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Recent Changes in Women's Occupation and Wages in Korea

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I . Introduction

Unlike other OECD countries, the gender wage gap has persisted in Korea since the global economic crisis of 2008. Currently, the gender wage gap in Korea is the largest among OECD countries. In most OECD countries, the gender wage gap decreased after the global economic crisis with its damages disproportionately concentrated on male jobs. Contrasting performances of female labor market between Korea and other OECD countries after the global economic crisis are related with the fact that Korea was relatively immune to the global economic crisis unlike other OECD countries. Therefore, the factor of long-run trend is important to explain the recent changes in women's occupations and wages in Korea more than the factor of business cycle.

Following trends seem to be behind the recent changes in the gender gap in the labor market in Korea. First, rapid increase of the participation of female college graduates in the labor market exerts crucial impacts on women's occupation and wages in Korea, concomitant with universal expansion of higher education. Rapid increase of the employment of female college graduates has been one of the most pronounced aspect of the Korean labor market since the global economic crisis of 2008. Education is also believed to be an important factor to explain the recent changes of gender gap in Europe (Castellano and Rocca, 2016). Second, dis-

proportionate expansion of female part-time job after the crisis is, however, one of the main obstacles to reduce the gender wage gap in Korea. Third, Korea is not the exception from the effects of the fourth industrial revolution on the gender gap in the labor market. The effects of information technology are important including artificial intelligence that is accelerated after the global economic crisis.

This paper will analyze the recent changes in women's occupation and wages in Korea, focusing on the trend of the gender wage gap between 2008 and 2015 and its determinants. Especially, the changes in the occupational profiles of young female college graduates will be highlighted. They will crucially affect the future trend of the gender wage gap. Young female college graduates are now rapidly advancing to the high-skill jobs which were previously dominated by men. The U.S. has already witnessed the advance of female workers to the high-skill male-dominant jobs with the increase of skill premium. Skill premium has increased from the globalization and high-skill biased technical change since the 1970s (Black and Juhn, 2000). Of course, it would not have been possible without the supply factor, that is, the improvement in the education level of women. The increase of the number of female entering in the high-skill male-dominant job is a powerful factor to decrease the gender wage gap in the future. The wages of male-dominant jobs are much higher than those of female-dominant jobs.

This paper will analyze the changes of women's occupations and wages between 2008 and 2015. This period is chosen for the data of the Local Area Labor Force Survey to use the 3-digit

classification of occupations. The data is available after 2008. This paper targets certain age groups such as the prime age group aged 25 to 54 or the young age group aged 25 to 34 in order to focus on job. Workers tend to quit their life-time primary job after 54. This paper will also analyze the occupational changes of young female workers, focusing on 15 occupations (3-digit classification) which employed the most young women aged 25 to 34 between 2008 and 2015.

This paper is structured as follows. Chapter 2 overviews the labor market environment after the global economic crisis of 2008. It is argued that the ongoing trend that had started prior to the global economic crisis of 2008, e.g. the expansion of higher education and technical advances from the fourth industrial revolution, is responsible for the recent changes in women's occupations and wages in Korea more than the impacts of the global economic crisis. Chapter 3 reviews the occupational structure and wages of the prime age group as well as the young age group. We also analyze the changes in the occupational profiles between 2008 and 2015, focusing on 15 occupations (3-digit classification) which employ the most young women aged 25 to 34. Chapter 4 analyzes the changes of the gender wage gap and its determinants. Chapter 5 summarizes the analysis and draws some policy implications.

II . Global Environment for Women's Labor after the Economic Crisis

1. The Global Economic Crisis of 2008 and 'he-cession'

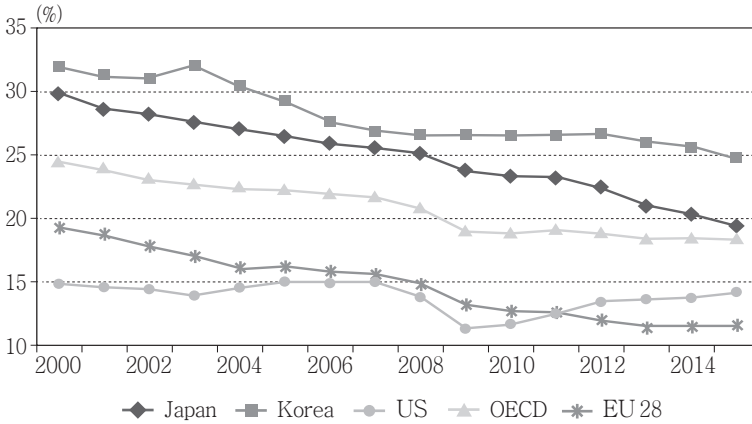
The effects of the global economic crisis of 2008 is the factor to be considered first when we examine the recent changes in women's occupation and wages. As Figure 2-1 shows, the gender gap decreased substantially in most of the advanced countries after the global economic crisis of 2008. This was mainly caused by the disproportionate loss of jobs in the industries, such as manufacturing and construction, where men dominate in employment (Ghosh, 2014; Perivier, 2016). So, the global economic crisis is sometimes called as 'he-cession'. As the labor force participation rate decreased after the crisis, women tried to compensate it by increasing theirs. Indeed, as the added worker effect¹⁾ hypothesis anticipates, women increased their employment rate in order to cope with the deterioration of the living standards after the crisis (ILO, 2016). However, the men's jobs began to recover mainly in the previously affected sectors,

1) Added-worker effect depends on the assumption of risk-sharing within the couple. It assumes that the secondary earner responds to the loss of job of the primary earner by getting additional job in order to compensate the decrease of income (Perivier, 2016).

such as manufacturing and construction, with the concentration of economic stimulus and rescue packages on them (so-called 'he-covery'). This stopped the decreasing trend of the gender employment gap after the crisis. Moreover, as the austerity policy targeted the public sector where women employees are dominant, the gender employment gap began to widen again with the decrease of female job (so-called 'sh(e)-austerity') (Karamessini and Rubery, 2014). The austerity policy was introduced to contain the skyrocketing budget deficit and the government debt after the global economic crisis.

The gender wage gap has also decreased since the global economic crisis of 2008. The cut of extra wage component from pay, sectoral segregation and the equal pay policy etc. were the main causes of the decrease of the gender pay gap (European Commission, 2013). As Figure 2-2 shows, the gender wage gap slightly decreased in the U.S. and Greece after the global economic crisis of 2008, where the damages of crisis were severe. However, the decrease of the gender wage gap was mainly achieved by the downward leveling of the gender gap rather than by the improvement of women's position (Karamessini and Rubery, 2014). According to ILO (2013), the decrease of gender wage gap in many countries between 1997~2008 and 2008~2011 was the result of the downward leveling of men's wage. Indeed, the decrease of the gender wage gap was resulted from the deterioration of men's position relative to women in the labor market rather than the advance of women's status (Ghosh, 2014). For example, the gender gap in low-wage workers decreased from 8.9% in 2006 to 5.8% in 2011, due to the increase of low-wage

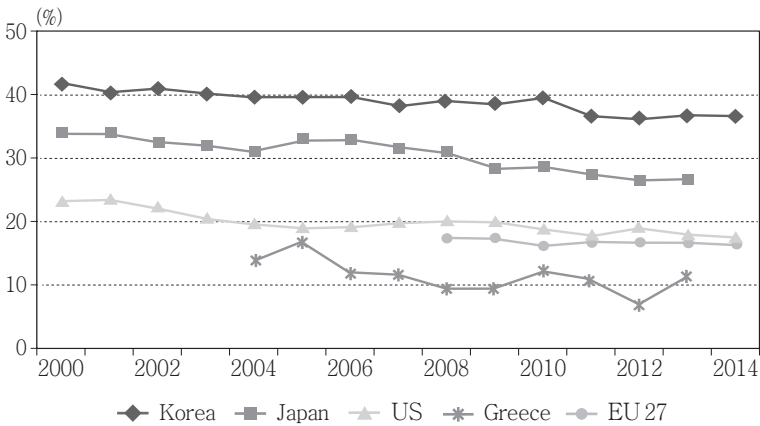
Figure 2-1. Gender employment gap (age 25~54), 2000~2015



Source : OECD.Stat, Labour Force Statistics.

Note : Gender employment gap=Male employment rate - female employment rate

Figure 2-2. Gender wage gap, 2000~2014



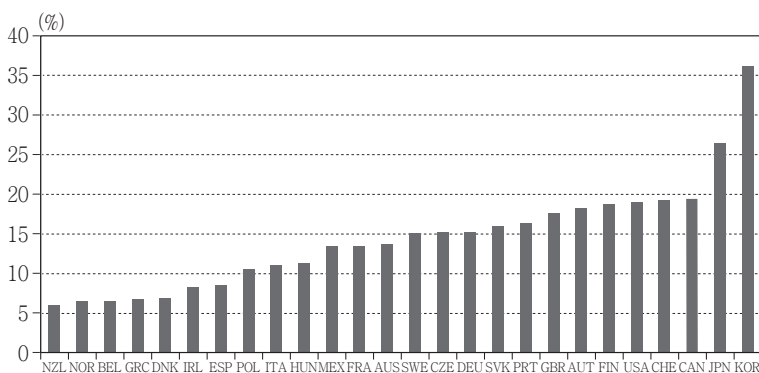
Source : Eurostat for EU 27; OECD.Stat, for the rest.

Note : Gender wage gap is unadjusted and is defined as the difference between median earnings of women relative to median earnings of men. Data refer to full-time employees and to self-employed.

male workers during 2006 to 2011. The gender gap in this case is defined as the difference between the portion of low-wage workers among female workers and the portion of low-wage workers among male workers. This was resulted from the destruction of job of middle wage male workers after the global economic crisis of 2008 (ILO, 2016).

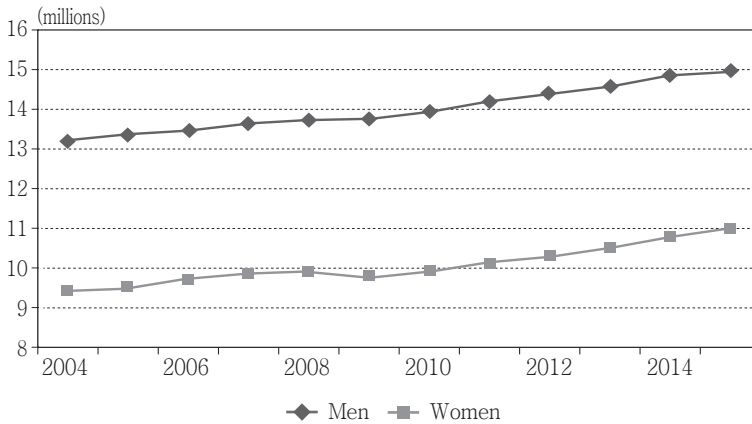
Unlike the U.S. or EU, Korea was relatively immune to the impacts of the global economic crisis of 2008. Korea did not fall into the recession between 2008 and 2009, for it did not experience the minus growth of GDP for any two consecutive quarters during this period. Therefore, it is not so relevant to directly relate the changes in women's occupations and wages with the global economic crisis of 2008. As Figure 2-1 shows, the gender employment gap for Korea has been almost constant at 26.5% point between 2008 and 2012. Indeed, the gender employment gap is as severe now in Korea as before the global economic crisis of 2008.

