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Research Report

Why Korea's Youth Unemployment Rate Rises

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Why Korea's Youth Unemployment Rate Rises*

Kyungsoo Choi, Fellow at KDI

"Korea's youth unemployment rate has rapidly ascended since 2013 while total unemployment remains little changed. The youth unemployment rate of high school graduates has been maintained at a stable level thanks to the growing number of service jobs. However, a rapidly rising number of college graduates are unemployed due to the slow creation of professional and semi-professional jobs. The government's youth employment support program has also contributed to the increase, but the extent is minor. To enhance the demand for skilled workers, economic innovation needs to accelerate and excellence in higher education must be achieved."

I. Korea's Youth Labor Market Trends

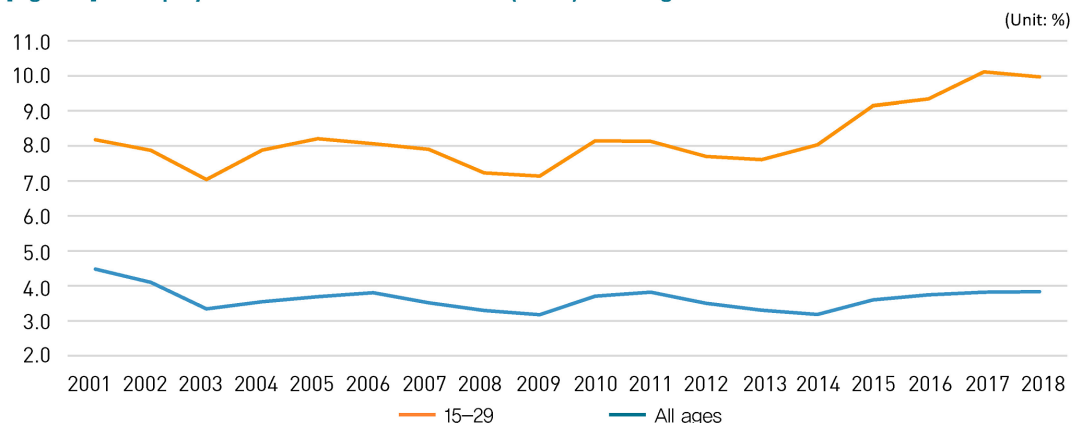
While Korea's total unemployment rate remains little changed, the youth (15-29) unemployment rate has rapidly surged to the 10% range since 2013 after remaining at around 8% from 2000.

In labor statistics, the youth population generally refers to the 15-29 age group. Among them, the majority of those in the 15-19 and 20-24 age groups are still students and have

The youth (15-29) unemployment rate rapidly ascended from 2013.

* Based on Choi, Kyungsoo and Jungho Kim, *Business Growth Dynamism and Youth Jobs*, Research Monograph 2016-06, Korea Development Institute, 2016 (in Korean).

[Figure 1] Unemployment Rate in 2000-2017: Youth (15-29) vs. All Ages



Note: Yearly average for Jan.-Oct.

Source: Statistics Korea, Economically Active Population Survey, various years; KOSIS

The decline in the employment rate for men aged 25-29 stopped after 2009 while the unemployment rate has soared since 2013.

not started their entrance into the labor market. Accordingly, the 25-29 and 30-34 age groups better show the youth labor market conditions in Korea.

The biggest concern in the youth labor market after 2000 has been the falling employment rate among men aged 25-29¹⁾ which receded from 78% in 2000 to 70% in 2016. Korea's level in 2000 was lower compared to the US and Japan's 90% range and Germany and France's 80% range. Still, this was not unusual as Korean men enter the labor market later due the mandatory military service. In 2016, however, the rate dropped to 70%, expanding the gap even further.²⁾ The downward trend has paused since 2009. However, the group's unemployment rate which remained stable until 2012 began to soar from 2013 (Figure 2). Meanwhile, the employment rate for men aged 30-34 poses little concern and stands relatively high at around 90%; the unemployment rate is also low.

