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The Gender Wage Gap in Japan – the Glass Ceiling Phenomenon

The gender gap is one of the most serious and persistent challenges in the Japanese labor market. In 1986, the *Equal Employment Opportunity Act* aimed to



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achieve gender equality in the labor market by providing both equal opportunity and treatment between men and women in all aspects and every stage of employment. Since then, it has been revised several times to increase its rigor, and this was followed in 2015 with the *Act on the Promotion of Female Participation and Career Advancement in the Workplace*, which recognized that tackling the issue of work-life balance is necessary to make inroads into the challenges facing women as they advance in their professional lives. Despite these legislative efforts, however, numerous gaps remain between

men and women in the Japanese labor market including the labor force participation rate, working style (regular versus part-time), wages, the proportion of workers in management positions, and education and training opportunities, to name a few. This paper focuses on the gender wage gap in Japan because wages are a broad-based labor outcome relevant to all workers.

CURRENT SITUATION IN JAPAN

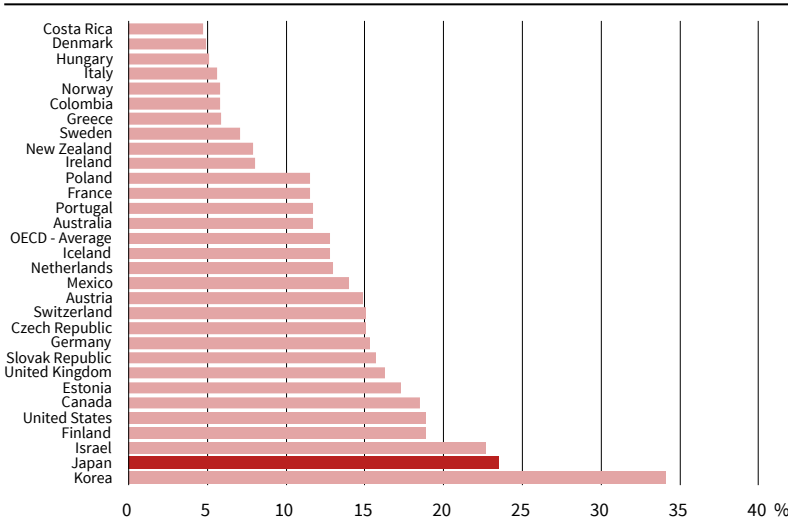
Japan is well-known as a country with large gender disparities, and Figure 1 shows that it has the second largest gender wage gap among all OECD countries after South Korea. However, as in many industrialized countries, the gender wage gap has been converging in Japan over time. Figure 2 shows the change in the gender gap in average monthly scheduled wages from 1990 to 2019, based on the annual Japanese Ministry of Health, Labor and Welfare (MHLW) *Basic Survey on Wage Structure* which provides the most reliable nationwide data on wages in Japan. We see that the gender wage gap decreased from 39.8 in 1990 to 25.7 in 2019, a substantial one-third reduction over the past 30 years.

However, looking only at the gender gap in average wages hides some interesting dynamics taking place under the surface. Figure 3 shows the gender wage gap not at the mean as in Figure 2, but *throughout the wage distribution* from the 5th percentile (P5) to the 95th percentile (P95) for the most recent 2015 data and each decade between 1980 and 2010. The gap is defined here as the difference in the log of hourly wages between men and women to show percentage differences, and a large value in the lower tail means that the gender wage gap is large among workers with low-paying jobs, while a large value in the upper tail indicates a large gap among highly-paid workers. From Figure 3, we can observe two main trends. First, the gender wage gap has narrowed from 1990 to 2015 at each percentile of the distribution, for the highest and lowest paid workers and everyone in between. The gender gap in 2015 is the smallest in the past 30 years for everyone. That is the good news.

However, the second major trend is that the shape of the gender wage gap has shifted over time. While in 1980 the gap was relatively flat except at the extremes, in 2015, the gender gap has a positive slope, which indicates that it is more pronounced at higher wages. The difference between P10 and P90 is a substantial 14 percentage points, but 10 percentage points of that difference occurs between P50 and P90 while only 4 occurs between P10 and P50. This means that the gender wage gap is much more prevalent in the upper half of the wage distribution than in the lower half.

Thus, by simply looking at the *raw* data as shown in Figure 3, the gender wage gap appears to be narrowing in recent years, especially for those earning a low wage. However, as this trend is also partially a

Figure 1
Gender Wage Gap among OECD Countries, 2018^a



^a The percent gender wage gap is defined here as the difference between male and female median wages divided by male median wages for full-time workers.
Source: OECD employment database.

reflection of changes in women's education level and years of service, an accurate “apples-to-apples” view of the gender wage gap over time must take these factors into account.