Figure 2-3. Gender wage gap, 2012



Source : OECD.Stat, Social Protection and Well-being.

Figure 2-4. Total employment in Korea, 2004~2015



Source : Korean Statistical Information Service, Economically Active Population Survey.

On the contrary, Korea seems to be exceptional in that the main victims of the crisis were the female workers rather than men. As Figure 2-4 shows, the total female employees absolutely decreased from 9.87 million in 2008 to 9.77 million in 2009.

As is shown in Figure 2-1, Korea is notorious for its highest level of gender employment gap in OECD countries. Moreover, as Figure 2-2 and Figure 2-3 show, the gender wage gap in Korea was sustained at the high level of 37~39% point after the global economic crisis of 2008. The gender wage gap decreased again after the global economic crisis in many OECD countries where it was substantially lower than in Korea. Unlike the U.S. or EU, Korea has not experienced the phenomenon like 'he-cession' since the global economic crisis of 2008. The gender inequality in employment and wages continues to be high.

2. The Impact of Education and the Fourth Industrial Revolution

Fact above imply that the determining factor regarding the recent changes in women's occupations and wages is less the global economic crisis of 2008. Rather, the trend which has started before the crisis and continued today would be more important factors. This paper will highlight two trends which are closely related with the recent changes in women's occupations and wages. First, rapid increase of female college graduates' participation in labor market thanks to the almost universal expansion of higher education. Education is also the most important factor that explains the changes in the gender gap during the global economic crisis (Castellano and Rocca, 2016). Second, the rapid technical changes, centering on information technology, especially the fourth industrial revolution, including artificial intelligence, after the global economic crisis of 2008.

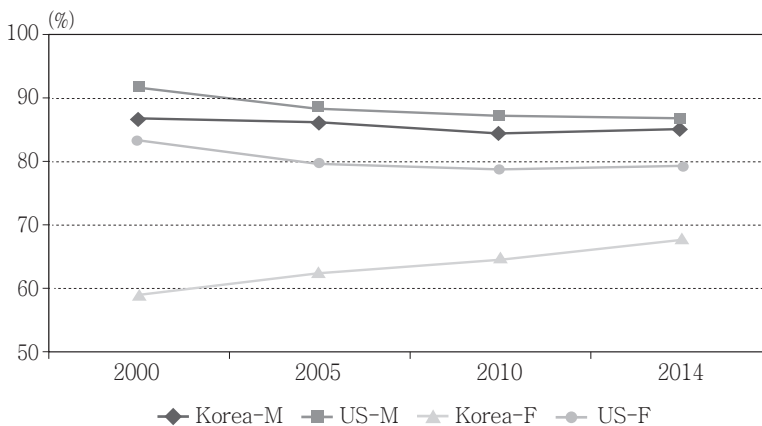
The recent advance of female college graduates in labor market in Korea is remarkable. As Figure 2-5 shows, the employment rate of Korean female college graduates aged 25 to 34 jumped from 58.8% in 2000, to 64.6% in 2010, and to 67.7% in 2014. This phenomenon sharply contrasted to most OECD countries where the ratio stagnated or decreased during this period. It is especially noteworthy that the employment rate of Korean male college graduates aged 25 to 34 decreased from 86.1% to 84.1% between 2005 and 2010, that is, before and after the global economic crisis of 2008. That of female increased from 62.4% to 64.6%.

The improvement of the labor market outcomes of female col-

lege graduates can be related with the enrollment ratio in higher education of young women which recently overtakes that of young men. Figure 2-6 shows the enrollment ratio in higher education between 1980 and 2014. The higher education institution includes two-year colleges as well as four-year colleges. The enrollment ratio of women in higher education started to overtake that of men since 2008, and the gap became clear after 2010. For women, the enrollment ratio in higher education was at the highest level, 83.5% in 2008 and it slightly decreased after the global economic crisis. For men, the enrollment ratio dropped sharply in 2010 and reached the current level of 67% in 2015.

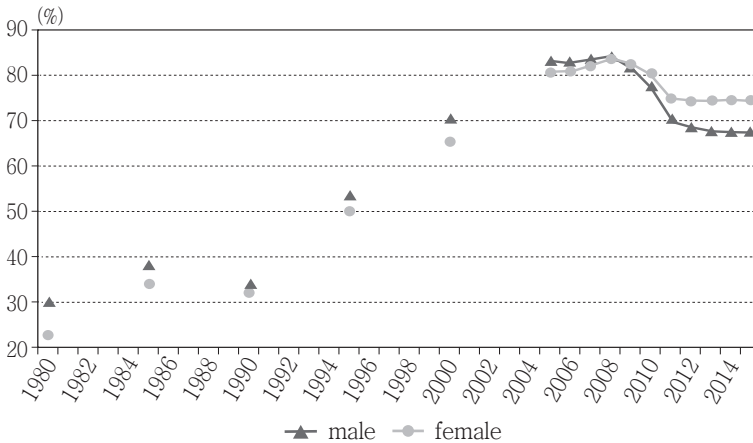
Considering that the employment rate of Korean female college graduate is still substantially lower than that of OECD countries with advanced gender equality, the trend of increase is likely to

Figure 2-5. Employment rate of college graduates (age 25~34), 2000~2014



Source : OECD.Stat, Education at a Glance.

Figure 2-6. Enrollment ratio in higher education, 1980~2014



Source : MOE·KEDI (2015).

continue in the near future. The rapid increase of the employment rate of Korean female college graduates can be viewed as the long-run process of female's catch-up with male in the participation in the labor market. It will not be too absurd to relate the recent phenomenon of 'misogyny' with the tension caused by rapid advance of educated young women in the labor market.

The effects of the fourth industrial revolution, centered on information technology including artificial intelligence, on the gender equality in the labor market seems to be double-edged (World Economic Forum, 2016). On the one hand, the fourth industrial revolution has the potential to decrease the industry gender gap. The fourth industrial revolution will contribute to the increase of the use of women's skill in the labor market by relieving women's burden of domestic labor through the automation of domestic labor. The transformation of the male dominant la-

bor will lead to the restructuring of domestic labor within family. The fourth industrial revolution will provide historically unprecedented opportunity to rebalance the existing gender division of labor by building a new flexible labor regime. This regime may be based on the result-driven rather than presence-driven evaluation system.

However, the fourth industrial revolution may well sustain or exacerbate the existing imbalance by causing the disruptive change accompanied by the destruction of previous jobs as well as creation of new jobs. As Table 2-1 shows, the fourth industrial revolution will destroy not only the jobs of manufacturing and production characterized by traditionally big gender gap but also the female dominant jobs of office and administrative. According to the estimates of World Economic Forum (2016), 5.1 million jobs will be destroyed by the disruptive changes of the fourth industrial revolution. 48% of them (2.45 million jobs) will be female jobs, while 52% of them (2.65 million jobs) will be men's jobs. Although the jobs destroyed by the fourth industrial revolution seem to be evenly distributed by gender, the actual result would be the widening of gender gap in labor forces. It is because the current share of female workers in the total labor force is smaller than that of male workers. Indeed, as for men, 1.4 million jobs will be created, replacing 4 million jobs destroyed. That is, 3 jobs are destroyed per 1 job's creation. As for women, 0.55 million jobs will be created, replacing 3 million jobs destroyed, that is, more than 5 jobs are destroyed per 1 job's creation.

Estimated by job family, as for men, 1.7 million jobs will be destroyed in manufacturing, production, construction and ex-

traction jobs, while 0.6 million jobs will be created in architecture, engineering, computer and mathematical jobs. As for women, 0.37 million jobs will be destroyed in the two male dominant job family, 0.1 million jobs will be created in architecture, engineering, computer and mathematical jobs. In other words, as for men, 4 existing jobs will be destroyed for every 1 new STEM job created. Whereas, for women, 20 existing jobs will be destroyed for every 1 new STEM job created. Therefore, if the current state of industry gender gap continues, and the transformation of the labor market towards new roles in computer, technology and engineering areas proceeds ahead of entrance of females in these areas, women will lose the opportunity of quality jobs in the future. Companies will also face the difficulties of recruit due to the dwindling pool of job seekers as well as the decrease of gender diversity within companies.

Table 2-1. Net employment outlook by job family, 2015~2020

Unit : thousand

Office and administrative	-4,759	Business and financial operations	+492
Manufacturing and production	-1,609	Management	+416
Construction and extraction	-497	Computer and mathematical	+405
Art, design, entertainment, sports and media	-151	Architecture and engineering	+339
legal	-109	Sales and related	+303
Installation and maintenance	-40	Education and training	+66

Source : World Economic Forum (2016).

III. The Occupational Structure and Wages in 2008 and 2015

This chapter examines the changes in the occupational structure and wages of female workers after the global economic crisis (2008~2015). Section 1 examines the changes in occupational structure and wages of the prime age group aged 25 to 54 using the Local Area Labor Force Survey in 2008 and 2015. Section 2 analyzes the major occupations employing the most young women aged 25 to 34 based on the Local Area Labor Force Survey. That data includes a 3-digit classification of occupations. Section 3 analyzes the wages and turnover of administration related clerks among the four-year college graduate women using the Korea Labor and Income Panel Study (KLIPS). Administration related clerks became the top ranked occupation (under the 3-digit classification code) employing the most four-year college graduate women in 2015.

1. Overview

(1) Changes in the Occupational Structure of the Prime Age Group

The improvement of women's educational attainment, rapidly aging society, and rapid technological advances after the global economic crisis of 2008 affected the change in the occupa-

tional structure of women. Table 3-1 shows the occupational structure of prime age group aged 25 to 54 in 2008 and 2015. After the global economic crisis, the share of professionals and clerks increased. The share of professionals increased by 3.7% points from 20.9% in 2008 to 24.6% in 2015. The share of clerks increased by 2.8% points, whereas the share of craft workers and elementary workers decreased.

For women, the share of professionals or clerks was very high. Women were concentrated in a few occupations. 52.3% of women were concentrated in professionals or clerks in 2015 and it was 41.3% in 2008.²⁾ The share of professionals increased by 6.3% points and the share of clerks increased by 4.7% points during the period. On the other hand, the share of service workers, sales workers, or agricultural workers decreased by more than 2% points, respectively.

