese households. Men were the authoritative figure of the family that worked outside the home, while women’s primary role was to keep the house in order and look after the children as well as the elderly. Women could work outside the home only if it did not interfere with their household duties, and this affected the type of jobs they held outside the home.

Household inequality, such as “division of labor”, has deep cultural and social roots and cannot be transformed instantaneously. Less than half of the women 15 years or older are in the labor market today, and among working women, over half are part-time and/or temporary workers. In contrast, over 80% of working men are hired as regular staffs. With the lagging economy, however, many households are now finding it necessary for women to hold jobs outside the home, and with this new reality, people’s perceptions toward women working outside the home is evolving, a point that will be discussed in Section 3.

One of the problems that the Japanese economy is facing is that the country has become a rapidly aging society with a decreasing birthrate. The male work force has been slowly shrinking since the late 1990’s. With the baby-boomers beginning to retire from their jobs, this declining trend will only intensify in the near future. In order for Japan to maintain the current level of economic activity and to compete in a globalized world, it is essential to sustain the size of its work force. To this end, the government is pushing to raise the country’s retirement age. But there is another way to alleviate the labor shortage, that is, to increase the size of female work force to compensate for the decreasing male work force. And to encourage more women to enter the work force, industries need to treat them equally as their male counterparts.

Japanese government has been taking measures to promote a more gender equal society, but the effects seem to have been rather limited. The first major step toward improving women’s standings in the workplace was the Equal Employment Opportunity Law, implemented in 1986. The effectiveness of this law has been in question from the onset, owing to its lack of penalty against corporations that did not comply with the law and enforce equality in the workplace. As a result, the law has had only a minimal effect on the industry’s wage and hiring system, and some critics say that the legislation served mainly as a publicity stunt rather than to solve the real problem of gender disparity. The next major piece of legislation was the Basic Law for a gender-equal society enacted in 1999. Based on the provision of this law, a basic plan to achieve a gender equal society is compiled every 5 years, the most recent plan being proposed in 2010.

Despite these and other government’s policies toward achieving gender equality and the growing number of women entering the labor market, gender wage gap in Japan remains relatively high today. One can argue that the main reason for the wage difference is that women tend to work on a part time basis and choose to hold subordinate positions in order to manage household obligations. If this is indeed the case, then wages of full

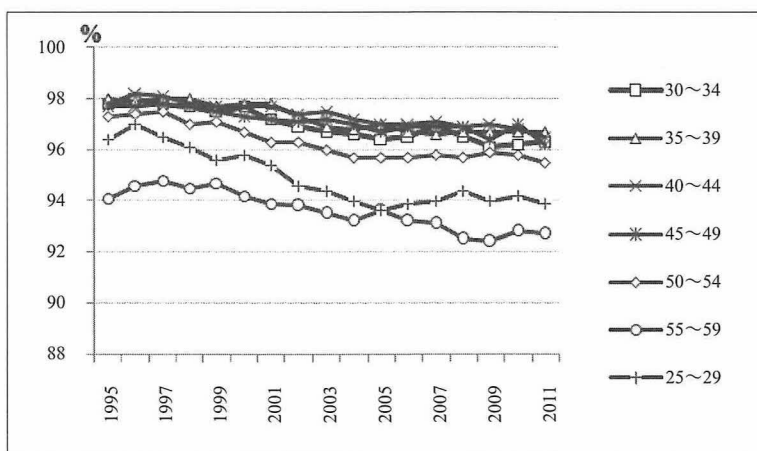
time employees for men and women should be comparable. But are they? And what are the characteristics of gender wage gaps in Japanese industries? Prior to exploring these questions, the state of Japan's labor market is studied.