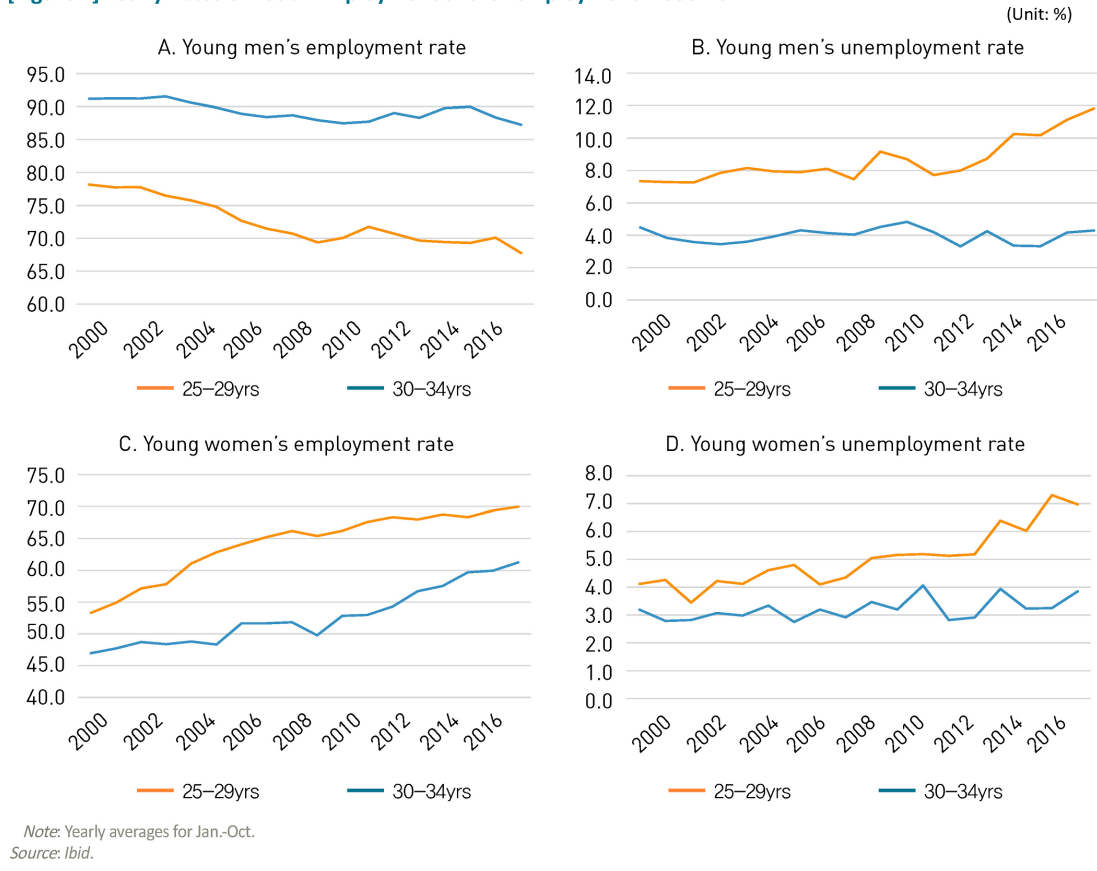
For women, the employment rate has continually increased for both the 25-29 and 30-34 age groups. This typically implies that they have become more economically active. Young women face the same labor market conditions and the unemployment rate for those aged 25-29 has rapidly risen since 2013. But as the secular trend of a growing female labor supply confounds the women's employment situation, the current analysis focuses on young men's employment and unemployment.

1) Employment rate is the percentage of employed persons within the civilian population.

2) Employment rates of the compared countries are as follows.

	Korea	Japan	US	France	Germany
Men 25-29 (2000)	78.2	90.3	88.9	81.5	81.1
Men 25-29 (2016)	69.7	89.4	82.3	79.3	80.7
Men 30-34 (2016)	91.2	93.7	91.5	87.8	89.3

[Figure 2] Yearly Rates of Youth Employment and Unemployment: 2000-2017



II . Characteristics of Korea's Youth Labor Market

1. Job Selection and Career Choice

Acquiring a job has different meaning for the youth. The middle-aged population find jobs for income. But for the youth, the choice is about a lifetime career and thus, show different preferences in choosing jobs. They reject self-employment and small-sized workplaces as well as high paying 3D jobs and take on low-paying, non-regular positions in large enterprises because they believe that there are better opportunities in the jobs. Indeed, because choosing a job essentially means choosing a career, young job seekers opt to expand their portfolios rather than resigning themselves to a job with an uncertain future. They are willing to wait long periods to enter large enterprises as they expect that more returns will be guaranteed over the course of their lives. The proportion of wage earners in medium- or large-sized workplaces is higher among the youth than in other age groups.