Men's occupations were more diverse than women's. 40.5% of men were concentrated in professionals or clerks in 2015 and it also increased from 37.0% in 2008.³⁾ The share of service workers or assembly workers slightly increased and the share

2) 89.3% of four-year college graduate women aged 25 to 54, that is, 9 out of 10 were professionals or clerks in 2015. In the case of two-year college graduate women, it was 76.2%. For women with high school education or less, the share of elementary workers was the highest. This is based on the author's calculation using the Economically Active Population Survey in 2015.

3) 75.8% of four-year college graduate men aged 25 to 54 were professionals or clerks in 2015. In the case of two-year college graduate men, the proportion of clerks or assembling workers was high. Many men of high school education or less were assembling workers, craft workers, or elementary workers. This is based on the author's calculation using the Economically Active Population Survey in 2015.

Table 3-1. Occupational structure of the prime age group, 2008 and 2015

Unit : %

	2015			2008		
	All	Male	Female	All	Male	Female
Managers	1.3	1.9	0.4	1.8	2.7	0.5
Professionals	24.6	21.7	28.8	20.9	19.8	22.5
Clerks	20.7	18.8	23.5	17.9	17.2	18.8
Service Wkrs	9.3	5.7	14.4	10.1	5.6	16.7
Sales Wkrs	11.8	10.1	14.3	13.8	11.6	16.9
Agri Wkrs	1.6	1.8	1.3	3.4	3.0	3.8
Craft Wkrs	9.6	14.5	2.7	10.7	15.2	4.2
Assem Wkrs	12.5	18.1	4.4	12.0	17.2	4.5
Elem Wkrs	8.6	7.5	10.3	9.4	7.7	12.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source : Local Area Labor Force Survey : 2008, 2015.

of sales workers or agricultural workers decreased by more than 1% points.

(2) Changes in the Industrial Structure of the Prime Age Group

Recent changes of industrial structure in female employment can be summarized as the increase of employment in the health and social work. In particular, this phenomenon can be interpreted as the transition to ‘care economy’. Jeong (2015) argued that a driving force of the expansion of female employment after the

global financial crisis was the health and social work sector.⁴⁾ Care economy overwhelmingly appears to change the female employment structure across the industry.

Table 3-2 confirms that the increase in female employment of the prime age group after the global financial crisis largely came from the health and social work sector. The employment share of all workers increased by 2.8% points in health and social work between 2008 and 2015. The employment of professional services and business facility management also increased by 1.3% points and 1.0% points, respectively.

For women, the increase in the employment share of health and social work sector explained most employment growth during the period. The share increased by 5.5% points during the period. professional services sector and business facility management sector also increased 1.3% points and 1.2% points, respectively.

Table A.1 and Table A.2 in the appendix showed that the increasing share of the health and social work sector mainly due to the increase of professionals. But the quality of the employment in the health and social work sector was not so good. According to Jeong (2015), job growth in health and social work sector after the global financial crisis, mainly the medium or low wage jobs. That is, although the number of female professionals in health and social work much increased after the global financial crisis, the quality of their jobs was not that high.

On the other hand, the increase in female professionals in

4) Her study was based on all age woman using the Economically Active Population Survey (2007~2014).

*Table 3-2. Industrial structure of the prime age group,
2008 and 2015*

Unit : %

	2015			2008		
	All	Male	Female	All	Male	Female
Agriculture	1.8	2.0	1.5	3.5	3.1	4.1
Mining	0.1	0.1	0.0	0.1	0.1	0.0
Manufacturing	20.1	24.5	13.7	19.5	23.3	14.1
Electricity, gas	0.4	0.6	0.2	0.6	0.8	0.2
Sewage, waste manag.	0.4	0.5	0.1	0.3	0.4	0.1
Construction	7.3	11.2	1.6	8.4	12.8	2.0
Wholesale and retail	14.8	13.8	16.4	15.7	14.5	17.6
Transportation	4.9	7.2	1.6	5.1	7.8	1.1
Accomm, food services	7.3	4.8	10.8	8.3	4.4	14.0
ICT	3.8	4.9	2.2	3.0	3.7	2.0
Financial, insurance	3.7	3.1	4.5	3.9	3.3	4.8
Real estate	1.8	1.7	1.9	1.9	2.0	1.8
Professional services	4.9	5.6	4.0	3.6	4.2	2.7
Business facility manag.	3.8	3.6	4.1	2.8	2.8	2.9
Public administration	3.7	4.1	3.0	3.8	4.5	2.7
Education	8.3	4.3	13.9	8.4	4.7	13.7
Health and social work	7.0	2.4	13.5	4.2	1.6	8.0
Arts and sports	1.6	1.5	1.6	1.6	1.5	1.8
Other personal services	4.6	4.2	5.2	4.9	4.5	5.5
Activities of households	0.1	0.0	0.2	0.3	0.0	0.8
Extraterritorial org.	0.1	0.1	0.0	0.0	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source : Local Area Labor Force Survey : 2008, 2015.

professional services sector would contribute to the raise of the average wages of female professionals. High wage jobs increased in this sector after the financial crisis (Jeong, 2015).

For men, the professional services sector showed the largest increase by 1.4% points. Manufacturing and ICT sector also showed a large increase by 1.2% points, respectively.

(3) Wages by Occupation in the Prime Age Group

Table 3-3 shows the average monthly wages of male and female workers aged 25 to 54 by occupation in 2015 and 2008. Women's wages were lower than men's, wages in all occupations. The wages of all female workers were 1.85 million won and they were 62.3% of the wages of all male workers, 2.97 million won in 2015.

Although the gender wage gap of all workers were reduced during the period, the gender wage gap of professional workers rather increased. The wages of all female workers were 62.3% of the wages of men in 2015 and they were 59.3% in 2008. The wages of female professionals were 62.0% of their male counterpart in 2015 and they were 62.2% in 2008. The gender wage gap was slightly enlarged during the period. It is because low wage female professional jobs in health and social work sector were much added during the period. The gender wage gap was the largest among service workers. In such occupations as professionals or service jobs, women are traditionally highly segregated.

The gender wage gap among full-time workers was slightly smaller than that of total workers in the appendix Table A.3. The wages of full-time female workers were 65.8% of the wages of

full-time male workers in 2015 and they were 61.7% in 2008. The gender wage gap among full-time workers was more reduced than that of all workers. This is because the number of female part-time workers much increased during this period. It may not be satisfactory that the gender wage gap in the prime age group has been reduced by 4.1% points during the period. Also, the wages of full-time female professional workers were 66.0% of their male counterparts in 2015 and they were 65.1% in 2008. The labor market outcomes of full-time female professionals were not much improved during the period. More medium or low wage jobs were added to the female professionals. We will discuss the recent changes of the occupational profiles in detail in the next section.

Table 3-3. Average monthly wages of the prime age group, 2008 and 2015

Unit : million won

	2015			2008		
	All	Male	Female	All	Male	Female
Managers	5.15	5.31	3.85	4.48	4.61	3.13
Professionals	2.91	3.56	2.21	2.54	3.05	1.90
Clerks	2.79	3.35	2.13	2.37	2.84	1.73
Service Wkrs	1.80	2.52	1.37	1.48	2.25	1.11
Sales Wkrs	2.00	2.51	1.59	1.69	2.16	1.34
Agri Wkrs	2.17	2.24	1.36	1.62	1.77	0.79
Craft Wkrs	2.41	2.52	1.45	1.88	2.00	11.5
Assem Wkrs	2.46	2.64	1.61	1.93	2.10	11.7
Elem Wkrs	1.43	1.73	1.15	1.14	1.43	0.89
Total	2.50	2.97	1.85	2.06	2.48	1.47

Source : Local Area Labor Force Survey : 2008, 2015.

2. Changes in the Occupational Profiles of Young Women

In this section, we examine the changes of the occupational profile of young women based on the method of Uppal and LaRoche-Cote (2014). They examined the changes in the 25 occupations employing the most young women aged 25 to 34 by education level in Canada (1991~2011). They used 4-digit classification of occupations. Changes in the occupational structure of young women reflects the effect of the increase in educational attainments of young women and the intensive technological changes after the global economic crisis. According to the previous section, although many women advanced to professionals in these days, the gender wage gap was rather persistent and only slightly reduced. This section examines the change in occupation among young workers in detail.

This section uses the Local Area Labor Force Survey that contains 3-digit classification of occupations. Since the period (2008~2015) is short, some member of the young age group in 2008 also belonged to the young age group in 2015.

(1) Occupations Employing the Most Young Women

Table 3-4, Table 3-5 and Table 3-6 shows the 15 occupations employing the most young women aged 25 to 34 by education level in 2008 and 2015. In 2015, administration related clerks was the top ranked (or the 1st) occupation under the 3-digit classification of occupations and had 15.9% of four-year college graduate young women. We will analyze this job in detail in the

next section.

However, common jobs for four-year college graduate young women were teachers and instructors. Their combined share amounted to 17.5% in 2015. It was 27.3% in 2008 and if we include kindergarten teachers, it amounted to 29.3% in 2008. Lots of educated women in the world were traditionally involved in those jobs. Teachers and registered nurses are typical occupations that requires a university degree among women. Teachers work in the formal educational institutions such as elementary or middle/high school. Unlike the United States or Britain, a full-time regular teaching job is one of the most aspiring jobs in Korea. Job security is very high and this ensures high wages and pensions. The wages of teachers was the highest among the top 5 occupations employing the most four-year college graduate young women in Table 3-4. However, the story is completely opposite to instructors. Instructors include liberal arts, science, technical and arts instructors. Many of them are part-timers, temporary workers, or the self-employed. Working condition is inadequate or job security is very low for instructors. The exceptionally high proportion of instructors among four-year college graduate women may be typical in Korea. This is partly because the private education market is active in Korea.

The top ranked occupation for two-year college graduate women was accounting and book-keeping clerks and the top ranked occupation for women with high school education or less was store sales workers.

The concentration ratio of the top 3 occupations employing the most young women was high regardless of education level. The

Table 3-4. The 15 occupations employing the most 4-yr college grad young women

	Occupation*	2008 (%)	2015 (%)	Wage** (2015) (million won)
1	312 Administration related clerks	11.8	15.9	2.38 (1.99)
2	254 Instructors	17.0	10.2	1.65 (1.50)
3	313 Accounting/book-keeping clerks	6.3	8.3	2.00 (1.63)
4	252 Teachers	10.3	7.3	2.59
5	247 Social welfare service workers	3.2	4.5	1.72
6	311 Administration clerks	4.0	4.0	2.18
7	243 Nurses	4.0	3.8	2.64
8	521 Store sales workers	3.4	3.7	1.56
9	285 Designers	3.3	3.6	2.22
10	320 Finance/insurance related clerks	5.0	3.3	2.65
11	314 Secretaries and assistant clerks	2.7	2.4	1.58
12	399 Customer service workers	2.0	2.4	1.80
13	245 Medical technologists		1.9	2.04
14	281 Writers and publishing professionals	1.5	1.5	2.35
15	530 Door to door/telecom sales workers	1.3	1.3	1.71
	253 Kindergarten Teachers	2.0		
3 occ		39.1	34.4	2.13
15 occ		77.9	74.1	2.16
All occ		100.0	100.0	2.20

Source : Local Area Labor Force Survey.