## 2. Japan's labor force

Since the burst of the bubble economy, the employment rate<sup>1</sup> among Japanese men has been falling slowly. Consequently, the number of male employees has been decreasing since 1997, according to the Labor Force Survey. Part of the declining trend in the employment rate can be attributed to the sluggish unemployment rate<sup>2</sup>, but another factor that is equally significant is the waning labor force participation rate<sup>3</sup> among men. Labor force participation rate among men was over 80% in the 1970's, whereas it has dropped to 71% by 2011. If this declining trend continues, labor force participation rate among men of all ages will roughly drop to 66% in 2020, suggesting that only two out of three men ages 15 or over will be in the labor market by 2020.

On the one hand, the declining rate of labor force participation among men between ages 15-19 and 20-24 is brought on by the increasing number of men getting higher level of education before entering the work force. On the other hand, the number of elderly men that are unable to work is rising, causing the labor force participation rate for age group 65 or older to drop consistently. In addition, data show that for some reason,

Figure 1. Labor force participation rate by age group, male



(Data Source) Labor Force Survey, ministry of internal affairs and communications

- 1 percentage of person on or over 15 years of age who are employed, as defined by the statistics bureau of the ministry of internal affairs and communications
- 2 percentage of total work force who are unemployed and seeking employment
- 3 percentage of persons on or over 15 years of age who are employed or unemployed but looking for a job

Note that employment rate = labor force participation rate  $\times$  (1 - unemployment rate)

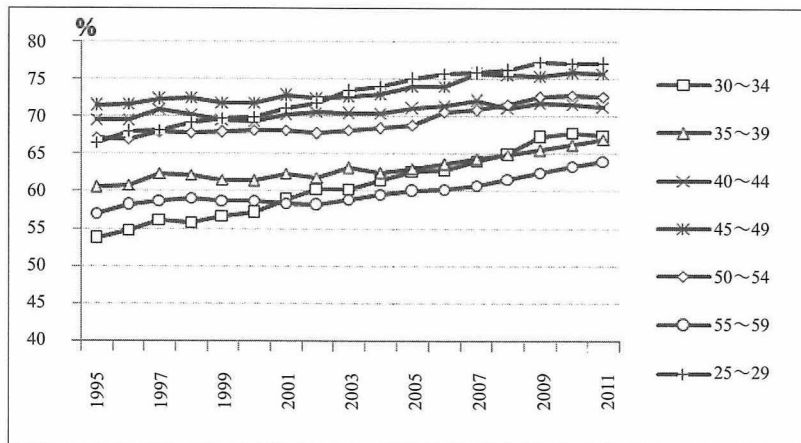
the labor force participation rate is dropping among prime age men as well, that is, men in their 30's and 40's.

The declining labor force participation rate among prime age men is particularly alarming, given that the size of working-age population (people between the ages 15-64) has itself been decreasing since 1995. With Japan's low birthrate, the working-age population will continue to shrink. As a result, if nothing is done about the declining trend in the labor force participation rate, the decrease in the number of younger workers will accelerate.

Labor participation rates for women ages 15-19 and 20-24 have also been declining along with the increase in the number of women obtaining higher education. In contrast to men, however, labor participation rates for women of all other ages are rising steadily, although their level is still much lower than men. Most notably, there have been major increases in the labor participation rate for women ages 25-29, 30-34 and women in their 50's, as depicted in Figure 2. With Japan's stagnant economy, a rise in the average age of marriage, and the rise in the rate of divorce, many women are finding that they no longer have a choice but to work outside the home and contribute directly to the family budget.

Although women's participation in the labor force is increasing, many are entering the labor market on a part-time, non-regular basis. To sustain the size of Japan's labor force of today and cover for the decrease in the male work force, we need to encourage more women to hold full time jobs. And in order to incentivize women into working full time, it is imperative to promote social acceptance, to provide help with household duties, as well as to ensure fair and equal treatment at work. Giving women the same financial benefits as men at work is the first step towards this goal.

