Master's Thesis of Public Administration

The Effect of Minimum Wage Increase on Wage Inequality

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Abstract

The study estimated the impact of the minimum wage hike in 2018 and 2019 on wage inequality. The difference-in-differences method was used to verify the effect before and after the policy change. South Korea' s minimum wage applies to all businesses or workplaces at the same rate nationwide. However, by using the fact that the minimum wage influence rates are different by industry, this paper examined the hypothesis that if the minimum wage was raised - that is, a certain industry had a higher minimum wage influence rate, the industry would have the more improved wage inequality. This project used the influence rate of the minimum wage by industry as an independent variable and the Gini coefficient and inter-decile ratios - P90/P10, P90/P50, and P50/P10 - as dependent variables.

The models presented by the study estimated that the 2018 and 2019 minimum wage hike does not have a statistically significant impact on wage inequality overall. Plus, some meaningful presumptions can be found when it is assumed that wage inequality by industry has common trends.

The relation between the Gini coefficient and the P90/P10 and the minimum wage increase rate in monthly wages have

positive values whereas those in hourly wages have negative values. This means that the monthly wage gap widened while the hourly wage gap is reduced after the minimum wage increased. This implies that the working hours are reduced. From this result, it is presumed that employers have responded to the wage cost burden from the minimum wage increase by reducing working hours.

Also, from the results of P90/P50 and P50/P10, it is found that the wage gap between the high-wage group and the middle-wage group has narrowed while the wage gap between the middle-wage group and the low-wage group has widened. This points out that the wages of the middle-wage class may grow higher than the low-wage class or high-wage class after the minimum wage hike due to the spillover effect probably.

Keyword : minimum wage, wage inequality, working hour, employment

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Table of Contents

Chapter 1. Introduction

The minimum wage system has lots of social and economic meaning. First of all, according to the Minimum Wage Act in South Korea, the minimum wage system aims to stabilize employee's life and to improve the quality of the labor force by guaranteeing a certain level of wages to employees. This means a traditional purpose of the minimum wage to protect workers' fundamental rights. The minimum wage is also used to improve wage inequality. Theoretically, a minimum wage is believed to contribute to the alleviation of wage inequality. The minimum wage is the legal lower limit of hourly wages, so lifting the lower limit raises the wage below the lower limit to the minimum wage, or eliminates jobs under the minimum wage. This will reduce inequality by compressing the distribution of hourly wages from the lower part to the higher part. Furthermore, there is some argument that raising the minimum wage can contribute to economic growth. Increasing minimum wages and the resulting spillover effects can raise household income of workers in the labor market. So if the household income rises, consumption increases, and demand for consumption leads to an increase in production through corporate investment and employment, leading to economic growth.

Raising the minimum wage has been one of the major topics as a social and economic policy around the globe. In particular,

since the Financial Crisis in 2008, as income inequality has reared up as a serious social issue, there has been a movement calling for raising the minimum wage to $15 per hour in the United States. As Democratic candidate Joe Biden, who suggested an increase in the federal minimum wage to $15 as a presidential election pledge, was elected the 46th U.S. president, it is expected to push for a hike in the federal minimum wage, which has been frozen for 11 years. The United Kingdom renamed the minimum wage as National Living Wage in 2015 and has also continuously raised the minimum wage to 60 percent of the median wage in 2020, the highest level in developed countries. Since modern minimum wage research began in the 1990s, the findings have been at odds. There is an ongoing debate between studies on the effect of minimum wage increase.

The Korean government has recently sought these active meaning of the minimum wage system. In 2017, the government adopted the so-called 'income-driven growth strategy' as a new economic policy, which eases wage polarization and promotes economic growth by increasing household income. In this context, South Korea increased its minimum wage significantly in 2018 and 2019. Korea's minimum wage rate had been raised by an annual average of about 7% since 2015. It, however, increased by 16.4% year-on-year to KRW 7,530 in 2018, which is the most drastic hike since 2001, and increased by 10.9% year-on-year to KRW 8,350 in 2019.

The sharp rise in the minimum wage has led to intense debate over its economic effect. Indeed, Korea's policy decision enables several empirical studies related to the minimum wage. In particular, since the above positive effects on the growth of the minimum wage are possible on the premise that the minimum wage does not adversely affect employment, many studies have already been conducted on the effect of the minimum wage on employment. Most of the recent empirical studies on the minimum wage hike in South Korea – Hong (2018), Oh (2019), Kim and Lee (2019), Hwang (2019), and Yoo (2020) – are focusing on the effect on employment.