Note : 1) * The number is a 3-digit classification code in KSCO.

2) ** Average monthly wages in 2015. Average monthly wages in 2008 is in parenthesis.

3) *** Part-time workers are also included.

Table 3-5. The 15 occupations employing the most 2-yr college grad young women

	Occupation	2008 (%)	2015 (%)	Wage (2015) (million won)
1	313 Accounting/book-keeping clerks	13.9	12.2	1.77 (1.40)
2	312 Administration related clerks	9.4	10.3	2.03 (1.63)
3	247 Social welfare service workers	5.3	7.3	1.54 (1.15)
4	521 Store sales workers	7.4	7.3	1.54
5	245 Medical technologists	4.8	6.2	1.91
6	243 Nurses	7.7	5.9	2.22
7	422 Hairdressing service workers	3.1	4.6	1.76
8	285 Designers	3.1	4.1	2.03
9	254 Instructors	5.6	3.9	1.52
10	399 Customer service workers	3.1	3.2	1.74
11	314 Secretaries and assistant clerks	4.9	3.0	1.47
12	246 Health/medical related workers	2.8	2.9	1.66
13	530 Door to door/telecom sales workers	2.2	2.5	1.45
14	392 Travel/reception clerks		2.4	1.76
15	320 Finance/insurance related clerks	4.1	2.2	2.45
	253 Kindergarten teachers	3.5		
3 occ		30.9	29.9	1.80
15 occ		80.6	78.0	1.99
All occ		100.0	100.0	1.80

Source : Local Area Labor Force Survey.

Note : The same as Table 3-4.

Table 3-6. The 15 occupations employing the most young HS grad or less women

	Occupation	2008 (%)	2015 (%)	Wage (2015) (million won)
1	521 Store sales workers	16.5	13.2	1.38 (1.15)
2	313 Accounting/book-keeping clerks	13.9	10.2	1.62 (1.30)
3	930 Production related elementary workers	3.9	7.2	1.19 (0.87)
4	422 Hairdressing service workers	5.1	7.0	1.50
5	312 Administration related clerks	5.5	6.4	2.02
6	442 Food service workers	7.8	6.3	1.15
7	246 Health/medical related workers	5.0	6.0	1.59
8	864 Electronic parts/products assemblers	3.2	4.5	1.83
9	530 Door to door/telecom sales workers	3.0	4.1	1.46
10	399 Customer service workers	1.7	3.4	1.68
11	314 Secretaries and assistant clerks	4.2	2.9	1.32
12	441 Chefs and cooks	2.7	2.5	1.14
13	863 Electronic parts/products prod operators		2.3	2.35
14	832 Chemical prod machine operators		1.8	1.52
15	854 Transport vehicle assemblers		1.7	1.68
	320 Finance/insurance related clerks	2.4		
	392 Travel/reception clerks	1.7		
	510 Sales workers	1.7		
3 occ		38.2	30.6	1.41
15 occ		78.3	79.5	1.54
All occ		100.0	100.0	1.53

Source : Local Area Labor Force Survey.

Note : The same as Table 3-4.

Table 3-7. The 15 occupations employing the most 4-yr college grad young men

	Occupation	2008 (%)	2015 (%)	Wage (2015) (million won)
1	312 Administration related clerks	18.6	19.3	2.77 (2.41)
2	235 Electronic/mech engineers and technicians	6.9	6.0	3.27 (2.79)
3	222 Info system development professionals	5.4	5.5	3.00 (2.65)
4	510 Sales workers	5.3	3.9	2.71
5	521 Store sales workers	3.0	3.5	1.74
6	274 Technical sales/brokerage related workers	3.3	3.1	3.03
7	252 Teachers	2.5	2.8	2.69
8	320 Finance/insurance related clerks	2.9	2.7	3.07
9	231 Construction/civil eng engineers and technicians	4.4	2.3	2.67
10	254 Instructors	4.1	2.3	2.37
11	313 Accounting/book-keeping clerks	2.8	1.9	2.76
12	311 Administration clerks	2.8	1.8	2.37
13	285 Designers	1.4	1.8	2.35
14	441 Chefs and cooks		1.6	1.94
15	411 Police/fire fight/prison related workers		1.5	2.71
	286 Sports/recreation related professionals	1.5		
	223 Info system operators	1.4		
3 occ		30.9	30.8	2.91
15 occ		66.3	60.1	2.77
All occ		100.0	100.0	2.65

Source : Local Area Labor Force Survey.

Note : The same as Table 3-4.

Table 3-8. The 15 occupations employing the most 2-yr college grad young men

	Occupation	2008 (%)	2015 (%)	Wage (2015) (million won)
1	312 Administration related clerks	13.8	12.8	2.41 (1.99)
2	521 Store sales workers	6.9	6.2	1.64 (1.40)
3	510 Sales workers	4.6	3.9	2.17 (2.00)
4	441 Chefs and cooks	2.5	3.6	1.89
5	854 Transport vehicle assemblers	2.4	3.1	2.39
6	873 Automobile drivers	2.5	2.5	2.12
7	761 Electronic machine repairers	2.8	2.5	2.04
8	442 Food service workers		2.4	1.28
9	222 Info system development professionals	2.6	2.3	2.55
10	863 Electronic parts/products prod operators		2.3	2.57
11	753 Machinery equip fitters and mechanics	1.9	2.1	2.54
12	239 Eng professionals		1.8	2.55
13	864 Electronic parts/products assembler		1.8	2.40
14	922 Deliverers		1.7	1.63
15	530 Door to door/telecom sales workers		1.7	2.08
	254 Instructors	2.6		
	235 Electronic/mech engineers and technicians	2.3		
	231 Construction/civil eng engineers and technicians	2.3		
	751 Automobile mechanics	2.1		
	274 Technical sales/brokerage related workers	2.1		
	762 Electricians	1.9		
3 occ		25.3	22.9	2.20
15 occ		53.4	50.6	2.20
All occ		100.0	100.0	2.15

Source : Local Area Labor Force Survey.

Note : The same as Table 3-4.

Table 3-9. The 15 occupations employing the most HS grad or less young men

	Occupation	2008 (%)	2015 (%)	Wage (2015) (million won)
1	521 Store sales workers	7.7	8.1	1.84 (1.52)
2	312 Administration related clerks	6.9	6.3	2.25 (1.89)
3	873 Automobile drivers	7.1	5.2	1.99 (1.64)
4	854 Transport vehicle assemblers	3.2	4.4	2.28
5	922 Deliverers	3.6	3.8	1.89
6	441 Chefs and cooks	2.2	3.8	1.80
7	510 Sales workers	4.6	3.5	2.33
8	851 Machine tool operators		3.1	2.09
9	442 Food service workers	2.6	2.9	1.69
10	864 Electronic parts/products assembler		2.5	2.18
11	930 Prod related elementary workers	2.3	2.4	1.55
12	832 Chemical prod machine operators		2.3	2.10
13	530 Door to door/telecom sales workers		2.2	1.81
14	743 Welders	2.8	2.2	2.49
15	910 Construction and mining elementary workers	2.7	2.0	1.60
	753 Machinery equip fitters and mechanics	2.5		
	773 Construction finishing related workers	2.5		
	751 Automobile mechanics	2.5		
	762 Electricians	2.2		
3 occ		21.8	19.5	2.04
15 occ		55.4	54.5	2.03
All occ		100.0	100.0	2.05

Source : Local Area Labor Force Survey.

Note : The same as Table 3-4.

top 3 comprised 34.4% of all four-year college graduate women, and 29.9% of all two-year college graduate women, and 30.6% of women with high school education or less in 2015. Another conspicuous characteristic for occupations where women are concentrated was a high ratio of part-timers. Especially, many instructors among four-year college graduates women or store sale workers among high school education women were part-timers.

Table 3-7, Table 3-8 and Table 3-9 show the 15 occupations employing the most young men aged 25 to 34 in 2008 and 2015. Among four-year college graduates men, the top ranked (the 1st) occupation employing the most was administration related clerks. The share was 19.3% and this was exceptionally large compared to other occupations. The 2nd occupation was electronic/mechanical engineers and technicians and their share was 6.0%.

For men, low level of concentration was found in the top 3 occupations compared to women. The share of the top 3 occupations was 30.8% for four-year college graduates, 22.9% for two-year college graduates, and 19.5% for high school education or less. Unlike women, levels of concentrations differed by education level and it was the highest for the four-year college graduate men.

(2) Changes in the Occupational Profiles of Young Women

The significant change between 2008 and 2015 was the ouster of the top ranked (or the 1st) occupation employing the most four-year college graduate women in Table 3-4. The share of instructors significantly decreased in 2015. The job quality

for instructors is not good, since the proportion of part-timers or temporary workers were high. The share of teachers also significantly decreased. The combined share of instructors and teachers was 27.3% in 2008 and 17.5% in 2015.

This change in the career of young college graduate women is noteworthy. Instructors or teachers has been typical jobs for educated women. Although top ranked occupation of young college graduate women was instructors in 2008, it was not due to cyclical factors such as the global financial crisis. Even after the economic recovery in 2010, top ranked occupation for them was still instructors. Although clerical job was common for both men and women, administration related clerks was the top ranked occupation among four-year college graduate young men.

The top ranked occupation employing the most four-year college graduate women or men in 2015 was administration related clerks. Between 2008 and 2015, its share increased by 4.1% points for young women and 0.7% points for young men (Table 3-4 and Table 3-7). This means that many highly educated women went into the male-dominant job instead of typical female job after the global financial crisis. The share of kindergarten teachers was dropped and medical technologist entered into the top 15 occupations employing the most young women.

The share of accounting/book-keeping related clerks also increased by 2.0% points among the four-year college graduate women (Table 3-4). This job has been a typical job for two-year college graduate women, but the share for them decreased by 1.7% points during the period (Table 3-5). The share for women with high school education or less decreased by 3.7% points in that

job (Table 3-6). Among women with the high school education or less, the share of low-skilled jobs such as assembling workers increased between 2008 and 2015.

For men with high school education or less, there were changes in composition within blue-collar jobs (Table 3-9). The share of assembling workers such as machine tool operators or electronic parts/products assemblers increased. Whereas, some occupations of craft workers such as machinery equipment fitters and mechanics dropped from the top 15 occupations. Among two-year college graduate men, many of professional jobs dropped from the top 15 occupations between 2008 and 2015 (Table 3-8).