Youth employment is driven more by future careers than income.

2. Characteristics of Young Workers in Korea

The skill level of young Koreans is densely concentrated in the middle, which means that their skill level is high among the bottom but low among the top.

Homogeneity is a very discernable characteristic of young Korean workers. Proficiency distribution is concentrated in the middle and there are very small gaps compared to other countries. Among the bottom, Korea performs better than any other country but at the top falls short of advanced countries.

This characteristic is confirmed in an international test, via the OECD's Programme for the International Assessment of Adult Competencies (PIAAC),³⁾ according to which young Koreans' (25-34) average score ranks high for literacy and middle for numeracy and problem-solving. In the top 1 percent comparison, Korea ranks one of the lowest among 33 major countries, at 25th for literacy, 29th for numeracy and 26th for problem-solving, while in the bottom 1 percent, Korea ranks 4th, 6th and again 6th, respectively. Such a result reflects the strength and weaknesses of Korea's education system.

Accordingly, based on their mid-level proficiency, young Koreans seek middle-skilled jobs such as clerical and production jobs, among others. However, these jobs are on a fast decline due to technological innovation. The 'job mismatch,' which is often cited as the cause of youth unemployment in Korea, is actually a phenomenon in which the young population who are fostered to be homogeneous avoid low-skilled jobs.

3. Changes in Labor Demand

Advanced economies experienced a severe polarization of jobs in the 1980s, an increase in service jobs from the 1990s with the IT revolution, followed by a decrease in skilled jobs in recent years.

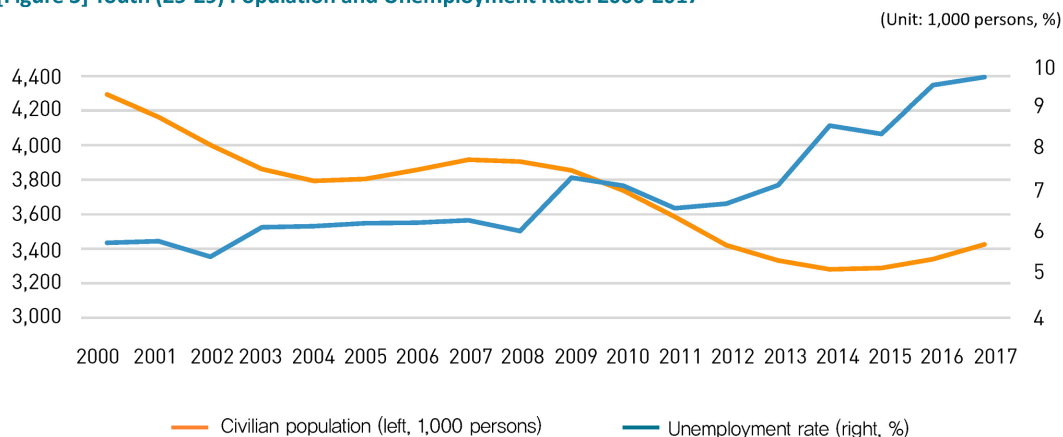
A significant ongoing trend in the youth labor market is the phased changes in labor demand. With the developments in and proliferation of IT, the following changes have been witnessed in advanced economies. First, technology replaced jobs and there was a surge in the demand for tech-savvy workers. Wages became polarized, and professional workers earned more while low-skilled workers earned less due to the decline in the number of routine work positions. This occurred in the US in the 1980s and Korea from the mid-1990s to 2000s. Next, the demand for service workers increased in line with the developments in IT and innovation. Technology enabled the production of more goods at lower prices, boosting the consumption of services and driving up the number of service positions.⁴⁾ During this phase, however, low-paid jobs became rampant. Such conditions are evident in the US in the 1990s and in Korea from the late 2000s.⁵⁾ The third phase was the reversal of skill demand, which refers to the situation in which the demand for high-skilled workers decreases as the IT revolution becomes almost complete. And although this was observed in the US after the 2000s, it is not clear whether the reversal has started in Korea. These phased changes are expected to repeat with the advent of the fourth

3) The PIAAC conducts the Survey of Adult Skills which measures adults' proficiency in information-processing skills—literacy, numeracy and problem solving with computers—of the population aged 16-65 in 33 major countries. This study used survey responses from youths aged 25-34.