UNEXPLAINED GENDER WAGE GAP AND SUBTLE BARRIERS

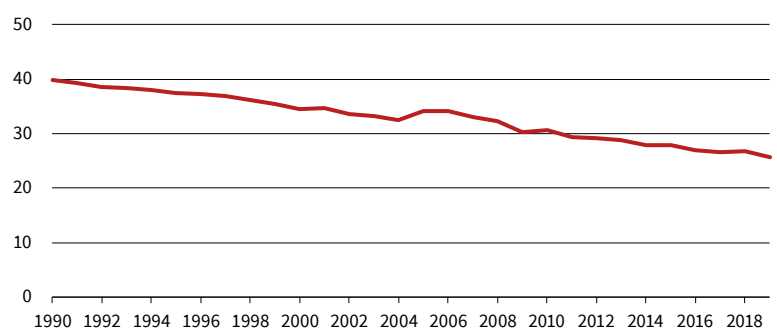
University enrollment and years of service at one's employer have both been rising for women in Japan, though they have still not reached the level of men. Since human capital, which includes such things as education, years of service to an employer, and experience in the labor market, impacts productivity and thus wages, an analysis of the gender wage gap must account for differences in human capital. Therefore, what we should focus on is not the *raw* gender wage gap but the wage gap that remains even after taking into account any gender differences in human capital. We call this gap the *unexplained* gap.

An unexplained gap observed at the upper or lower tail of the wage distribution suggests the existence of subtle barriers such as a *glass ceiling*, the invisible barrier that prevents women from obtaining high-ranking and high-wage jobs in business, government, and academia. If there were no such barrier, then there would be no observed difference between high-income men and women after controlling for gender differences in human capital. For example, suppose that even after controlling for human capital we see that the wages of the top 10% of wage-earning men are higher than the top 10% of wage-earning women. What does this mean? One interpretation is that, for reasons other than gender differences in human capital, women do not have access to the same high-paying jobs as men. Thus, even though the top 10% of wage-earning women are doing well relative to other women, an unexplained gender gap in the upper part of the wage distribution shows that there might be a glass ceiling holding them back from being rewarded at the same rate as men. A similar phenomenon occurs at the lower tail of the wage distribution. In this case, the gender wage gap is referred to as a *sticky floor*, whereby low wage-earning women earn less than men as they become trapped in low-paying jobs.

This unexplained gap can be estimated by using a *decomposition* econometric technique that separates the gender wage gap into two parts: one that results from *compositional effects* that are explained by gender differences in human capital (the *explained* gap), and one that results from wage structure effects that are not explained by differences in human capital (the *unexplained* gap), which is our focus here.

Until recently, due to methodological and computational limitations, estimates of the gender wage gap were restricted to that of average wages through a method known as the Oaxaca-Blinder technique. The strong interest in the gender wage gap by labor economists has led to an extensive worldwide litera-

Figure 2
Gender Gap in Mean Wages in Japan^a

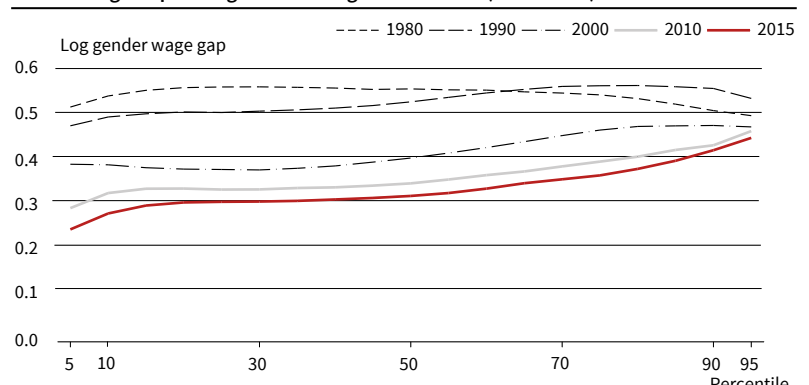


^a The value is calculated by $\frac{((\text{male monthly average wage}) - (\text{female monthly average wage}))}{(\text{male monthly average wage})} \times 100$ for full-time workers.

Source: MHLW Basic Survey on Wage Structure.

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Figure 3
Gender Wage Gap throughout the Wage Distribution (1980–2015)



Source: Hara (2018); MHLW Basic Survey on Wage Structure.