This study examines the effect of the minimum wage hike in 2018 and 2019 on wage inequality, which differentiates this study from existing research. This project seeks to comment on whether it is appropriate for the minimum wage to be used as a redistribution policy. If the minimum wage increase eases the wage gap, we can get an implication that the policy is meaningful for income redistribution. Conversely, if the analysis shows that raising the minimum wage does not narrow the wage gap, it should be cautious to use the policy as a means of distribution policy. Besides, since there are few domestic empirical studies on the effect of minimum wage on wage inequality, this research can contribute to diversifying the evaluation of the minimum wage policy.

The analysis of this study basically follows the method of

Hong (2018). Hong (2018) examined the effect of the minimum wage increase in 2018 on employment. It used the fact that the influence of a minimum wage increase differs by industry. Korea's minimum wage is applied to all businesses or workplaces at the same rate nationwide unlike the U.S., which applies different minimum wages by state. Therefore, a minimum wage rate itself cannot be used as an independent variable in empirical research in Korea. Even though every industry is covered by the same minimum wage increase rate, each industry has its own influence rate due to the difference in labor composition. By using this fact, this study uses the influence of a minimum wage increase as an independent variable. As dependent variables that represent wage inequality, the Gini coefficient and the inter-decile ratios are used. As an analysis method, this study employs difference-in-differences like Card and Krueger (1994) and Hong (2018). This study uses wage data from 2015 to 2019 in the Survey on Labor by Employment Type conducted by the Ministry of Employment and Labor of South Korea annually.

As a result, the 2018 and 2019 minimum wage hike does not have a statistically significant impact on wage inequality overall. Also some meaningful results can be found. It is estimated that the hourly wage gap is reduced while the monthly wage gap widened after the minimum wage increased. This implies that employers have responded to an increase in the wage burden by reducing

working hours. Also, the wage gap between the high-wage group and the middle-wage group has narrowed while the wage gap between the middle-wage group and the low-wage group has widened. From this, it is estimated that the wage of the middle-wage class may grow higher than the low-wage class or high-wage class after the minimum wage hike.

This paper is organized as follows. Chapter 2 discusses the theoretical background and the literature review, and Chapter 3 describes introduces data for empirical analysis and explains the estimation model. Chapter 4 presents the analysis and finding, and Chapter 5 describes the conclusion and limitation of the study and policy implications.

Chapter 2. Theory and Literature Review

2.1. Minimum Wage

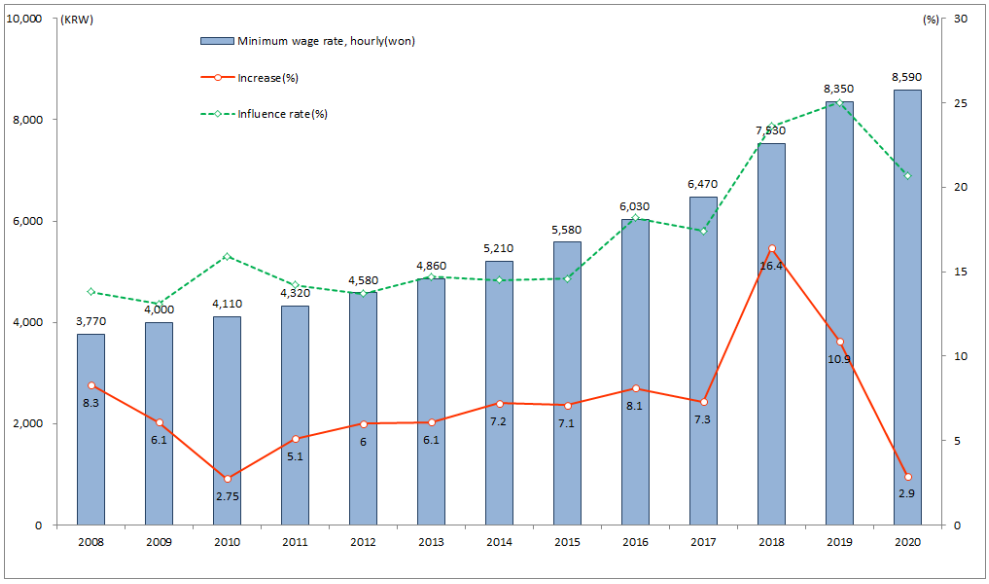
In South Korea, the Minimum Wage Act was enacted in December 1986. At first, the institution was applied to the limited coverage of companies in manufacturing, mining, and construction with more than 10 employees. However, the coverage had been gradually expanded by October 2000, now the minimum wage obligation is applied to all workplaces with 1 employee or more. As shown in <Figure 1>, the nominal minimum wage rate has been continuously raised, reaching KRW 8,590 per hour or KRW 1,795,310 per month as of 2020.