Figure 2. Labor force participation rate by age group, female



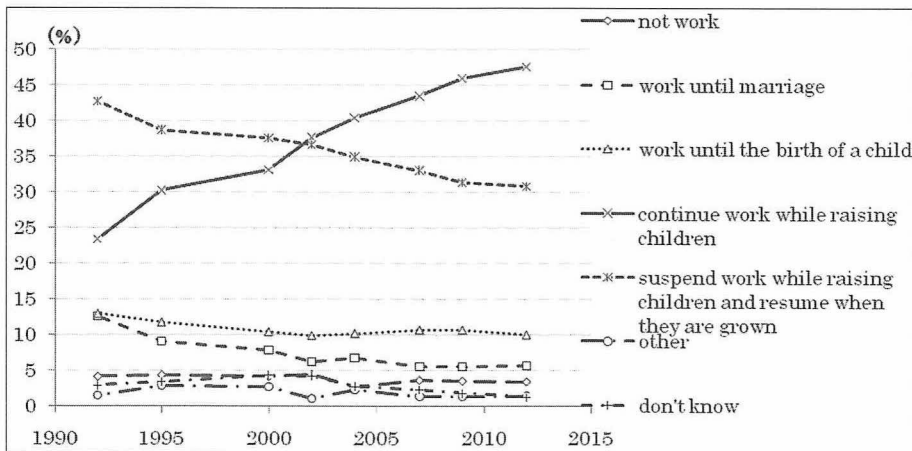
(Data source) Labor Force Survey, ministry of internal affairs and communications

### 3. Should women work outside the home?

People’s attitudes toward women working outside the home have been evolving. Figure 3 shows people’s views on whether or not it is better for women to have work outside the home, and if so, at what stage of their lives. Data are taken from surveys on gender-equal society conducted by the cabinet office between the years 1992 and 2012. As is shown in Figure 3, in 1992, 23.5% of those surveyed thought women should continue working outside the home while raising children. In the most recent survey of 2012, that percentage has more than doubled. In contrast, the percentage of people who think women should suspend their career while raising children and go back to work once the children are older, have dropped more than 10%. As a result, the percentage of people who think women should continue working while raising children is now significantly higher than those who think women should suspend work while raising children and resume when they are grown. Adding these two categories amount to nearly 80%, that is, a vast majority of people, regardless of their age or gender, think it is better for women to work outside the home, at least when the children are “old enough”. It is interesting to note that people most resistant to the idea of women continuing to work while raising children, are those in their 70’s or older, and men in their 20’s.

Unfortunately, the public’s growing acceptance of women working outside the home does not automatically lead to the understanding on the side of industries. Companies are not necessarily hiring women on an equal footing as their male counterparts. In fact, many women still face discrimination in one form or another at various workplaces. Of course, in many instances, women choose to work part-time or in a more subsidiary role to reduce the pressure of work and to work for shorter hours so they will have time to attend to their families. In such circumstances, it is still important that women are paid fairly according to their services to

Figure3. Should women work outside the home?



(Data source) Survey on gender-equal society, cabinet office

the companies, and are guaranteed equal opportunities as men once they decide to work full time. In the next section, inequality of earnings between men and women are studied.

## **4. Gender wage gap**

### **4.1. Wage structure by industry**

Basic Survey on Wage Structure, conducted by the ministry of health, labor and welfare provides us with detailed wage data. Data for regular full time workers on year 2011 from this survey are analyzed in this section using the multiple regression method, to ascertain differences in wage structures across various industries and to determine the main factors affecting wages of full time employees in each industry. Workers are classified by the industries of employment into 16 categories, as shown in Table 1. Possible factors that affect wage are the educational background, length of service to the company, gender, and working hours. Although skill of each individual is also an important factor in determining wage, data on individual workers are not offered to the public and therefore not available for this analysis. The questions that are of particular interest are whether gender plays a prominent role in determining wage, and what types of industries have higher gender wage gap.