(3) Wages of the Top 3 Occupations Employing the Most Young Workers

Table 3-4 to Table 3-9 also shows average monthly wages of top 15 occupations employing the most young women or men by education level in 2015. There was a considerable wage gap by education level. In addition, women's wages were lower than men's wages at all education levels. The average wages of top 3 occupation employing the most four-year college graduate men were 2.91 million won, whereas those of female counterpart were 2.13 million won.

An interesting fact in the table was associated with occupational segregation. For women, the average wages of the top 3 occupations were lower than or the same as the average wages of all occupations depending on education levels. For example, for the four-year college graduate women, the average wages of the top 3 occupations were 2.13 million won and the average wages of

all occupations was were 2.20 million won. For men, this was the opposite. The average wages of the top 3 occupations was higher than the average wages of all occupations except high school educated men. For example, for the four-year college graduate men, the former were 2.91 million won and the latter were 2.65 million won. That is, women in top 3 occupations earned 73.2% of men in top 3 occupations among four-year college graduates. For all occupations of four-year college graduates, women earned 83.0% of men. This implies that the wages of high-skilled male-dominant occupations are relatively high.

Let's review some occupations. Wages of instructors in Table 3-4 were 1.65 million won and were considerably low compared to the average wages of top 3 occupations employing the most four-year college graduate women. This level was even lower than the average wages of top 3 occupations employing the most two-year college graduate women. It was because there were a lot of part-timers or temporary workers in this occupation. The proportion of part-timers was 53.3% and the proportion of temporary workers among paid workers was 57.3% in this occupation in 2015. The proportion of self-employed was 30.9%. In contrast, wages of teachers was 2.59 million won and the highest among the top 5 occupations.

Wages of accounting and book-keeping clerks, which was the top ranked occupation employing the most two-year college graduate women, were 1.77 million won in 2015 in Table 3-5. This was a typical job for females at all education levels and wages of them was significantly low compared to that of administration related clerks. Wages of female administration related clerks did

not differ much by education levels : 2.38 million won for four-year college graduate women, 2.03 million won for two-year college graduate women, and 2.02 million won for women with high school graduate or less in Table 3-4 to Table 3-6.⁵⁾ In other words, the wages of this job were fairly high.

However, wages of male administration related clerks was significantly higher than that of the female counterpart. Wages of female four-college graduate administration related clerks was 85.9% of their male counterpart in 2015 (Table 3-4 and Table 3-7). Wages of female four-year college graduate administration related clerks were 82.6% of their male counterpart in 2008. The labor market condition for female administration clerks seems to be slowly improving.

3. Characteristics of the College Graduate Clerical Job

In the previous section, we reviewed that the share of administration related clerks among four-year college graduate women grew fast between 2008 and 2015 and it became the top ranked career employing the most of them. In this section, we analyze this job in detail. If the quality of this job was good, then we can assess that this may contribute the improvement of the labor market outcomes of college graduate young female workers.

5) There is a difference in tenure of 2~4 years between education groups.

(1) Administration related Clerk for Full-time Four-year College Graduates

In this section, we analyze the job quality such as wages and tenure of full-time administration related clerks. The samples are four-year college graduates aged 25 to 34. We compare five groups in 2007 : ① administration related clerks who maintained the job in 2000 and 2007 (continued group), ② administration related clerks in 2007 (total group), ③ managers in 2007, ④ professionals in 2007, and ⑤ other occupations in 2007. We also compare five groups in 2014.

We use the Korea Labor and Income Panel Study (KLIPS) data of the Korea Labor Institute in 2000, 2007 and 2014. In order to maintain the consistency of the classification of occupations, we apply the 5th KSCO instead of the 6th KSCO.

Since there were many kinds of clerks in the 5th KSCO, we constructed the good quality clerical job that is similar to administration related clerks (occ 312) in the 6th KSCO. Therefore, administration related clerks in this sections includes 3-digit occupations of 311 to 316 in the 5th KSCO as is in Table 3-10.⁶⁾ This category may be described as so-called good quality clerical jobs.

6) The office assistant clerks (occ 317 in the 5th KSCO) with library and mail related clerks (occ 318 in the 5th KSCO) is included in the other occupations (Table 3-10). This classification follows an arbitrary criteria of this study. We consider the job type and wages of the occupation. In 2007, wages of the constructed group (administration related clerks) was higher than that of all four-year college graduate female workers.

Table 3-10. Administration related clerks and other occupations : 4-yr college graduates*

Administration related clerks**	Office clerks (311), Planning clerks (312), Gov't administration clerks (313), Sales related clerks (314), Numerical clerks (315), Stock and production related clerks (316)
Managers	Managers (011~030)
Professionals	Professionals (111~184), Associated professionals (211~293)
Other occupations	Office assistant clerks (317), Library and mail related clerks (318), Cashers and tellers (321), Info and reception clerks (322), Customer related clerks (323)
	Service workers (411~444), Sales workers (511~530) Agricultural workers, etc. (611~630), Craft workers (711~754), Assembling workers (811~844), Elementary workers (911~942)

Note : 1) * The classification uses the 5th KSCO.

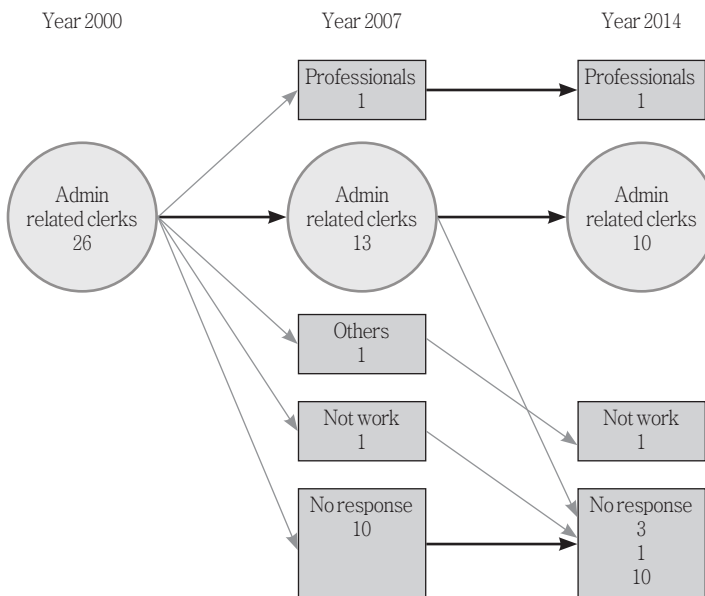
2) ** This category is constructed and it is similar to administration related clerks (occ 312) in the 6th KSCO.

(2) Turnover of Administration related Clerks

Many full-time administration related clerks have maintained their job for 7 years until 2007 and for 14 years until 2014 (Figure 3-1 and Figure 3-2). In this case, maintaining job simply means that they were in the same occupation after 7 years or after 14 years. As mentioned earlier, samples are four-year college graduate full-time young workers aged 25 to 34 in 2000. The number of young women who were administration related clerks in 2000 was 26 in the KLIPS data. Half of them, i.e. 13 women, who maintained their jobs in 2007 when they were at the age of 32 to 41 (Figure 3-1). After 14 years when they were at the age of 39

to 48, 10 out of 13 still maintained their jobs in 2014.⁷⁾ This means that most young women who were able to keep their jobs in 2007 most likely continued to keep their jobs thereafter. In 2007, they were at the age of 32 to 41 and most of them were in the period of marriage and childbearing. Despite the global economic crisis, most workers who had retained the jobs in that period did not lose the job thereafter. This means that it is important to keep the job

Figure 3-1. Turnover of female administration related clerks



Source : KLIPS : 2001, 2007, and 2014.

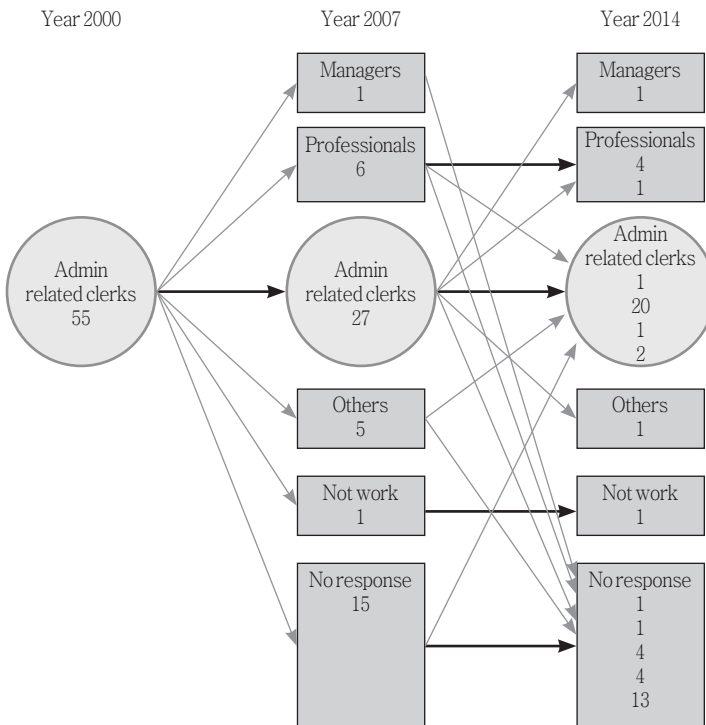
Note : All samples were full-time four-year college graduates. The numbers in the circles are the numbers of observations.

⁷⁾ The impact of firm size for maintaining the job may be important. However, we cannot identify the firm size from the KLIPS data in 2000.

during the marriage and childbirth period for young female college graduate administration related clerks in order to maintain their career.

This was also true for men. Most young male administration related clerks who were able to keep their job in 2007 continue to keep their jobs thereafter. However men's career were more diverse than that of women. We assume that no response means

Figure 3-2. Turnover of male administration related clerks



Source : KLIPS : 2001, 2007, and 2014.

Note : All samples were full-time four-year college graduates. The numbers in the circles are the numbers of observations.

that they could not maintain the job : administration related clerks. This may be a strong assumption though.

The number of young men who were full-time administration related clerks in 2000 was 55. Half of them, i.e. 27 men, maintained their jobs in 2007 as was in Figure 3-2. In 2014, total of 24 men were administration related clerks. Among them, 20 men were also administration related clerks in 2000. Four men who had been administration related clerks in 2000 was in other jobs in 2007, but they switched to administration related clerks thereafter and they were in the job again in 2014. Unlike the female counterpart, some male administration related clerks promoted to management positions, or switched to professionals during the period.

(3) Wages and Tenure of Administration related Clerks

We will examine the labor market performance of the administration related clerks who maintained the job. Labor market performance in this section was measured by wages and tenure. However, we should be cautious to generalize the result since the number of samples in the KLIPS data was very small.

This section compared the wages of administration related clerks with those of other four groups as in Table 3-11. Wages of female administration related clerks were 1.28 million won in 2000. Wages of professionals were 1.17 million won and those that of other occupations were 1.01 million won in 2000. All of them are four-year college graduate full-time young women aged 25 to 34. Although the number of professionals was large, wages of them were relatively low.