The minimum wage of Korea is the average level of members of the Organization for Economic Co-operation and Development (OECD). <Figures 2> and <Figure 3> show the ratio of minimum wages to the median and mean wages in each OECD country. As of 2017, the ratio of Korea' s minimum wage relative to the median wage is 52.8%, which is lower than that of France (61.8%) and the U.K. (53.6%), but higher than that of Germany (47.8%), Japan (41.5%) and the U.S. (33.7%). The ratio of the minimum wage to the mean wage is 41.4%, which is lower than France (49.9%), the U.K. (44.2%), and Germany (42.5%), but

higher than Japan (36.0%) and the U.S. (24.3%).

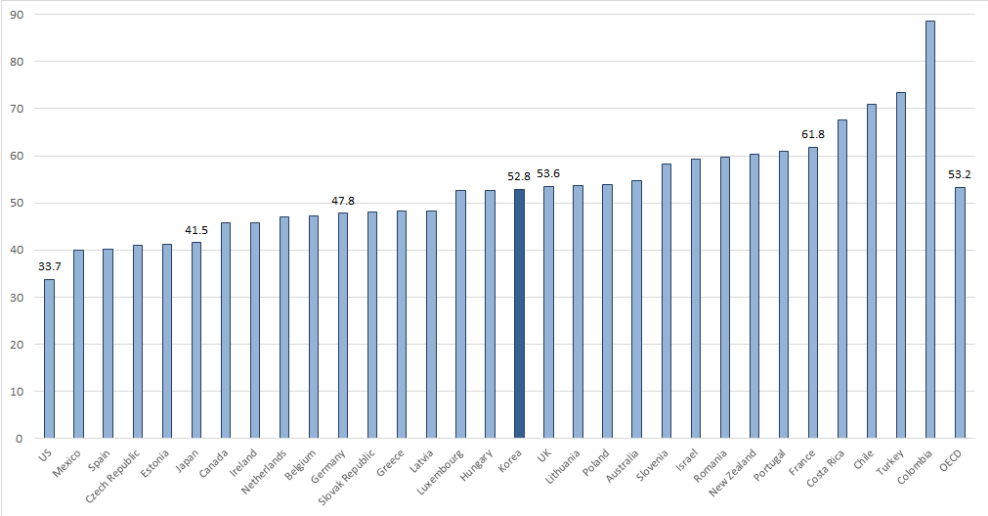
The scale of the workers to which the minimum wage is applied can be indicated by the minimum wage influence rate. The influence rate of a minimum wage is defined as the percentage of employees who earn an hourly wage lower than the minimum wage of next year. According to the National Statistics of the Minimum Wage Committee, the rate is estimated at 20.7% of all wage workers in 2020.

Figure 1. Korea’s minimum wage rate



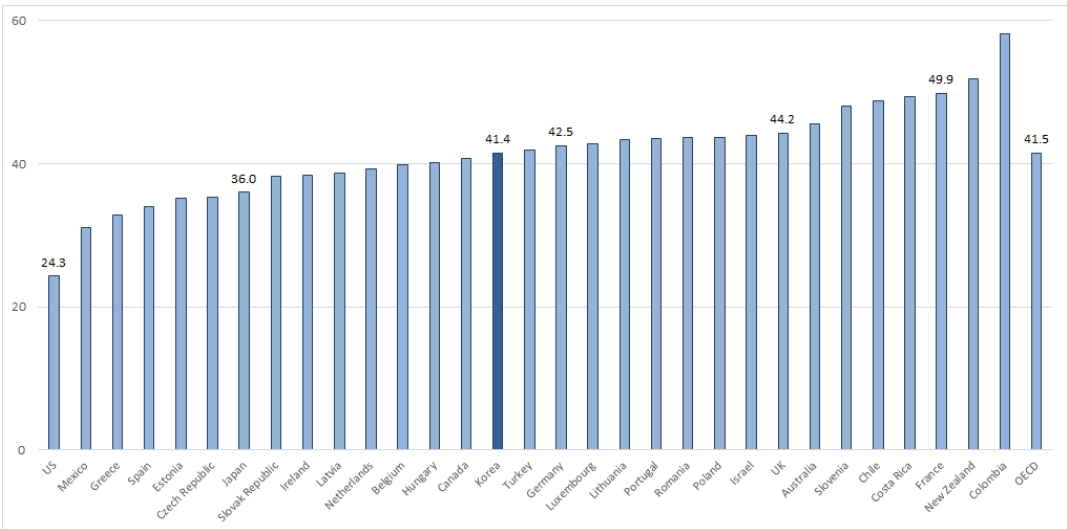
Source: Minimum Wage Commission of South Korea.
Note: The influence rate of the minimum wage is estimated on the Economically Active Population Survey.

Figure 2. Minimum wage relative to median wage (2017)



Source: OECD.Stat (data extracted on 16 May 2019).