For each industry, data on wages for full time workers are given in the form of frequency tables, classified by age group and academic career. As stated before, data on individual worker are not available to the public and therefore aggregated data by age group and academic career were employed for the analysis. From the original data that comprised of employees aged 15 and older, age groups 19 and under as well as 60 and over were excluded from the analysis. Age group 19 and under was not included in the model since no data is available for this age group as regards junior college or university graduates. Age group 60 and over were excluded since a majority of the companies set 60 to be the retirement age, and therefore, a structural change in the relationship between variables is expected at age 60. Also excluded from the analysis were data on workers whose final educational background are junior high school graduates. The ratio of students entering high schools has exceeded 90% in the 1970's and is now over 96%, thereby, the sample size of people with educational background without a high school diploma was too small to perform a reliable analysis.

The main focus of the analysis is to compare characteristics of the wage structure of each industry, not to obtain models best fit for prediction. For this purpose, identical form of the multiple regression model need to be adopted for every industry. Scheduled cash earning, which corresponds to basic wage and does not include overtime pay, was chosen as the dependent variable, to control for the possible difference in working hours among employees within the same industry. Candidates of independent variables include length of service to the company, number of hours worked, gender, and school careers, where gender and school

careers are dummy variables.

Another important point to note is that each age group (grouped every 5 years) in the frequency table represents different number of employees, since the number of workers vary by industries. For this reason, the weighted least squares method was adopted in the estimation of the regression coefficients, with the number of employees used as weights.

A preliminary analysis to choose the combination and the functional form of the independent variables consisted in applying the stepwise method of model selection for each industry. The results of the stepwise method were then compared across all industries to determine the appropriate model to represent all industries. After careful inspection of the values of the coefficients, p-values, as well as scatter plots, it was concluded that dummy variables representing gender and school career should both be included in product form with the length of service, rather than in additional form. This indicates that both gender and school career affect wages of regular employees in a manner that the gap widens with the length of service at the industry.

The functional form chosen for the final wage function is as follows:

$$Y = \alpha + \beta_0 X + \beta_1 D_1 X + \beta_2 D_2 X + \beta_3 D_3 X$$

where,

Y: scheduled cash earnings (thousand yen)

X: length of service (years)

D<sub>1</sub>: gender dummy variable (male=1, female=0)

D<sub>2</sub>: school career dummy variable 1 (high school graduate=1 other=0)

D<sub>3</sub>: school career dummy variable 2 (graduates of higher professional schools or junior colleges=1, other=0).

The estimated values of the coefficients for each industry, along with the values of the adjusted R<sup>2</sup> and the percentage of female employees in the industry are reported in Table 1. Note that D<sub>2</sub>=D<sub>3</sub>=0 represents university graduates, and the constant term  $\alpha$  represents earnings at the entrance level. Number of hours worked did not prove to be statistically significant for each industry, and was therefore not included in the final model. This was to be expected since scheduled cash earning was chosen as the dependent variable, not the contractual earning which includes overtime pay. Values in the second column indicate p-values. Very few women are employed in the mining and quarrying industry, hindering a precise analysis of the effect of gender on wage in that industry, so the result for this industry should be regarded only as a reference. As stated before, all dummy variables are in product form with the length of service. Although the initial model included dummy variables in both the product form and the additional form, the additional form of the

dummy variables in most industries proved to be statistically insignificant, and therefore dropped from the final model.

Industry with the largest gender gap in wages among full time employees proved to be the finance and insurance industry, with over 7600 yen difference for each year of service. The percentage of female workers in the finance and insurance industry is relatively high, but a majority of women in the industry assume gender specific tasks, such as customer service. Real estate industry also has a large wage disparity of about 7300 yen difference for each year of service. This industry has long been male oriented, and to this day, important businesses such as negotiating with customers are typically done by male employees, while women take on subsidiary roles. Both industries are clearly profit-oriented. A wide gender pay gap is also seen in the construction industry. This industry is male-dominated, partly because of the physical nature of the work, with only about 10% of its workers being female.