4) Autor and Dorn (2013), Figure 3, p.1558.

5) What stands out the most in the recent economic recovery of the US and Japan is that job creation is active but wage growth is weak. This implies that mainly low-paying jobs are being created.

[Figure 3] Youth (25-29) Population and Unemployment Rate: 2000-2017



Note: Yearly averages for Jan.-Oct.

Source: Calculated by author using Statistics Korea's Economically Active Population Survey (various years).

industrial revolution.

Employee restructuring begins at the recruiting stage and thus, the changes in labor demand decidedly reshapes jobs for the youth population, and this pattern is universal across countries.⁶⁾

4. Impact from Demographic Changes

Some argue that the rise in the youth unemployment rate since 2013 is owed to the echo generation (those born in 1991-1996) entering young adulthood. However, as they joined the 25-29 group from 2016, their contribution to the unemployment rate is not significant as of now. In youth labor markets, labor demand usually fluctuates more dramatically and tends to make the impact from the demographic changes on the employment rate unclear (Figure 3). However, according to the Future Population Projections by Statistics Korea, the population aged 25-29 is expected to rise by 390,000 in 2017-2021. Thus, when the age group enters the labor market, they may drive up the youth unemployment rate.

The impact from the demographic changes to the youth unemployment rate is insignificant as of now, but the population aged 25-29 is expected to rise by 390,000 in 2017-2021.

5. Employment Success Package Program

Another key determinant behind the rising youth unemployment rate is the Ministry of Employment and Labor's Employment Success Package Program. This program was designed to encourage job-seeking activities and arrange job placements, which naturally entails a statistical increase in the unemployed. It covers huge targets as it is applied to all unemployed persons aged 18-34 with no substantial strings attached to the qualification for participation. The program focuses mostly on the following three categories: high school graduates with no further education; long-term (6+ months) job seeking college graduates; and senior students in high school and college (including graduate school). The number of participants are summarized in <Table 1> and 64% are female.

The Ministry of Employment and Labor's Employment Success Package Program partially increases the unemployment rate but with little significance.

6) Card and Lemieux (2001).

<Table 1> Participation in the Employment Success Package Program

(Unit: persons)

	2011	2012	2013	2014	2015	2016
High school graduates with no further education*	12,222	17,922	28,930	25,295	33,144	-
Job seeking college graduates*	7,904	24,982	40,726	42,263	64,538	-
Students	0	0	0	0	32,929	-
Total**	20,245	43,061	70,035	68,262	133,492	192,739

Source: * Korea Labor Institute, "Employment Success Package Program: Performance Analysis and Restructuring Measures," 2014, p.12. Data from 2014 are based on Korea Employment Information Service, "Employment Success Package Program: Performance Analysis and Development Measures for Programs Entrusted to Private Operator," 2016, p.71.

** Data from 2013 are based on the Ministry of Employment and Labor, 2017 White Paper on Employment and Labor, 2017, p. 160. Data before 2013 are from Korea Labor Institute (2014), p.12.