Figure 3. Minimum wage relative to mean wage (2017)

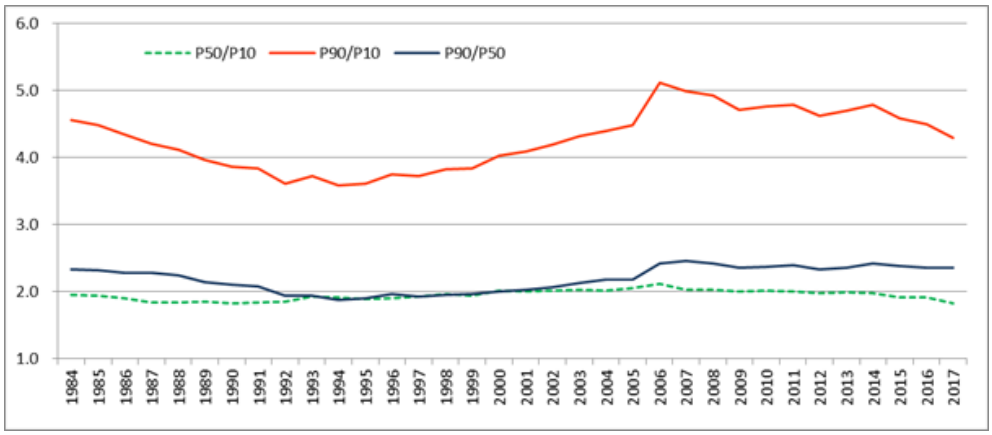


Source: OECD.Stat (data extracted on 16 May 2019).

2.2. Wage Inequality

Wage inequality among workers is generally measured by the Gini coefficient and inter-decile ratio of wages. The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality. Sung and Jung (2013) used P90/P10, P90/P50, and P50/P10 as variables for wage inequality: P90/P10 is the ratio of the 90th percentiles of wage distribution to the 10th percentiles of the wage distribution, which indicates overall wage gap; P90/P50 is the ratio of the 90th percentile of wage distribution to the median wage, 50th, which indicates wage gap between high wage class and middle classes; and P50/P10 is the ratio of median wage to the 10th percentiles of the wage distribution, which indicates wage gap between middle and low classes. <Figure 4> shows that the wage distribution in Korea has been improving since 2006. The P90/P10 ratio has been decreasing and the P90/50 and P50/P10 ratio are steady.

Figure 4. South Korea's wage inequality



Source: OECD Earnings Distribution (database).

2.3. Theoretical Basis

In order to explain the minimum wage can reduce wage inequality theoretically, when the minimum wage is introduced or raised, wages for low-wage workers have to rise more than those for high-wage workers by the measure. In other words, the effect of wage increases by the minimum wage should be prominent at the new minimum wage level and above the minimum wage level. When we see the wage distribution, it should be overshot at the minimum wage level compared to the general distribution.

First of all, the rationale that the introduction or hike of a minimum wage leads to an overall wage increase can be found in neoclassical economics. In the neoclassical model, the price of labor increases when introducing or raising the minimum wage, even if there are two types of labor, skilled or unskilled, or there is only

one type of skilled worker that is not discrete and continuous in the labor market.

When we assume that only skilled workers exist in the labor market, workers are only distinguished by what degree of proficiency they have. In this model, the price of labor is the price per unit of human capital (skill), and the wage distribution is cut off at the minimum wage level because workers whose prices per hour are lower than the minimum wage cannot get their jobs. Likewise, when a minimum wage is introduced (or raised), the business replaces a low-skilled worker with a higher skilled worker, which raises the price of human capital. Thus, the overall wages will increase in the upper tier of the minimum wage.

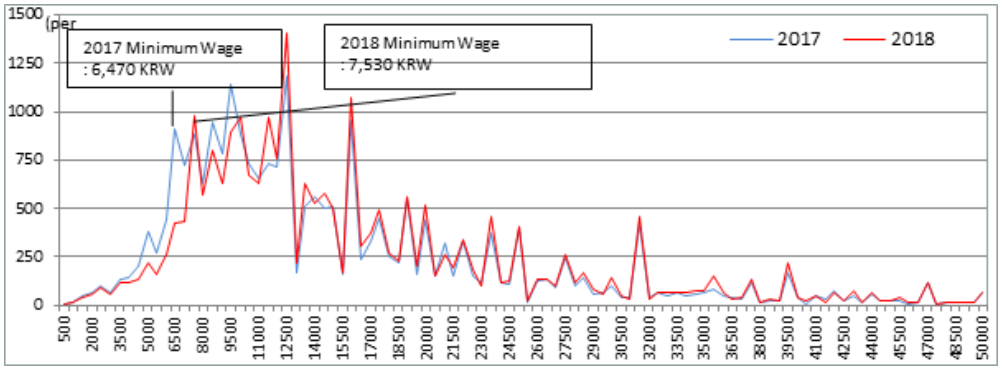
Although two kinds of workers, skilled or unskilled, exist in the labor market, the increase in skilled workers' wages can be also explained. The minimum wage is the prices of unskilled labor in this case. As long as they are substitutes for each other, demand for skilled labor increases since unskilled labor is replaced by skilled labor when the minimum wage increases. Therefore, the increase in the price of non-skilled labor raises the demand for skilled labor, which thereby generates higher employment and wages of skilled workers.