In contrast, industries that have the least gender gap in wages are found to be the education industry and the compound services industry which includes postal offices and cooperative associations. Education industry has relatively high percentage of female employees, although the percentage of women in certain professions within the industry, such as college professors, is considerably lower. Electricity, gas, heat supply and water industry as well as transport and postal activities industry have smaller gender gap as well. Ironically, these two industries hire the smallest percentage of women, each with less than 10% of the employees. Industries with low gender wage gap have the common characteristics of a public or semipublic, service-oriented sector, with less emphasis on profit. Note that for the education industry, academic wage gap is large compared to other industries. This is logical since a higher degree is essential to teach, especially at the university level. For educational institutions, it is the academic background rather than gender that affects wage.

Medical, health care and welfare industry also show a large academic wage gap. This industry includes hospitals and welfare centers which employ drastically different types of workers. For this industry, the gender gap is also large, but this is most likely due to the difference in the types of occupations within the industry. There are more than double the number of male medical doctors than female medical doctors, where as a majority of nurses, auxiliary nurses and nursing aids are female, thereby producing a wide gender wage gap. Welfare caregivers are also likely to be female, contributing further to the gender pay disparity. As a whole, the industry has the highest percentage of female employees.



Table 1. Estimated values of coefficients

Industry	R <sup>2</sup> adjusted	$\alpha$	$\beta_0$	$\beta_1$	$\beta_2$	$\beta_3$	% female
Mining and quarrying of stone and gravel	0.8976	195.49	16.08	7.45	-16.43	-13.55	12.2
		$4.96 \times 10^{-17}$	$8.03 \times 10^{-11}$	$6.29 \times 10^{-07}$	$7.51 \times 10^{-20}$	$5.83 \times 10^{-09}$	
Construction	0.9793	188.90	7.79	6.07	-5.15	-3.26	11.4
		$1.66 \times 10^{-37}$	$4.09 \times 10^{-18}$	$6.13 \times 10^{-18}$	$1.47 \times 10^{-23}$	$3.52 \times 10^{-10}$	
Manufacturing	0.9776	185.18	9.26	5.21	-7.35	-4.37	18.7
		$2.31 \times 10^{-36}$	$9.25 \times 10^{-21}$	$5.18 \times 10^{-17}$	$1.1 \times 10^{-27}$	$8.9 \times 10^{-11}$	
Electricity, gas, heat supply and water	0.9761	188.90	14.08	3.21	-7.23	-5.39	9.9
		$2.84 \times 10^{-31}$	$1.81 \times 10^{-24}$	$4.57 \times 10^{-08}$	$1.63 \times 10^{-23}$	$6.26 \times 10^{-11}$	
Information and communications	0.9649	215.30	13.19	3.66	-9.18	-7.46	21.8
		$2.5 \times 10^{-32}$	$5.27 \times 10^{-21}$	$2.61 \times 10^{-07}$	$1.11 \times 10^{-21}$	$5.55 \times 10^{-17}$	
Transport and postal activities	0.7810	223.43	4.19	3.34	-5.00	-2.76	8.7
		$3.72 \times 10^{-31}$	0.00012	$6.89 \times 10^{-05}$	$1.74 \times 10^{-12}$	0.0023	
Wholesale and retail trade	0.9507	201.13	6.79	4.11	-4.87	-3.61	25.6
		$1.21 \times 10^{-33}$	$6.06 \times 10^{-15}$	$2.46 \times 10^{-12}$	$2.08 \times 10^{-17}$	$9.8 \times 10^{-09}$	
Finance and insurance	0.8570	233.19	10.12	7.62	-7.19	-5.16	43.9
		$3.56 \times 10^{-16}$	$6.38 \times 10^{-05}$	$8.2 \times 10^{-05}$	$3.81 \times 10^{-05}$	0.0207	
Real estate and goods rental and leasing	0.9637	209.07	9.03	7.31	-7.20	-3.62	26.9
		$2.69 \times 10^{-32}$	$4.11 \times 10^{-14}$	$2.64 \times 10^{-15}$	$4.17 \times 10^{-19}$	$1.67 \times 10^{-05}$	
Scientific research, professional and technical services	0.9414	219.91	11.67	4.03	-9.15	-7.83	23.1
		$2.83 \times 10^{-28}$	$5.08 \times 10^{-16}$	$7.63 \times 10^{-07}$	$5.71 \times 10^{-20}$	$9.02 \times 10^{-14}$	
Accommodations, eating and drinking services	0.9060	190.66	5.81	4.69	-4.54	-2.59	31.7
		$5.95 \times 10^{-33}$	$1.14 \times 10^{-08}$	$2.16 \times 10^{-11}$	$3.88 \times 10^{-11}$	0.0002	
Living-related and personal services and amusement services	0.8893	199.78	6.88	4.92	-4.22	-3.19	37.9
		$3.58 \times 10^{-30}$	$3.84 \times 10^{-09}$	$2.16 \times 10^{-09}$	$4.73 \times 10^{-08}$	0.0004	
Education, learning support	0.9463	219.24	16.25	3.04	-13.79	-11.22	41.3
		$4.19 \times 10^{-28}$	$1.33 \times 10^{-21}$	$8.7 \times 10^{-05}$	$1.66 \times 10^{-21}$	$2.47 \times 10^{-10}$	
Medical, health care and welfare	0.8473	207.25	15.96	6.18	-15.44	-11.66	73.0
		$4 \times 10^{-24}$	$2.29 \times 10^{-14}$	$3.61 \times 10^{-07}$	$7.42 \times 10^{-15}$	$7.41 \times 10^{-12}$	
Compound services	0.9811	179.53	6.70	2.86	-2.70	-1.78	26.8
		$1.27 \times 10^{-40}$	$1.05 \times 10^{-24}$	$7.76 \times 10^{-18}$	$1.48 \times 10^{-17}$	$3.05 \times 10^{-08}$	
Services, NE.C.	0.9165	206.39	7.62	4.72	-7.13	-4.87	24.4
		$5.12 \times 10^{-31}$	$1.23 \times 10^{-11}$	$1.57 \times 10^{-10}$	$8.76 \times 10^{-19}$	$5.34 \times 10^{-09}$	