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ture on this gap at the mean of the wage distribution, including in Japan (Kawaguchi 2005; Miyoshi 2008). But while this has been informative, it provides information only on the wage outcomes of the *average* worker of each gender, with no insight into the experiences faced by the majority of workers. However, thanks to improvements in computational power and analytical methods, decomposition *throughout* the wage distribution has now become possible, so we can now estimate the explained and unexplained gaps at each percentile of the wage distribution to reveal phenomena that could not be grasped by a decomposition at the average alone. The groundbreaking paper by Albrecht et al. (2003) has led to a growing interest in the gender pay gap across the wage distribution because of its more comprehensive view of the gender gap and insight into tail-end phenomena such as the sticky floor and glass ceiling. In the remainder of this article, I will present the main results from Hara (2018), which is the first study in Japan examining the gender gap throughout the wage distribution to identify where the gender wage gap is most serious.

GLASS CEILING IN JAPAN

Before presenting the estimation results, I will first briefly explain the technique used in Hara (2018). Al-

though there are several methods used to estimate the unexplained gender wage gap throughout the wage distribution, we used the Recentered Impact Function (RIF) regression method proposed by Firpo et al. (2009) and micro data from *the Basic Survey on Wage Structure* (BSWS) covering more than a million workers in Japan. The estimation also controlled for differences in a range of human capital variables.¹ In addition, since the wages of workers at different firms vary beyond what can be explained by worker characteristics, we controlled for establishment fixed effects. Further, using a method proposed by Mundlak (1978), we estimated the unexplained gap *within an establishment* because we noticed that phenomena such as the sticky floor and glass ceiling are more prevalent *within* an establishment than *across* establishments in Japan. In other words, the gender gap is greater when women are placed in lower-paying jobs within a company than when they take a job at lower-paying companies. From this point on we will focus on the more salient gap, which is the unexplained gap *within* an establishment.

Figure 4 shows the unexplained gap within an establishment every 5th percentile from P5 to P95 using data each decade from 1980 until 2015. As in Figure 3, the estimated value is the percentage difference in men’s and women’s hourly wages, so the larger the value on the vertical axis, the larger the unexplained gender wage gap.²

Focusing on 2015, and examining the unexplained gender wage gap at the tails of the distribution compared to the mean, on the left side we see an unexplained gender wage gap at the 20th percentile of 15.4%, which is more than two percentage points³ larger than the 12.5% gap at the 50th percentile, indicating a relatively large wage gap between low-wage

¹ Following the typical Mincer wage equation, these include schooling, years of service, years of service squared, potential labor market experience, and potential experience squared.

² Short-time workers are excluded from this analysis because the BSWS does not survey their academic background.

³ Following Arulampalam et al. (2007), a difference of two percentage points was used as the criterion to determine if the gap was large.

men and women, or what is known as a *sticky floor*, though we also notice that this does not seem to apply to those workers at the very bottom of the wage distribution. Now turning to the right side, the gender gap increases at an accelerating rate from the center of the distribution toward the upper tail. The wage gap between men and women at the 90th percentile (the top 10%) is 25.7%, a difference of 13.2 percentage points from the gap at the mean, which indicates that the gender wage gap between top earners is large, strongly suggesting the existence of a *glass ceiling* in Japan.

Much of the research on this topic has been conducted in Europe, East Asia, and Latin America, and studies of Europe have found glass ceilings in many countries and sticky floors in some. Arulampalam et al. (2007) have shown that while only Italy and Spain have a sticky floor, many countries have a glass ceiling restraining female workers.⁴ Additionally, Albrecht et al. (2003) noticed that the gender gap in Sweden is widening rapidly at the top of the distribution and concluded that a glass ceiling may be forming. As for East Asian countries, Chi and Li (2008) have provided strong evidence of sticky floors in Chinese urban areas and Cho et al. (2014) found glass ceilings in South Korea. In Latin America, from among the twelve countries studied, Carrillo et al. (2014) found glass ceilings in some countries, sticky floors in others, and both phenomena in still others.⁵ In general, glass ceilings are widely observed in the literature in both developed and developing countries, but sticky floors are observed in fewer and typically developing countries. However, Figure 4 shows that both a glass ceiling and a sticky floor have been observed in Japan even recently.

Looking at trends over time, we also see in Figure 4 that the difference in the unexplained gender wage gap between the bottom and middle of the wage distribution has been decreasing since 1990, which suggests a weakening of the sticky floor, but the difference between the top and middle of the distribution has been increasing, indicating that the glass ceiling is becoming more pronounced over time.