Even though the neoclassical theory can explain why the overall wage increase occurs in the upper tier of the minimum wage, it cannot fully explain the relatively bigger increase at the new

minimum wage level and well above the minimum wage level.

In order to improve the wage inequality among workers with a minimum wage, higher wages increase should mainly take place for low-wage workers. In other words, if the institution is properly enforced and observed, the distribution of wages among employees will be cut off or thinned in the part below the minimum wage, and be prominent at the minimum wage level (Jeong, 2011). This is called the "spike effect". In addition, the "ripple effect" or "spillover effect" should be observed. This means that the wage of the upper class just above the minimum level is raised by the minimum wage hike in order to maintain the wage gap between skilled employees for work incentive or due to higher demand for skilled workers. As a result, it can be explained that the wage disparity between the workers is reduced.

Figure 5. Spike effect on the wage distribution



Source: Economically Active Population Survey.

Note: Sample size is 24,814 in 2017 and 24,782 in 2018.

Pettengill (1981) explained the spike effect of wage distribution as follows. In a model where there are many groups with different levels of skill, the protrusion phenomenon occurs naturally. This is because the workers directly affected by the minimum wage will is not hired unless the marginal revenue production (MRP) of the group reaches the wage (MRP <MW). If low-skilled workers, who could be unemployed after raising the minimum wage, do an effort to enhance their productivities, workers with different initial skill levels will have the same productivity, and thus a protrusion at the minimum wage level can be seen.

2.4. Literature Review

Empirical studies on the effect of the minimum wage are such a classical research issue in academia that there are abundant studies to review. Before reviewing previous research directly related to this study, this chapter looks through the most representative research on the minimum wage.

In a case study of the fast-food industry in New Jersey and Pennsylvania, Card and Krueger (1994) compare employment growth at fast-food restaurants in New Jersey where the minimum wage rose from $4.25 to $5.05 per hour, and Pennsylvania where the minimum wage was constant. They found no indication that the rise in the minimum wage reduced employment (Card and Krueger,

1994). They used primary data earned by telephone surveys and employed a difference-in-differences method explained in the methodology in Chapter 3.

On the other hand, Neumark et al. (2004) point out that increases in the minimum wage most strongly adversely affect low-wage workers and have little impact on higher-wage workers. Although wages of low-wage workers rise, their working hours and employment fall. The combined effect of these changes on earned income suggests adverse consequences for low-wage workers (Neumark et al., 2004). They used data on individuals in the United States Current Population Survey from 1979 to 1997. Their efforts to distinguish minimum wage effects in different parts of the wage distribution differentiate their approach from most of the existing work on minimum wage, which typically studies employment effects for teenagers or a closely related group (Neumark et al., 2004).

Cengiz et al. (2019) estimate the effect of minimum wages on low-wage jobs using 138 prominent state-level minimum wage changes between 1979 and 2016 in the United States using a difference-in-differences approach. It suggests that the overall number of low-wage jobs remained essentially unchanged over the five years following the increase(Cengiz et al., 2019). At the same time, the direct effect of the minimum wage on average earnings was amplified by modest wage spillovers at the bottom of the wage distribution (Cengiz et al., 2019).

Since July 24, 2009, the federal minimum wage of the U.S. has been $7.25 per hour, although many cities have higher minimum wages than that by their state law. After the Financial Crisis in 2008, as income inequality has reared up as a serious social issue, there has been a movement calling for raising the minimum wage to $15 per hour in the U.S. Some states including Washington, California, and Massachusetts are already on the way to $15 by 2023, while the rest of them are discussing their minimum wage increase. In this context, a series of recent research on the effect of the minimum wage increase has been released. Recent studies use more wide range of data and more contemporary methodology in analyzing compared to the past ones, their conclusions still conflict with each other.

A study from the University of Washington conducted by Jardim et al. (2017) found that the minimum wage increase in Seattle in 2016 – the city raised the minimum wage from $9.47 to $11 per hour in April 2015 and $13 per hour in January 2016 – reduced hours worked in low-wage jobs by around 9 percent, while hourly wages in such jobs increased by around 3 percent. Consequently, total payroll fell for such jobs, implying that the minimum wage ordinance lowered low-wage employees' earnings by an average of $125 per month in 2016 in Seattle (Jardim et al., 2017). They examined the impact of a minimum wage increase for employment across all categories of low-wage employees,

spanning all industries and worker demographics, differing from Card and Krueger (1994), who analyze it on the fast-food industry.