## 4.2. Female to male ratio by occupation

As a follow-up to the analysis of Section 4.1, female-to-male ratios of scheduled cash earnings of full time employees classified by occupation are shown in Table 2. The ratios were calculated from wages data of the Basic Survey on Wage Structure. Not all occupations are listed in the table for two reasons: there are simply too many occupations, and more importantly, many occupations suffer from missing data, especially on female wages, since few women hold certain occupations. Nevertheless, the table provides some new insights into gender difference in wages.

A clear picture emerges from the table. Occupations that require a certain academic degree or qualification are likely to have higher female-to-male ratios, implying that gender difference in wages tend to be smaller for such professional jobs. The large gender wage gap in the medical, health care and welfare industry of the last section seems to have been the result of wage difference between the occupations, rather than gender. For each profession within the industry such as medical doctors, professional nurses, and physical therapists, the female-to-male ratios of wages are relatively high, denoting a low gender wage gap. The large wage gap

for the industry is most likely the result that far more women are engaged as caregivers which tend to be paid lower wages, whereas more men serve as medical doctors, one of the most generously paid employees among all occupations.

Interestingly enough, blue-collar jobs that do not require a lot of prior knowledge or skills have higher wage gap, and the inequality amplifies with the length of service at the workplace. This cannot be attributed to the difference in the working style between men and women, since the data reflect basic salaries of full time employees, and do not include overtime pays or wages of part time workers. The most likely source for the gap is gender discrimination, either in the type of work women are assigned to, or just plain difference of salary by gender.