In 2007, there were two groups of administration related clerks in Table 3-11. The first group (total 2) was women who maintained the job, that is, they were also administration related clerks in 2007. The second group (continue 2) was women who

Table 3-11. Wages and tenure of administration related clerks

Unit : million won, years

	Female			Male		
	Wages	Tenure	N*	Wages	Tenure	N*
Year of 2000 (age 25~34)						
Admin r. clerks	1.28	4.9	26	1.51	3.7	54
Managers	-	-	0	1.19	5.3	3
Professionals	1.17	3.3	67	1.57	2.8	103
Others	1.01	1.6	11	1.22	2.6	28
Year of 2007 (age 32~41)						
Admin r. clerks (Total 2)	2.27	9.1	34	2.82	6.3	114
Managers	-	-	0	3.88	9.5	10
Professionals	2.24	6.6	77	3.24	5.1	176
Others	1.66	5.5	13	2.49	6.4	60
Admin r. clerks (Continue 2)	2.52	13.2	13	3.34	9.6	25
Year of 2014 (age 39~48)						
Admin r. clerks (Total 3)	3.10	12.7	33	4.08	11.2	122
Managers	3.33	1.2	3	5.24	6.4	11
Professionals	3.05	10.2	80	4.21	9.5	165
Others	2.46	5.6	13	3.37	9.1	70
Admin r. clerks (Continue 3)	3.65	20.1	10	4.83	15.7	22

Source : KLIPS, 2001, 2007, and 2014.

Note : 1) * The number of samples. Only workers with wage information.

2) ** All samples are four-year college graduate workers.

were administration related clerks in 2000 and 2007. The former group includes the latter group. Also, the former group includes someone who became a four-year college graduate and full-time administration related clerk in 2007. Wages of the first group (total 2) was 2.27 million won and their tenure was 9.1 years. Wages of the second group (continue 2) was 2.52 million won and their tenure was 13.2 years.

In 2014, wages of the first group (total 3) who were in administration related clerks in 2014 were 3.10 million won. Wages of the second group (continue 3) who were administration related clerks in 2000 and 2014 were 3.65 million won. Their tenure was 20.1 years.

The results implies that the job quality of administration related clerks among four-year college graduate women was relatively good. The recent expansion of administration related clerks among them may contribute to build their career and to reduce the gender wage gap.

The result was similar to men. Wages of administration related clerks were 1.51 million won and similar to those of professionals, 1.57 million won in 2000. After 7 years, wages of administration related clerks (total 2) were 2.82 million won, lower than those of professionals, 3.24 million won. However, wages of the second group (continue 2) were 3.34 million won. This phenomenon is also found in 2014 after the 14 years. At this point we can say that the labor market performance of high tenure administration related clerks was also good for men. However, in the near future when they reached to their 50s, wages of male managers or professionals may increase further.

In sum, the result implies that the labor market outcomes for female administration related clerks who could maintain their jobs for 7 year or 14 years were fairly good. Almost half of young female administration related clerks maintained their job for 7 years and most of them could maintain their job thereafter. Compared to female professionals, their wages were high and their tenure was long. This may be a promising phenomenon in terms of educated women's career and the gender wage gap, though large part of this job is prone to be destroyed from the fourth industrial revolution in the future.

IV. The Gender Wage Gap and its Determinants

1. Changes in the Gender Wage Gap

This chapter estimates the gender wage gap and explore the changes in the gender wage gap between 2008 and 2015 using the data, the Economically Active Population Survey. We also analyze the factors of it. We analyze the prime age group aged 25 to 54 to focus their main job in the lifetime as well as the young age group.

(1) Data and the Summary Statistics

There are four categorical variables for education levels of the prime age group in the regression : four-year college graduates (COLL), two-year college graduates (SEMI), high school graduates (JUSTHIGH), or less (LESSHIGH). For the young age group there are three categorical variables : COLL, SEMI, and high school graduates or less (HIGH).

There are nine categories of occupations and 21 categories of industries. Company size are classified into three groups : 300 or more employees (LARGE), 100~299 employees (MED), and less than 100 employees (SMALL). TEN is years of tenure, SPOUSE is a dummy variable for married workers, and UNION is a dummy variable for union members. REGULAR is a dummy variable for

regular workers and PART is a part-time dummy variable.

Table 4-1 shows the summary statistics. We review the summary statistics for the prime working age group first. Between 2008 and 2015, the average monthly wages of the prime working age group increased annually 3.9% from the 1.93 million won to 2.52 million won. Average annual growth rate of wages of men was 3.7% and that of women was 4.7%. That is, wages of female workers grew faster than those of male workers. Wages of female workers was 57.9% of those of male workers in 2008 and it increased to 61.5% in 2015. This result comes from the sample statistics and may be slightly different from population parameter.

A change in working hours during the period was remarkable. Working hours were reduced from 45.6 hours in 2008 to 42.6 hours in 2016. The reduction in working hours was greater among women than men. This reflects the fact that part-time workers among prime age women increased in these days. The education level continued to increase. Especially the increase of female education level was remarkable. The share of the male four-year college graduates increased by 5% points, while that of the female counterpart increased by 9% points during the period. Tenure of all workers increased by about a year during the same period. The increase in tenure was particularly pronounced among female workers.

Let's take a look at the summary statistics for the young age group. Between 2008 and 2015, the wages increased by 3.7% annually from the 1.71 million won in 2008 to 220 million won in 2015. Working hours were reduced from 45.4 hours in 2008 to

Table 4-1. Summary statistics

	Prime age group (25~54 years)						Young age group (25~34 years)	
	2015 total	Male	Female	2008 total	Male	Female	2015 total	2008 total
Wage (mill. won)	2.52 (1.54)	3.04 (1.60)	1.87 (1.15)	1.93 (1.27)	2.35 (1.32)	1.36 (0.93)	2.20 (1.01)	1.71 (0.78)
Age (years)	40.6 (8.3)	40.6 (8.1)	40.5 (8.6)	39.1 (8.1)	39.3 (8.0)	38.9 (8.3)	29.9 (2.9)	29.5 (2.9)
Working hours (hours)	42.6 (9.0)	44.0 (8.1)	40.7 (9.8)	45.6 (10.7)	46.8 (9.9)	43.9 (11.6)	42.8 (8.1)	45.4 (9.7)
COLL	0.37 (0.48)	0.41 (0.49)	0.33 (0.47)	0.31 (0.46)	0.36 (0.48)	0.24 (0.43)	0.48 (0.50)	0.38 (0.49)
SEMI	0.17 (0.37)	0.17 (0.37)	0.17 (0.38)	0.14 (0.34)	0.13 (0.34)	0.14 (0.35)	0.24 (0.43)	0.25 (0.43)
HIGH	-	-	-	-	-	-	0.28 (0.45)	0.37 (0.48)
JUSTHIGH	0.40 (0.49)	0.38 (0.49)	0.42 (0.49)	0.43 (0.5)	0.41 (0.49)	0.45 (0.50)	-	-
LESSHIGH	0.06 (0.24)	0.05 (0.22)	0.08 (0.27)	0.12 (0.33)	0.09 (0.29)	0.17 (0.37)	-	-
SPOUSE	0.70 (0.46)	0.70 (0.46)	0.69 (0.46)	0.70 (0.46)	0.72 (0.45)	0.68 (0.47)	0.39 (0.49)	0.42 (0.49)
FEMALE	0.44 (0.5)	0 (0)	1 (0)	0.42 (0.49)	0 (0)	1 (0)	0.46 (0.5)	0.44 (0.5)
LARGE	0.14 (0.34)	0.18 (0.38)	0.09 (0.28)	0.12 (0.33)	0.16 (0.37)	0.07 (0.26)	0.15 (0.36)	0.13 (0.33)
MED	0.11 (0.31)	0.13 (0.33)	0.09 (0.28)	0.10 (0.3)	0.12 (0.32)	0.08 (0.27)	0.12 (0.33)	0.11 (0.31)
SMALL	0.75 (0.43)	0.70 (0.46)	0.83 (0.38)	0.77 (0.42)	0.72 (0.45)	0.85 (0.36)	0.72 (0.45)	0.76 (0.43)
UNION	0.16 (0.37)	0.20 (0.40)	0.11 (0.31)	0.15 (0.35)	0.19 (0.39)	0.08 (0.28)	0.14 (0.35)	0.14 (0.34)
TEN	6.44 (7.32)	7.53 (7.89)	5.03 (6.22)	5.39 (6.81)	6.65 (7.58)	3.66 (5.09)	3.23 (3.16)	2.96 (3.03)
REGULAR	0.72 (0.45)	0.79 (0.41)	0.63 (0.48)	0.60 (0.49)	0.70 (0.46)	0.46 (0.50)	0.78 (0.41)	0.68 (0.47)

(Continue)

	Prime age group (25~54 years)						Young age group (25~34 years)	
	2015 total	Male	Female	2008 total	Male	Female	2015 total	2008 total
PART	0.07 (0.26)	0.03 (0.16)	0.13 (0.34)	0.06 (0.24)	0.03 (0.16)	0.11 (0.31)	0.05 (0.22)	0.04 (0.2)
AGE2534	0.28 (0.45)	0.27 (0.44)	0.29 (0.46)	0.32 (0.47)	0.31 (0.46)	0.33 (0.47)	–	–
AGE3544	0.36 (0.48)	0.38 (0.48)	0.33 (0.47)	0.38 (0.49)	0.39 (0.49)	0.37 (0.48)	–	–
AGE4554	0.36 (0.48)	0.36 (0.48)	0.37 (0.48)	0.30 (0.46)	0.30 (0.46)	0.30 (0.46)	–	–

Source : The Economically Active Population Survey.

Note : Standard errors in parentheses.

42.8 hours in 2016. The proportion of full-time workers also rose up, but the increase was relatively small compared to the prime working age group. It reflects the increase in temporary jobs among the young age group.

Increase in the educational attainments in the young age group was more prominent. The share of the four-year college graduates increased from 38% in 2008 to 48% in 2015 in the young age group. Almost one of two young workers was a four-year college graduate. The proportion of married workers among the young age group was reduced during the period and it may suggest that marriage was delayed or shunned in these days.

(2) Mincerian Wage Regression Results

Table 4-2 shows the estimation results in 2015 and 2008 using the Economically Active Population Survey for the prime age group (25~54 years) and the young age group (25~34 years).

The wage penalty for female workers, that is, the coefficient for the dummy variable for being female, decreased between 2008 and 2015 among the young age group as well as the prime age group. Wages of female workers were lower by 29% compared to those of male workers after controlling for other variables in 2015 and 32.9% in 2008 among the prime age group. The wage penalty for young female workers also decreased during the period, though the wage penalty for young women was small compared to that of the prime age group.