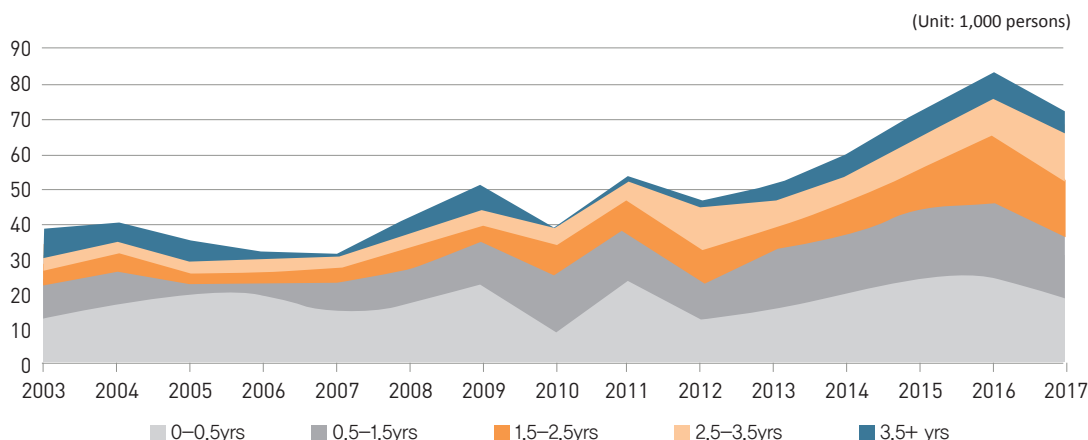
There are currently no methods to accurately identify the effects of the program with regards to adding to the number of unemployed youths, but an indirect estimation is possible by analyzing the changes in unemployment among program-targeted youths after the program was initiated.⁷⁾ In the statistical data, youths attending 2-year or 4-year colleges are categorized as 'high school graduates' in education. In this regard, by comparing the unemployment rate in the total youth population and minus 'those in education,' it is possible to estimate the contribution of students participating in the program to the increase in youth unemployment. The unemployment rates for both samples of men aged 25-29 remained almost identical until 2012. A gap appears thereafter with the total youth unemployment rate marking 0.7%p higher in 2017.⁸⁾ It should be noted that the width of the gap could be deemed as the maximum effect of the program, considering that there might have been other factors also at work. From 2013, total youth unemployment ascended 3.8%p, implying that the program has an effect on unemployment but does not have a significant impact on the growth of the unemployment rate.

As for graduates, the effects were examined based on the distribution of the time passed since graduation as only college graduates who have been unemployed for over six months are eligible for the program (long-term job seeking college graduates). The case of 4-year college graduates is shown in [Figure 4]. Unlike in the past, the number of long-term unemployed persons has increased significantly as the number of unemployed college graduates has risen. However, as this trend is evident before the start of the program, this variable is inadequate in identifying the program's effect. Nevertheless, an estimation based on the number of long-term job seeking college graduate program participants shows that the size of the increase in unemployment induced by program participation is at almost a several-thousand, which means that it would be difficult to conclude that the program has any notable impact on the unemployment rate. Similar implications were obtained from the analysis of high school and 2-year college graduate samples.

7) For more information, see the online appendix, "Effects from the Employment Success Package Program on the Increase in the Youth Unemployment Rate," (in Korean) (www.kdi.re.kr).

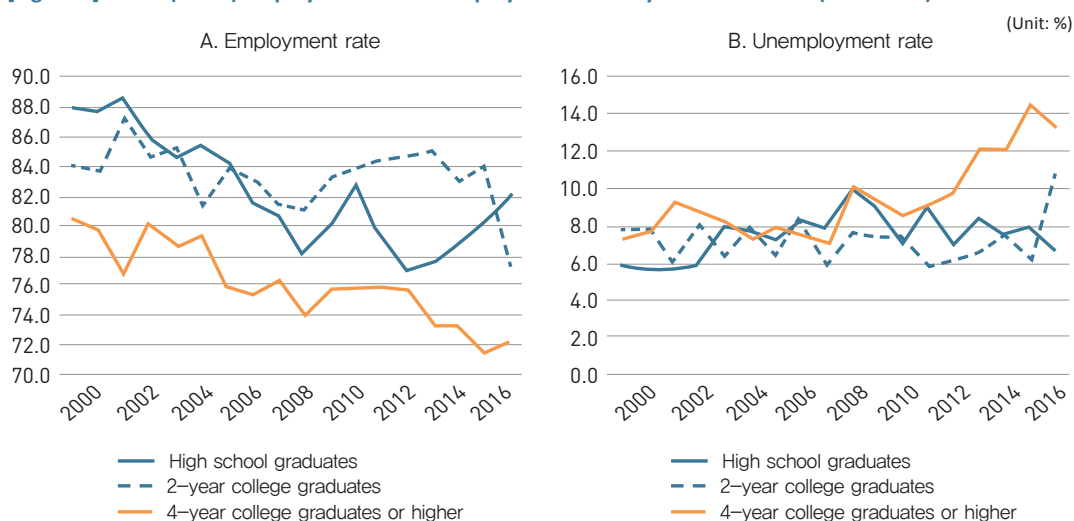
8) Yearly averages for Jan.-Oct. Statistics Korea, Economically Active Population Survey. Total unemployment rate of men aged 25-29 is 11.8% in 2017.