**Table 2. Female-to-male ratios of wages by type of occupation (%)**

type of occupations / length of service	0 years	1-4 years	5-9 years	10-14 years	15 years or more
System engineer	92.4	89.8	86.2	100.7	97.0
Medical doctor	121.9	84.3	85.1	114.6	81.7
Pharmacist	78.4	86.7	84.3	88.2	83.8
Professional nurse	99.3	94.1	94.1	99.3	94.6
Clinical examination technician	99.0	90.7	85.4	86.7	94.7
Physical therapist or occupational therapist	97.7	96.3	91.6	87.2	89.8
Nursery teacher	95.0	81.8	78.7	79.7	68.9
Home helper	90.6	93.3	89.2	79.6	87.6
Nursing-care worker of welfare facility	96.4	95.5	89.9	86.8	82.0
Highschool teacher	86.8	91.8	90.3	93.7	89.9
College and university lecturer	83.1	90.1	87.2	94.2	94.5
Salesclerk, department store	79.2	85.4	79.2	71.4	69.3
Salesperson (except salesclerk, department store.)	85.4	81.5	75.9	67.4	68.2
Insurance canvasser	67.6	58.3	64.0	63.8	75.1
Laundryman	82.1	74.3	71.3	62.6	64.6
Cook	78.8	79.1	76.1	70.3	66.8
Waiter/waitress	85.6	85.8	78.5	74.9	70.0
Assembler, communication equipment	77.7	63.1	74.5	64.3	58.8
Baker and confectioner	89.0	88.3	81.6	78.4	71.7
Sewing machine worker	83.8	72.1	59.0	62.9	63.8
building interior cleaner	79.7	76.9	76.7	65.0	66.8

Tabulated from wage data on regular workers by occupation, Basic Survey on Wage Structure

In conclusion, statistics of Table2 suggest that for women, it pays to get higher education, and/or to obtain a qualification of some sort, than to work on blue-collar jobs. Regrettably, fewer women hold professional jobs as of today. For instance, not enough women hold the job of a university or college professor, that the statistics on women's earnings are not available for this occupation. Data on university lecturers suggest that once you find a job, you are likely to be paid on a nearly equal basis. The difficulty for these types of

professions is getting in the front door.

## 5. Concluding remarks

Japan's economy has been stagnant for almost 20 years. Although it is still the third largest national economy in the world, the glory days of high economic growth seem to be long gone. The declining birthrate and aging population will only exasperate the economic problems that the country is facing. Shortage of the number of younger workers is sure to become a grave problem before long. The government is taking steps to alleviate the work force deficiency by raising the retirement age. This, however, will most likely yield limited results. A faster, more effective way to cope with the shortage of younger male workers is to increase the size of female work force.

In order to encourage more women to join the labor market on a full time basis, corporations need to offer equal economic opportunities as men. And to this end, the government should play an active role in persuading the industries. Although there still remain some social barriers for women, data suggest that people have become more accepting to the idea of women holding jobs outside the home. On the corporate side, though, there are still discriminations against women in many forms. One such discrimination is seen in the form of a gender wage gap.

Gender wage gap is seen to be large in male-dominated industries, where, in many cases, the types of works performed by the employees are clearly defined by gender. Inequality is large in many blue-collar jobs as well. Industries with large gender pay gap tend to be conservative and resistant to organizational changes, making it the role of the government to intervene in order to accelerate the transformation to a more gender equal environment. The government could affect the industries by either penalizing discrimination or subsidizing to encourage equal treatment of female workers.

In a knowledge-based service-oriented economy, women often prove to be more effective than men at the workplace. Incentivizing and retaining talented women in the work force are both profitable for the corporations as well as for the women that are employed. From a macroeconomic viewpoint, making full use of all available human resources is only reasonable. In the long run, reducing gender inequalities in the workplace is not only beneficial for the company but for the entire Japanese economy.

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