In contrast, Allegretto et al. (2018) at the University of California, Berkeley found that a 10 percent increase in the minimum wage leads to an increase in earning between 1.3 and 2.5 percent and there is no significant negative employment effect. They analyzed the effect in six cities including Seattle, using event study and synthetic control with the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) administrative data.

Meanwhile, several domestic studies on the impact of the minimum wage have also shown conflicting results. Studies on minimum wage hikes in 2018 and 2019 were conducted mostly on the effect on employment, so related studies are reviewed first.

Hong (2018) estimated the effect of the 2018 minimum wage hike on employment by using monthly data from the Economically Active Population Survey. Using difference-in-differences, it estimated the change in employment due to the change in the influence rate of the minimum wage which is calculated by industry from the monthly wage data. Hong (2018) shows that the minimum wage increase did not have a significant impact on employment.

Oh (2019) also estimated that employment was not significantly affected by the effect of the minimum wage increase in

2018. By using the Local Area Labour Force Survey. Oh (2019) created subgroups based on gender, age, educational background, region, and utilized a panel model.

Kim and Lee (2019) also used monthly data from the Economic Activity Population Survey and difference-in-differences method but shows conflicting results from Hong (2018). Kim and Lee (2019) classified the entire sample group not into industry but into subgroups based on human characteristics such as the year of birth and gender. According to Kim and Lee (2019), the minimum wage increase in 2018 had a statistically significant negative impact on employment, and it was estimated that the group with a 1%p higher minimum wage influence rate would have a 0.154%p lower employment growth rate, and 27% of the decline in employment growth rate in 2018 was due to the minimum wage increase.

Hwang (2019) critically reviewed the research of Kim and Lee (2019). Hwang (2019) argued that if the sample includes younger people and uses age as a group classification standard instead of the year of birth, the 2018 minimum wage hike does not have a negative impact on employment, even if all other conditions remain the same.

Differentiating itself from the previous research, Yoo (2020) analyzed the impact of the minimum wage hike of 2018 on employment through a tracking survey of actual households based

on the Korea Welfare Panel data. The linear panel model is used as an analysis method. According to the analysis, the minimum wage increase in 2018 reduced the employment rate of those subject to the minimum wage by about 4.1%p to 4.6%p. Yoo (2020) estimated that 30% of unemployed people who were eligible for the minimum wage have lost their jobs due to the minimum wage hike in 2018.

Empirical research on the effect of the minimum wage on wage or income inequality also has shown various results. Lee (1999) shows that growth in inequality in the lower tail of the wage distribution in the United States is attributed to the erosion of the real value of the federal minimum wage rate during the 1980s. This implies that the minimum wage increase can contribute to improving wage inequality. It uses microdata from the Current Population Survey outgoing rotation group files for the years 1979 and 1989.

On the other hand, Neumark et al. (2004) discuss that the increase in the minimum wage raises hourly wages for low-wage workers, but, in turn, adversely affects the income of low-wage workers by reducing their working hours and employment. Neumark et al. (2004) also use data on individuals from the Current Population Survey outgoing rotation group files for the period 1979-1997.

Jeong (2011) finds that there is a spike effect at the minimum wage level in the wage distribution, and not only the minimum wage level and above but also middle-wage classes

benefit from the minimum wage increase. In other words, the study suggests that an increase in the minimum wage improves wage inequality at least among workers within the labor market.

On the contrary, Sung (2014) shows that the minimum wage reduces the wage inequality between low-wage and middle-wage workers, analyzing the relationship between the Kaitz index and percentile ratio of wage.

When examining the economic effect of the minimum wage, previous studies have generally used the difference-in-differences method. Difference-in-differences is a method, which compares the average change in outcomes across a certain period of time for the treatment group (the first "difference") with the average change in the same period of time for the control group. This comparative methodology effectively rules out any other factors except the change of minimum wage which can affect the effect. Card and Krueger (1994) is a representative example, comparing employment in New Jersey with those in a nearby and similar state, Pennsylvania.

South Korea, however, has applied an identical minimum wage across the country, so it is impossible to use a regional difference of the minimum wage itself like Card and Krueger (1994). Instead, Korea's recent empirical research examines the effect by dividing workers into certain groups which have different the 'Influence Rate of the Minimum Wage' and comparing the groups.

The influence rate of the minimum wage is defined as the percentage of wage workers whose hourly wages of last year were below this year's minimum wage, which means the percentage of workers benefiting from the minimum wage hike. This rate can be used as a proxy variable of the minimum wage rate.