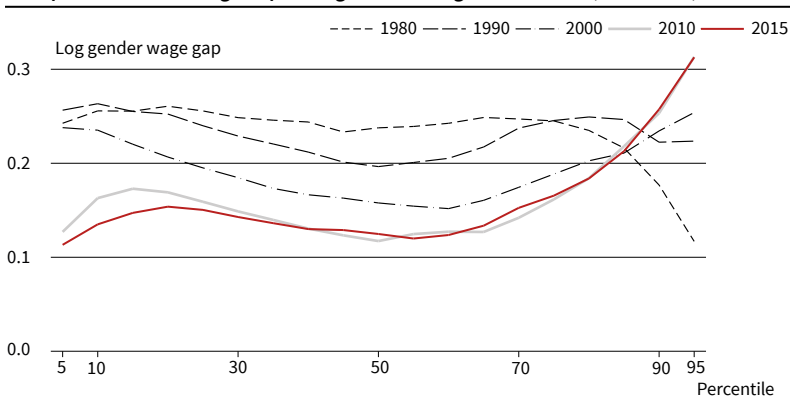
Why has the glass ceiling become so prominent recently? We might naturally assume that this is due to a difficulty for women to become managers but, according to published statistics,⁶ the number of women in managerial positions is now larger in Japan than ever before. To investigate this further, we estimated the gender gap for six different positions within a firm, again controlling for gender differences

⁴ Arulampalam et al. (2007) have shown that glass ceilings are observed in Austria, Belgium, Great Britain, Denmark, Finland, France, Germany, Ireland, and the Netherlands.

⁵ A glass ceiling has been observed in Argentina, Brazil, Paraguay, and Uruguay; a sticky floor in Bolivia, Chile, and Peru; and both a glass ceiling and a sticky floor in Colombia, Costa Rica, Honduras, Mexico, and Venezuela.

⁶ The proportion of women in managerial positions was 3.1% in 1990 but rose to 14.3% in 2019 (Japanese Ministry of Health, Labor and Welfare *Basic Survey on Wage Structure*).

Figure 4
Unexplained Gender Wage Gap throughout the Wage Distribution (1980–2015)



Source: Hara (2018); MHLW Basic Survey on Wage Structure.

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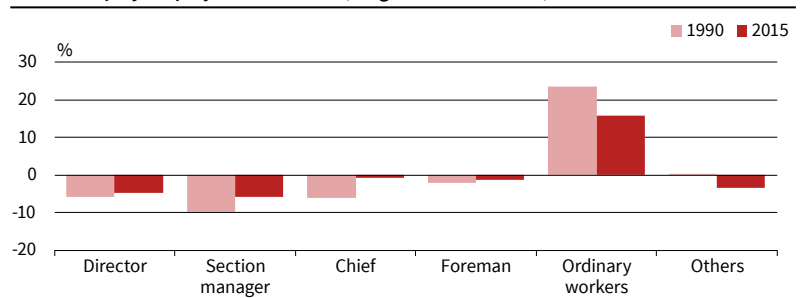
in human capital. Figure 5 shows the percentage point gender difference in the probability of holding each position, with a negative value meaning that the probability of being in that position is larger for men than for women. It is clear that the only position that women have a greater chance of holding than men is that of ordinary worker, while women are less likely to hold any of the managerial positions of director, section manager, chief, and foreman. Recall that we have accounted for differences in human capital, so these are “apples to apples” comparisons between workers of equal human capital. Next, comparing the data from 1990 and 2015, we see that the differences are smaller in absolute value in 2015 but the overall pattern has not changed substantially. In other words, while it still remains more difficult for women to be promoted than men, there is clear evidence of improvement since 1990. What might be causing the prominent glass ceiling?

One possible explanation is the “swimming upstream” phenomenon proposed by Blau and Kahn (1997) in which women are swimming hard against the stream but they cannot finish the climb because of the force of the backwash they are struggling against. A version of this is thought to have occurred in Japan. In the 2000s, it became easier for women to be promoted to managerial positions than in the 1990s, but it seems that the returns to management positions might have increased for men but decreased for women due to a shifting scarcity premium, leaving women relatively less rewarded for their increased upward mobility. In Japanese companies, there are two types of positions: core positions and non-core positions. For example, there are *star* posts or fast-track positions to which future executive candidates are assigned and relatively unimportant posts that are managerial positions in name only. Based on the results of our analysis, it is highly likely that women in Japan tend to be assigned to the latter type of post.