[Figure 4] Distribution of Years Passed after Graduation among the Unemployed: 4-year College Graduates



Source: Calculated by author using Statistics Korea's Economically Active Population Survey: Additional Survey on Youth Population (May of various years)

[Figure 5] Men's (25-29) Employment and Unemployment Rates by Education Level (Graduates): 2000-2017



Note: Yearly averages for Jan.-Oct. Standard errors in 2-year college graduates for 2017.
Source: Calculated by author using Statistics Korea's Economically Active Population Survey (various years).

III. Decline and Rebound in Low-skilled Jobs

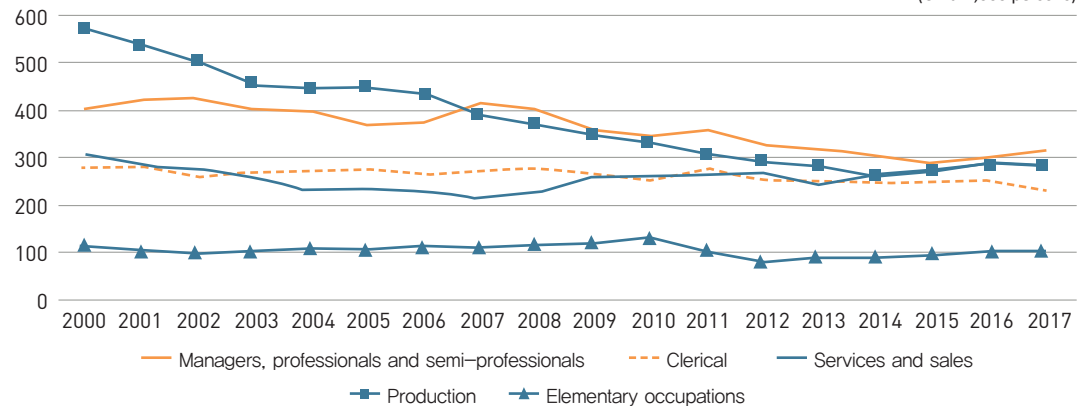
The employment rate of men aged 25-29 remained on a downward trajectory until 2009 with a steeper decline among high school graduates than among college graduates. From 2013 on, the employment rate of high school graduates rebounded while that of college graduates continued to ebb. Additionally, an increase in the unemployment rate was found among college graduates when those in education were excluded (Figure 5).

The fall in the employment rate of high school graduates before 2009 was driven by the decrease in production and clerical jobs due to the technological progress. [Figure 6] shows the occupational structure of employed men aged 25-29. Production jobs dropped

Men's (25-29) employment rate plummeted in 2000-2009 on a decline in production and clerical jobs due to the technological progress.

[Figure 6] Men's Employment (25-29) by Occupation: 2000-2017

(Unit: 1,000 persons)



Note: Yearly averages for Jan.-Oct. Production includes plant and machine operators and assemblers.

Source: Calculated by author using Statistics Korea's Economically Active Population Survey (various years).

to 330,000 in 2010 from 570,000 in 2000. Since the majority of these positions are filled by male high school graduates, the decline naturally deteriorated their job opportunities. The reduction in the total size of manufacturing jobs itself was not as rapid. With technological innovation, production jobs disappeared within manufacturing and as firms adjusted employment, new hires disproportionately decreased and dealt a hard blow to young job seekers. Clerical jobs diminished for the same reason.