In the analysis of the employment effects of the minimum wage increase in 2018 in Korea, Hong (2019) divided workers by industry, Kim and Lee (2019) did by gender and the year of birth, Hwang (2019) did by gender and age. In the analysis of the inequality effects of the minimum wage increase, Jeong (2011), Sung (2014), separate workers by region.

This study uses the fact, based on Hong (2019), that the percentage of workers covered by the minimum wage – the influence rate of the minimum wage – differs by industry. By grouping workers by industry, this research can be differentiated from previous studies on wage inequality that divided groups by region.

Regarding wage data, previous studies utilized the Economically Active Population Survey, the Business Labour Force Survey, the Local Area Labour Force Survey, or the Korea Welfare Panel data. This study uses data from the Survey on Labor by Employment Type to differentiate itself from previous studies.

Chapter 3. Research Method

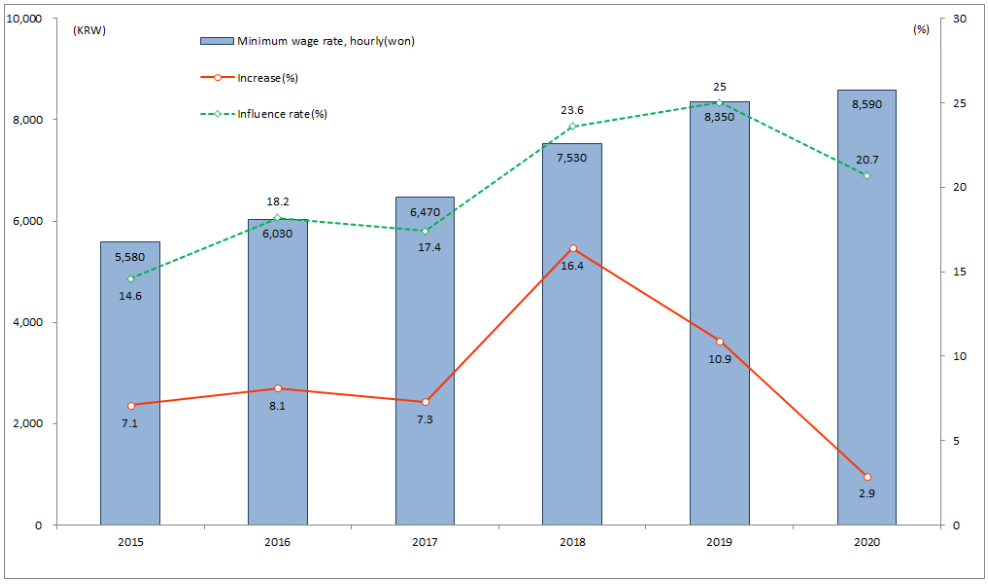
3.1. Data and Variables

This study uses microdata from the Survey on Labor by Employment Type by the Ministry of Employment and Labor of South Korea. We can obtain monthly and hourly wage data by industry from this survey, which is conducted annually and has 33,000 wage sample units. Wage data can be divided into 21 sections of industries that each sample worker belongs to. The section is broken down into 72 divisions denoted by two digits by Korea Standard Industrial Classification. This paper uses 65 divisions of industries ranging from manufacturing to other personal services as groups with different minimum wage influence rates, except for agriculture, forestry and fishing, mining and quarrying, household activities, and international and foreign institutional industries where the number of wage earners is small.

As mention above, this project uses the influence rate of the minimum wage by industry as an independent variable. The influence rate of the minimum wage is defined as the percentage of wage workers whose hourly wages of last year were below this year's minimum wage, which can be used as a proxy variable of the minimum wage rate. As shown in <Figure 6>, according to the

Minimum Wage Commission of South Korea, the influence rate of the minimum wage on entire workers is estimated as 23.6% in 2018 and 25% in 2019, which has risen compared to the previous years as the minimum wage radically surged respectively by 16.4% in 2018 and 10.9% in 2019. As the minimum wage growth rate slowed down in 2020, the influence rate of the minimum wage became lowered to 20.7%. In this study, the hourly wage is calculated by dividing the monthly regular payment by the monthly regular working hour in the Survey on Labor by Employment Type.

Figure 6. Influence rate of the minimum wage by year (%)



Source: Minimum Wage Commission of South Korea.