Other studies report similar results. Sato et al. (2019), using HR data from a Japanese company in the manufacturing industry, found that while a wide range of experience in the workplace increases a woman’s probability of promotion, it does not necessarily lead to higher wages, suggesting that women accept promotions to positions that are not accompanied by a substantial wage increase. Booth et al. (2003) also report this situation in the UK, where women are promoted at about the same rate as men, but the wage increase associated with promotion may be smaller, suggesting that for male and female workers in the same position, female workers might be stuck at the bottom of the wage scale for that position.

To explore this interpretation, I conducted an additional analysis of the returns to the six employment positions discussed above by gender for 1990 and 2015. When workers are promoted to a higher rank position, wages usually increase in what is known as

Figure 5
Gender Gap by Employment Position (Large Establishments)^a

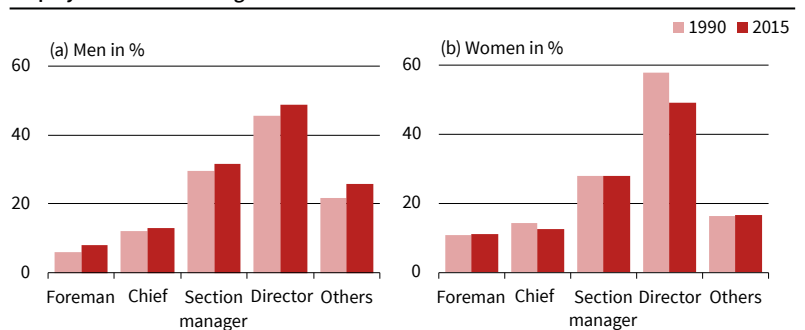


^a The figure shows the gender gap in the probability of being in a given position within a large establishment employing more than 100 workers of both genders after controlling for gender differences in human capital. A negative value means that the probability for men is larger than for women, and vice versa. Ordinary workers are those not in managerial positions. All values are 1% statistically significant except for the value of others in 1990, which is not statistically significant.

Source: Hara (2018); MHLW Basic Survey on Wage Structure.

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Figure 6
Employment Position Wage Premium within an Establishment^a



^a The figure shows the wage premium (in percentage) for each managerial position above that of ordinary workers after controlling for gender differences in human capital. All values are 1% statistically significant except for the value of women’s foreman in 2015, which is a 5% statistically significant.

Source: Hara (2018); MHLW Basic Survey on Wage Structure.

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the employment position premium. Figure 6 shows the wage premium (percentage) for each managerial position above that of an ordinary worker. Again, we have controlled for any gender difference in human capital. Although we can see that women, like men, receive an employment premium as they get promoted, this premium has increased for men from 1990 to 2015 but has decreased for women – just as more women are being promoted into managerial positions. It thus seems likely that the recent prominence of the glass ceiling in Japan is due to an increase in the gender gap in the employment position premium.

CONCLUSION

This article has focused on the gender wage gap, a prominent gap in the labor market and one which remains important even as progress has been made in mitigating gender gaps in other working conditions because a gap in wages is a gap in the compensation for labor.

So far, we have seen that while a sticky floor still exists in Japan, it has become somewhat less tacky for the lowest wage earners at least. Meanwhile, a glass ceiling has become prominent in Japan in recent years and so eliminating this gap should now become the focus of policy. How to do this, of course,

depends on the mechanism causing the phenomenon. Our initial hypothesis that it is due to the difficulty women face in being promoted to managerial positions was not supported empirically. Instead, further investigation revealed that it could be caused by a decrease in the employment position premium, or the increase in wages from promotions, received by women over time.

As mentioned above, the 2015 *Law for the Promotion of Women's Activities* was enacted to promote the advancement of women in their professional lives. Currently, employers with 301 or more full-time workers are required to objectively monitor⁷ and quantitatively track one or more of the items specified in the law regarding working conditions for women.⁸ Among these, the percentage of female workers in management positions is stipulated as a *mandatory* item.⁹ Employers are also required to set numerical targets for improvement and put them into action based on the monitoring results. Evidence-based policy requires good data, and so obtaining objective quantitative information about the problem is an important first step. However, our results suggest that eliminating the glass ceiling will require more than merely paying attention to simple numerical targets such as the proportion of workers in managerial positions by gender. Mitigating this problem will require a more comprehensive analysis based on direct observation of the gender wage gap within any given position over time.

⁷ The law will be extended to employers with 101 or more employees on 1 April 2022.

⁸ There are over 20 items, including the proportion of female workers to total employees, the proportion of female new employees, education and training by gender, assignment to jobs by gender, and differences in average length of service between genders, to name a few.

⁹ <https://www.mhlw.go.jp/content/11900000/000594316.pdf> (in Japanese).

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