Although the level of education affected wages significantly, education premium was decreasing during the period. Among the prime age group, wages of the four-year college graduates were 20.7% higher than the wages of the base category, that is, high school drop-outs in 2015. Their wages were 25.9% higher than those of the base category in 2008. Education premium also decreased among the young age group. Especially wage premium for the two-year college graduates has almost gone in 2015 among the young age group.

The extent to which wage increases as age increases was similar in 2008 and 2015. However, the highest wage group was changed between 2008 and 2015. Wages of 35~44 years old workers were 5.6% higher than those of 25~34 years old workers (the base group) and wages of 45~54 years old workers were 5.0% higher than those of the base group in 2015. In other words, wages of the 35~44 age group were the highest among three groups in 2015. However, in 2008, wages of the oldest group (the 45~54 age group) were the highest.

As tenure increases during the period, wage increase resulting

Table 4-2. The regression results, 2008 and 2015

	Prime age group (25~54 years)		Young age group (25~34 years)	
	(1) 2015	(2) 2008	(3) 2015	(4) 2008
FEMALE	-0.290* (0.006)	-0.329* (0.006)	-0.188* (0.011)	-0.220* (0.009)
COLL	0.207* (0.014)	0.259* (0.011)	0.117* (0.013)	0.155* (0.012)
SEMI	0.108* (0.014)	0.142* (0.012)	0.009* (0.014)	0.036* (0.011)
JUSTHIGH	0.055* (0.012)	0.099* (0.009)	—	—
SPOUSE	0.072* (0.007)	0.059* (0.006)	0.090* (0.099)	0.086* (0.008)
AGE3544	0.056* (0.007)	0.056* (0.007)	—	—
AGE4554	0.050* (0.008)	0.057* (0.008)	—	—
TEN	0.024* (0.000)	0.034* (0.001)	0.045* (0.004)	0.047* (0.004)
TEN2	-0.000 (0.000)	-0.000* (0.000)	-0.001* (0.000)	-0.001* (0.000)
REGULAR	0.214* (0.008)	0.218* (0.007)	0.223* (0.014)	0.211* (0.011)
PART	-0.696* (0.011)	-0.690* (0.011)	-0.669* (0.023)	-0.770* (0.021)
MED	0.073* (0.009)	0.042* (0.009)	0.071* (0.015)	0.043* (0.014)
LARGE	0.220* (0.009)	0.161* (0.009)	0.195* (0.015)	0.140* (0.014)
UNION	0.047* (0.008)	0.077* (0.008)	0.061* (0.015)	0.095* (0.013)
INDUSTRY	Controlled	Controlled	Controlled	Controlled
OCCUPATION	Controlled	Controlled	Controlled	Controlled
N of Obs	17,721	20,275	4,928	6,454
AdjR2	0.651	0.677	0.512	0.544

Source : The Economically Active Population Survey.

Note : Standard errors in parentheses.

from one year increase in tenure declined. The part-time wage penalty in 2015 was about the same as in 2008. Wages of part-time workers were 69.6% lower than those of full-time workers controlling after individual and job characteristics. Workers in large companies earned 20% more after controlling other variables in 2015 and the wage premium for large companies increased between 2008 and 2015. Also, married workers (SPOUSE) earned more in 2015 than in 2008. This may reflect a social phenomenon that workers with higher income marry more in these days.

2. Wage Penalty for Female Workers and its Determinants

Using Oaxaca-Blinder decomposition methods, we decompose the gender wage gap in this section. Attraction of Oaxaca-Blinder decomposition methods is that it allows for the possibility that inequalities caused in part by differences of determinants.

Table 4-3 shows the contributions of variables to the gender wage gap in the prime age group using Oaxaca-Blinder decomposition method. GROPUED included three categorical variables for education levels : four-year college graduates (COLL), two-year college graduates (SEMI), high school graduates (JUSTHIGH). SIZEUNI included the firm size variables such as MEDIUM, and LARGE and a union membership dummy variable, UNION. GROUPAGE included the age groups : the 35~44 years and the 45~54 years. GROUPIND included 20 variables for in-

Table 4-3. Contribution of variables to the components of the decomposition (the prime age group)

	2015	2008
Differential		
Prediction_1	5.590* (0.005)	5.318* (0.005)
Prediction_2	5.070* (0.007)	4.743* (0.006)
Difference	0.519* (0.008)	0.575* (0.008)
Explained		
GROUPED	0.011* (0.001)	0.025* (0.002)
SPOUSE	0.003* (0.001)	0.005* (0.001)
GROUPAGE	0.003* (0.001)	0.002* (0.001)
GROUPTEN	0.043* (0.002)	0.058* (0.002)
REGULAR-PART	0.113* (0.005)	0.118* (0.004)
GROUPSIZE	0.026* (0.002)	0.025* (0.002)
GROUPIND	0.026* (0.004)	0.008* (0.005)
GROUPOCC	-0.008* (0.003)	-0.001 (0.003)
Total	0.216* (0.008)	0.240* (0.008)
Unexplained		
Total	0.303* (0.008)	0.335* (0.008)

Source : The Economically Active Population Survey.

Note : Standard errors are in parentheses.

dustry, and GROUPOCC included 8 variables for occupation. REGULAR-PART included a dummy variable for regular workers (REGULAR) and a part-time dummy variable (PART).

In the Table 4-3, the component that explained the largest part of the outcome differential in the explained part was REGULAR-PART. Tenure, SIZEUNI, and GROUPIND also explained large parts of the outcome differential.

It is obvious that REGULAR-PART was the most important factor in explaining the gender wage gap. Many women were engaged in part-time jobs than men and the part-time wage penalty was huge. In addition, the share of regular workers among all workers was significantly low for female workers than for male workers, although the gender gap in the share has slightly declined between 2008 and 2015.

Despite the recent policy for creating good quality part-time jobs, the part-time wage penalty did not decrease between 2008 and 2015. Many Korean women has suffered a major career break due to marriage and childbearing. When they return to the labor market, many of them end up with low quality part-time jobs or temporary work. Main target of the government policy for creating good quality part-time jobs was the highly educated women who had major career breaks and were reluctant to re-enter the labor market because they could not find decent jobs.

Tenure was an important variable to explain the gender wage gap. Industry was also an important factor to explain the gender wage gap. Male workers gathered in the high wage industries. Unlike industry, occupation was not a factor to explain the gender wage gap. It was rather a factor reducing the gender wage gap

after controlling other factors. Women gathered in relatively high wage occupations under the 1-digit classification of occupations. A large proportion of female professionals may be an example.

That is, the job characteristics rather than individual characteristics were important for explaining the gender wage gap. Educational attainment was the most important factor for the individual characteristics. However, the gender difference in education years as well as the wage premium for education years was significantly reduced in these days.

V. Summary and Policy Implications

1. Summary

This paper analyzed the recent changes in women's occupations and wages in Korea, focusing on the trend of the gender wage gap and changes in the occupational profiles of young women between 2008 and 2015.

This period was impacted by the global economic crisis of 2008, and the global economic crisis affected the gender wage gap as well as the gender employment gap. Chapter 2 reviewed that the decrease of the gender wage gap was found in the advanced countries after the global economic crisis. The result was from the downward leveling of men's wage, that is, it resulted from the deterioration of men's position rather than the advance of women's status (Ghosh, 2014). However, the global economic crisis is not directly relevant to the changes in women's occupations and wages in Korea. Korea did not fall into the recession in 2008 and 2009. Rather, the trend factors such as improvement of the educational attainment of women since the 2000s can be important for explaining the changes in occupations and wages.

Chapter 3 examined the changes in the occupational structure and wages of female workers between 2008 and 2015. First, we reviewed the changes in the occupational structure and wages of the prime age group aged 25 to 54 and the young age group aged

25 to 34. During the period, the combined share of professionals and clerks greatly increased. 89.3% of four-year college graduate women gathered in these occupations in 2015. Especially, the share of clerks increased among four-year college graduate women. The share of professionals decreased among them.

Recent changes in industrial structure in female employment can be summarized as the increase of employment in the health and social work sector. Although the pace of population aging has not been particularly increased during this period, technological change impacted on the service industry and led to the advance of 'the care economy'. It increases the number of female workers in the health and social work industry.

Second, we analyzed the changes in the occupational profiles of young women based on the Local Area Labor Force Survey between 2008 and 2015. We used a 3-digit classification of occupations. The share of administration related clerks among four-year college graduate young women significantly increased during the period. This means that more of highly educated women entered the male-dominant jobs in these days. Although administration related clerks is the occupation that men or women with all education level are engaged, it is especially prominent for four-year college graduate men. However, the gender wage gap in this occupation was still very large and slightly decreased between 2008 and 2015. The gender wage gap may decrease with further expansion of female workers in this occupation in the future. In the United States, due to globalization and technological advances, the skill premium have increased and this reduced discrimination against high-skilled women (Black and Juhn, 2000) and narrowed the gender wage gap.

However, we should remember that discrimination is not eliminated automatically and the political and cultural efforts also contributed to reducing discrimination.

Although many women were still concentrated in a small number of occupations, the concentration ratio of the top 3 occupations or the top 15 occupations employing the most young women has been reduced during the period. The share of the traditionally female occupations such as teachers, instructors or kindergarten teachers decreased remarkably in 2015. Instead, the share of administration related clerks or medical technologists increased. That is, the performance of the four-year college graduate women has improved in terms of occupational profiles. For women with high school education, the share of production related elementary workers increased significantly.

Third, we analyzed the job of administration related clerks in detail. Samples were full-time workers and four-year college graduates aged 25 to 34 in 2000. We use the Korea Labor and Income Panel Study (KLIPS), though the number of sample in this data was very small. The result implies that the labor market outcomes of female administration related clerks who could maintain their job for 7 years or 14 years was fairly good. Almost half of female administration related clerks remained in that job for 7 years and most of them also maintained the job for 14 years. Their wages were relatively high and their tenure was much higher compared to female professionals. This means that the recent trend of expansion of female administration related clerks among four-year college graduates would contribute to build their career and to reduce the gender wage gap in the future. However, this job is susceptible to

the progress of the fourth industrial revolution that would destroy this job. More of highly educated women should enter male-dominant professional jobs such as electronic/mechanical engineers or information system development professionals. Those jobs are the second ranked and the third ranked occupations that employ the most young four-year college graduate men. Also, the issue about the vertical job segregation is important. Vertical job segregation means that men are concentrated in the higher-status position even in the same occupation. This paper only mentioned about the horizontal job segregation in different types of occupations.