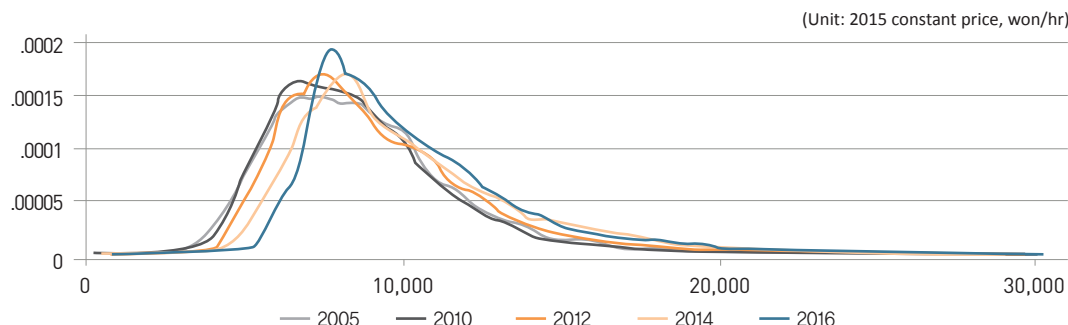
With growing service jobs from 2010, the employment rate and the wages of high school graduates improved.

For the youth population, production and clerical jobs traditionally serve as the doorway into the labor market and provide them with soft job skills such as negotiation, communication and cooperation skills. As the access becomes narrower, many have chosen to remain on the academic track to enhance their competitiveness. The percentage of high school graduates advancing into higher education surged from 68% in 2000 to 84% in 2008. Jobs diminished in number but as more students enrolled in higher education, the unemployment rate did not rise despite the fall in employment (Figure 5). It was just the average education level for clerical workers that went up. During this time, college graduates did not have much difficulties in gaining employment. The time spent securing positions after graduation did not increase to any significant degree and many did not stay unemployed for long (Figure 4). In fact, entering college turned out to be a beneficial alternative.

Until around 2008, the number of low-skilled jobs including those in services and sales decreased with no wage increases. After 2008, however, the number of positions increased and wages improved. According to [Figure 7], no wage increases can be observed in low-paying jobs (left slope) between 2005 and 2010. However, from 2010, the whole wage distribution moving right is clearly seen. The increase in service jobs drove the rebound in the employment rate of high school graduates from 2013 (Panel A in Figure 5).

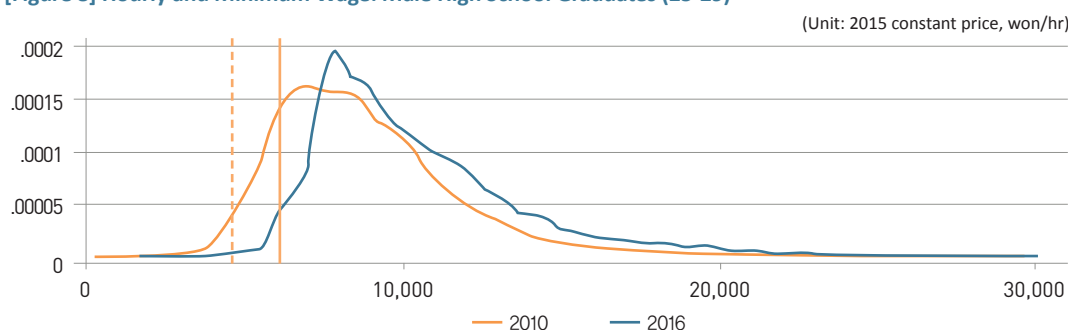
In the majority of advanced economies, low-skilled service jobs began increasing from the 1990s in line with the advancements in technology. New innovations have replaced

[Figure 7] Hourly Wage Distribution of Male High School Graduates (25-29): 2005-2016



Source: Calculated by author using the Ministry of Employment and Labor's Survey on Labor Conditions (2005-2016).

[Figure 8] Hourly and Minimum Wage: Male High School Graduates (25-29)



Note: The vertical dotted line denotes the minimum wage in 2010 and the vertical line for 2016.

Source: Ibid.

jobs but created new products. Accordingly, prices have dropped as more and more innovative products flood the market, and this, in turn, has boosted the demand for services and jobs including those in food services, leisure and transport which have a complementary relationship with innovation.

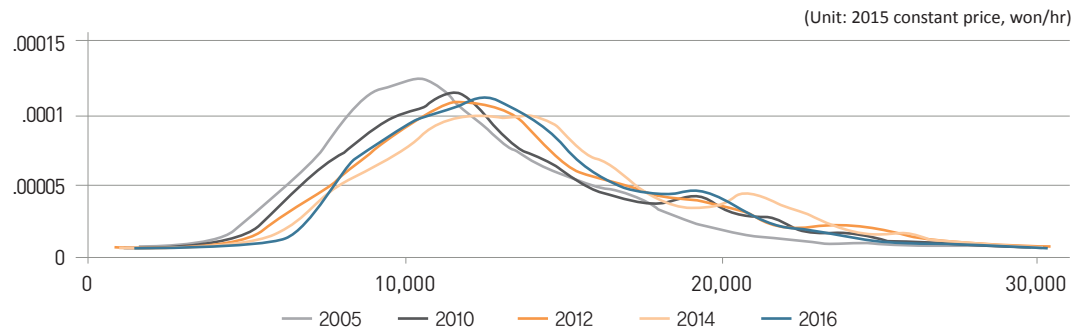
However, the key to such a job creating mechanism is that the gains obtained through innovation lead to a reduction in prices. Even if revolutionary progress is made in ICT, service jobs cannot grow unless the fruits are widely shared at a low price. Thus, in order to create new service jobs, it is important to induce a price reduction by alleviating regulations and encouraging competition.

To examine the impact of the minimum wage on the increase in the wages of high school graduates, the 2010 and 2016 wages are presented in [Figure 8]. The wage increases are accompanied by increases in the minimum wage. But, this does not necessarily mean that increases in the minimum wage have raised the general wage level for them. The wage for low-skilled jobs also increased in other countries as well in those that have different minimum wages.

In the past, production and clerical work accounted for the majority of job positions and labor unions served to uphold their working conditions. The new service jobs of today, however, do not have labor unions and demand the role of government. Consequently, governments around the world are seeking to raise the minimum wage.

To increase service jobs, the gains from technological innovation must lead to a reduction in prices. But, this is only possible when regulations are eased and competition is encouraged.

The minimum wage system does not directly increase the wages of high school graduates, but it can serve as an institutional tool necessary for the protection of labor conditions.

[Figure 9] Hourly Wage Distribution of Male College Graduates (25-29): 2005-2016

Source: Ibid.

IV . Unemployment Rise among College Graduates

The rising youth unemployment rate is driven by the increase in the unemployment rate of college graduates, particularly due to the decrease in semi-professional jobs.

The unemployment rate ascended among 4-year college graduates (Panel B in Figure 5) and the number of those who remained unemployed long after graduation increased from 2013 (Figure 4). The composition of occupations displays decreases in professional and semi-professional jobs (Figure 6), mostly in technical, educational, business management and financial fields. Meanwhile, the employment rate among college graduates is on the decline (Panel A in Figure 5) and the percentage of high school students enrolling in higher education dropped to about 70% recently after peaking in 2008. All of these point to a reduction in the demand for skilled workers.

The distribution of the real hourly wage of college graduates shows an improvement in 2005-2010 when wage growth remained stagnant among high school graduates (Figure 7), but from 2012 on, no clear signs of improvement can be seen (Figure 9).

The US experienced a strong demand for skilled workers in the 1980s and 1990s and a sharp decline after the 2000s,⁹⁾ which can be explained by the following.¹⁰⁾ For each country, there is an optimal level of skill capital stock. The IT revolution has significantly pushed up the level. As a result, marked shortages in skilled labor appeared and the demand began to grow. Thereafter, as the pace of technological progress decelerated and accumulation of skill capital stock reached near optimal level, the skill demand rapidly waned.

The demand for skilled workers depends on where the economy's optimal level of skill capital is. The level is determined by innovation capacity and the capacity is determined by the economic system which drives innovation and by the quality of the economy's workforce. Accordingly, if Korea's skill capital is much smaller than the US but demand is already on the decline, this means that Korea's optimal level of skill capital level is lower.

9) Skilled workers include but not limited to the science and technology workforce. Technological advancement creates demand for professionals in diverse areas.

10) Beaudry *et al.* (2016).

Korea's innovation level must be enhanced to increase the number of skilled jobs. To that end, an environment must be created to motivate innovation, business growth dynamism and excellence in education.

Thus, in order for Korea to sustain the demand for skilled workers, economic innovation must accelerate and the quality of its highly skilled workers must improve from the current low level. To that end, Korea should make consistent efforts to create an environment that motivates innovation and business growth dynamism and to achieve excellence in education.

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