Chapter 4 examined the changes in the gender wage gap between 2008 and 2015 using the Economically Active Population Survey and analyzed its determinants. The gender wage gap decreased at a slower rate among the prime working age group of aged 25 to 54. Wages of female workers was 57.9% of that of male workers in 2008 and 61.5% in 2015 in the sample statistics. The wage penalty for being female in the wage regression also decreased. It was 32.9% in 2008 and it dropped down to 29% in 2015 among the prime age group. The part-time wage penalty in the wage determination was almost the same level in both 2008 and 2015. Wage premium for college graduates significantly decreased, but the impact of the company size on wages increased in 2015.

Using Oaxaca-Blinder decomposition methods, Chapter 4 also decomposed the gender wage gap in means of outcome variables. A full-time regular position was the largest component to explain the outcome differential in the explained part. The fact that women were more likely to be part-time workers or temporary workers affected the gender wage gap the most in the explained part. The

difference in tenure, company size, and industry between male and female workers also affected the gender wage gap. That is, the job characteristics rather than individual characteristics were important for explaining the gender wage gap. Gender difference in educational attainment was significantly reduced in these days and individual characteristics such as education years less explained the outcome differential in the explained part.

2. Policy Implications

The main findings of this paper can be summarized as follows. First, recent changes in women's occupations and wages especially among young workers witnessed the improvement of gender equality, though it was slow. Second, the expansion of higher education and the massive participation of female college graduates in the labor market were the crucial factors in enhancing the gender equality. More women have entered the traditionally male-dominated occupations. Third, recent technical change, especially the fourth industrial revolution, may function to threaten hitherto improved women's position in labor market. Fourth, despite the recent advances, Korean gender gap in wages was still the largest among OECD countries. Fifth, in Korea, job tenure of women is still substantially shorter than that of men. Also the part-time female workers increased significantly in these days. These factors would be obstacles to reduce the gender wage gap.

Findings above seem to suggest following directions for the policy of enhancing the gender equality in occupations and wages in

Korea. First, the policy which could ameliorate still severe vertical and horizontal segregation of jobs by gender is necessary. Now, Korean women came to equip themselves with the skills as high as Korean men and advance to middle and high wages jobs thanks to universal expansion of higher education. However, in Korea, it is still hard to find females in the traditionally male dominant industries and jobs with middle and high wages. Indeed, women are almost excluded from or marginalized in these areas due to ‘unexplained factors’, that is, some sort of sex discrimination. Recently, the number of female managers is increasing, but the proportion of highly paid female managers is still very low. The number of female professionals is also rapidly increasing, average wages of them are not much increasing. This is because the number of low-paid or part-time female professionals greatly increased after the global economic crisis. Hence the policies to eliminate the institutional and cultural barriers which prevent women from entering the male dominated jobs are urgently needed. Although this paper did not mention about the vertical job segregation to say that men almost monopolize the highest position, this should become an important issue.

Second, considering that the relatively short period of job tenure of women hampers the improvements in gender equality in Korean labor market, the policies that help women to maintain the job tenure without interruption are crucial. More systematic support for the work-family balance, such as high quality nurseries and day care center, subsidy for sharing domestic labor etc. are needed.

In addition, to meet the improvement of educational achievement of women, the part-time policy should include the strategy for im-

proving the quality of part-time professional jobs. In these days, part-time female professionals is increasing. Both the number of young female professionals in their thirties and that of female young part-time professionals in their thirties were doubled between 2004 and 2014 (Choi, 2015).

Since the job destruction in the fourth industrial revolution will be intensified in near future, part-time jobs become important. Part-time professional jobs are also essential to raise the labor market participation of women. Many Korean women has suffered a major career break due to marriage and childbearing. When they return to the labor market, many of them end up with low quality part-time jobs or temporary work. Government introduced the policy for creating good quality part-time jobs since 2012. The main target of the policy is the highly educated women who are reluctant to re-enter the labor market because they could not find decent jobs. However, there is little evidence that the policy contributes to raise the quality of the part-time jobs and to lower the part-time wage penalty at this point. Despite the recent policy for creating good quality part-time jobs, the part-time wage penalty did not decrease between 2008 and 2015 among the prime age group as was in Chapter 4. Although the policy now provides subsidies for creating good quality part-time jobs, the future policy should more focus on raising the quality of the existing part-time jobs especially part-time professional jobs. Most of part-time professionals are women.

Third, the policies that can cope with the negative impacts of the fourth industrial revolution on the gender equality should be prepared. Although more women enter into male-dominant pro-

fession and the concentration ratio of typically female dominated occupations decreased recently, such movement is rather slow. Some experts are pessimistic about the outlook for the effect of the fourth industrial revolution through the displacement of female dominant jobs, like clerical, service and sales jobs. Policies that can orient female college students to choose the majors related with STEM, which are currently dominated by male students, but regarded as core of the fourth industrial revolution, could be recommended.

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Appendix

Table A.1. *Occupation and industry distribution of the prime age group, 2015*

	Managers	Professionals	Clerks	Service Wkrs	Sales Wkrs	Agri Wkrs	Craft Wkrs	Assem Wkrs	Elem Wkrs	Total
Agriculture	0.00	0.00	0.05	0.00	0.00	1.27	0.00	0.00	0.20	1.53
Mining	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Manufacturing	0.02	1.00	3.74	0.12	0.24	0.00	1.99	3.89	2.69	13.68
Electricity, gas	0.00	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.06	0.20
Sewage, waste manag.	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.02	0.14
Counstruction	0.00	0.12	1.17	0.00	0.03	0.00	0.17	0.01	0.12	1.63
Wholesale and retail	0.05	0.81	3.86	0.09	10.15	0.00	0.14	0.02	1.26	16.39
Transportation	0.01	0.03	0.83	0.12	0.12	0.00	0.01	0.06	0.37	1.55
Accomm, food services	0.05	0.11	0.19	7.64	0.79	0.00	0.09	0.00	1.90	10.76
ICT	0.00	1.06	0.94	0.01	0.10	0.00	0.01	0.01	0.04	2.17
Financial, insurance	0.05	0.14	2.18	0.01	2.03	0.00	0.00	0.00	0.09	4.51
Realestate	0.03	0.78	0.68	0.01	0.13	0.00	0.00	0.00	0.29	1.92

(Continue)

	Managers	Professionals	Clerks	Service Wkrs	Sales Wkrs	Agri Wkrs	Craft Wkrs	Assem Wkrs	Elem Wkrs	Total
Professional services	0.01	1.64	2.07	0.08	0.03	0.00	0.01	0.07	0.05	3.96
Business facility manag.	0.01	0.31	1.47	0.29	0.34	0.00	0.06	0.15	1.44	4.07
Public administration	0.01	0.41	2.26	0.19	0.00	0.00	0.00	0.00	0.14	3.03
Education	0.06	11.44	1.46	0.65	0.02	0.00	0.00	0.03	0.27	13.94
Health and social work	0.07	9.87	1.19	1.77	0.04	0.00	0.03	0.02	0.48	13.47
Arts and sports	0.00	0.67	0.25	0.48	0.10	0.00	0.00	0.00	0.07	1.57
Other personal services	0.01	0.34	0.90	2.96	0.10	0.00	0.16	0.08	0.64	5.20
Activities of households	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.22
Extraterritorial org.	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Total	0.40	28.78	23.52	14.42	14.24	1.28	2.68	4.35	10.34	100.00

Source : Local Area Labor Force Survey.

Table A.2. *Occupation and industry distribution of the prime age group, 2008*

	Managers	Professionals	Clerks	Service Wkrs	Sales Wkrs	Agri Wkrs	Craft Wkrs	Assem Wkrs	Elem Wkrs	Total
Agriculture	0.00	0.00	0.02	0.00	0.01	3.81	0.00	0.00	0.26	4.11
Mining	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02
Manufacturing	0.02	0.76	2.68	0.18	0.31	0.00	3.08	3.88	3.19	14.09
Electricity, gas	0.00	0.01	0.13	0.00	0.01	0.00	0.00	0.00	0.08	0.23
Sewage, waste manag.	0.00	0.01	0.07	0.00	0.00	0.00	0.00	0.01	0.02	0.11
Counstruction	0.01	0.14	1.20	0.01	0.05	0.00	0.36	0.02	0.22	2.01
Wholesale and retail	0.03	0.46	2.93	0.10	12.69	0.00	0.14	0.03	1.17	17.55
Transportation	0.00	0.01	0.59	0.09	0.14	0.00	0.01	0.09	0.19	1.13
Accomm, food services	0.07	0.06	0.14	10.45	0.83	0.00	0.03	0.00	2.46	14.04
ICT	0.02	0.72	1.01	0.01	0.15	0.00	0.02	0.01	0.06	2.00
Financial, insurance	0.06	0.17	2.42	0.02	1.99	0.00	0.00	0.00	0.17	4.83
Realestate	0.00	0.93	0.57	0.02	0.12	0.00	0.00	0.00	0.13	1.78

(Continue)

	Managers	Professionals	Clerks	Service Wkrs	Sales Wkrs	Agri Wkrs	Craft Wkrs	Assem Wkrs	Elem Wkrs	Total
Professional services	0.00	1.06	1.45	0.03	0.04	0.01	0.03	0.03	0.03	2.67
Business facility manag.	0.01	0.14	0.81	0.28	0.24	0.01	0.06	0.13	1.23	2.90
Public administration	0.01	0.32	1.95	0.21	0.01	0.00	0.00	0.00	0.23	2.74
Education	0.17	11.07	1.19	0.83	0.03	0.00	0.01	0.08	0.33	13.71
Health and social work	0.10	5.76	0.72	0.95	0.01	0.00	0.03	0.01	0.41	7.98
Arts and sports	0.01	0.48	0.24	0.81	0.14	0.00	0.00	0.00	0.07	1.76
Other personal services	0.00	0.40	0.72	2.69	0.16	0.00	0.38	0.20	0.94	5.50
Activities of households	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.82
Extraterritorial org.	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Total	0.53	22.50	18.83	16.70	16.93	3.83	4.16	4.50	12.00	100.00

Source : Local Area Labor Force Survey.

Table A.3. Average monthly wages of the prime age group (full-time workers), 2008 and 2015

Unit : million won

	2015			2008		
	All	Male	Female	All	Male	Female
Managers	5.17	5.32	3.90	4.49	4.63	3.18
Professionals	3.10	3.65	2.41	2.65	3.10	2.02
Clerks	2.86	3.38	2.20	2.41	2.85	1.77
Service Wkrs	2.00	2.63	1.54	1.58	2.31	1.19
Sales Wkrs	2.13	2.57	1.72	1.77	2.20	1.41
Agri Wkrs	2.20	2.26	1.36	1.71	1.83	0.88
Craft Wkrs	2.46	2.57	1.53	1.92	2.04	1.19
Assem Wkrs	2.49	2.65	1.65	1.95	2.11	1.19
Elem Wkrs	1.60	1.85	1.31	1.25	1.51	0.98
Total	2.64	3.04	2.00	2.15	2.52	1.55

Source : Local Area Labor Force Survey.