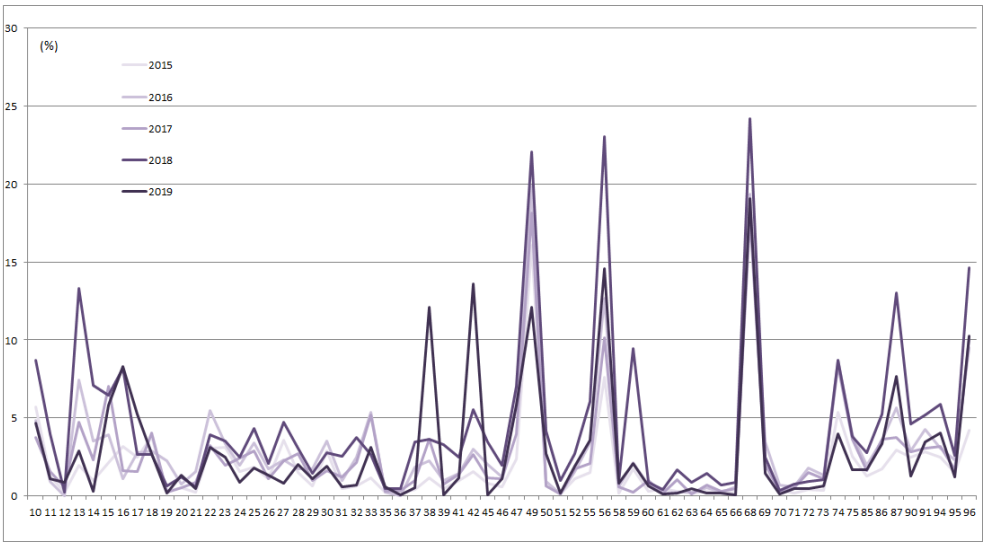
Note: The influence rate of the minimum wage is estimated on the Economically Active Population Survey.

From the sample data from the Survey on Labor by Employment Type, the influence rates of the minimum wage by industry from 2015 to 2019 are shown in <Figure 7> and <Table 1>. The color of the lines on the graph is marked darker in recent years and it can be observed that by and large the minimum wage influence rate increases across industries in 2018 and 2019. We can also find that the sample mean and the max value of the minimum wage influence rate by industry increases in 2018 than previous years from <Table 1>. One thing to add is that the mean or max values from this sample data are smaller than the values estimated from the Economically Active Population Survey on the <Figure 6>. This may be because the hourly wage calculated by dividing monthly wage by working hours is usually higher than hourly wage-workers' wage rate, which may make the influence rate calculated with monthly wage data smaller than those from directly surveyed hourly wage. But in the direction of change, the minimum wage influence rate from calculated hourly wage or those from directly surveyed hourly wage will show the same trend. Therefore, the minimum wage influence rate calculated by the sample data from the Survey on Labor by Employment Type can be used as an independent variable for this study.

Compared to the other industries, service industry such as land transport and transport via pipeline (49), food and beverage service activities (56), real estimate activities (68), and social work

activities (87) have relatively high influence rates of the minimum wage. On the other hand, public sector such as water supply (36), air transport (51), and postal activities and telecommunications (61), etc. show low influence rates of the minimum wage among industries.

Figure 7. Influence rate of the minimum wage by industry(%)[①]



① 10-34: Manufacturing; 35: Electricity, gas, steam and air conditioning supply; 36-39: Water supply: sewage, waste management, materials recovery; 41, 42: Construction; 45-46: Wholesale and retail trade; 49-52: Transportation and storage; 55, 56: Accommodation and food service activities; 58-63: Information and communication; 64-66: Financial and insurance activities; 68: Real estimate activities; 70-73: Professional, scientific and technical activities; 74-76: Business facilities management and business support services, rental and leasing activities; 84: Public administration and defense; compulsory social security; 85: Education; 86-87: Human health and social work activities; 90, 91: Art, sports, and recreation related services; and 94-96: Membership organizations, repair and other personal services.

Table 1. Basic Statistics of the Influence rate of the minimum wage by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	2.04	3.12	0.14	18.50
2016	65	3.10	3.81	0	19.88
2017	65	2.69	3.49	0.09	18.16
2018	65	4.57	5.19	0.25	24.20
2019	65	2.91	3.98	0.048	19.08

The dependent variable of this study is wage inequality. As an indicator of inequality, the Gini coefficient and inter-decile ratios – P90/P10, P50/P10, and P90/P50 – are generally used.

This study measures inequality of monthly wages and hourly wages respectively. The monthly wage is defined as the sum of the total monthly salary and a special bonus per month. Total monthly salary is the sum of the monthly regular payment and overtime allowances. The hourly wage is calculated by dividing the monthly regular payment by the regular working hours.

First of all, <Figure 8> and <Table 2> show the Gini coefficient of monthly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can observe that the Gini coefficient of the monthly wage decrease in 2018 and 2019 overall.

One thing to note is that the absolute value of the Gini coefficient used in the study itself should not be interpreted as the level of wage inequality in South Korea, as the level of the Gini coefficient can vary significantly depending on the data used in the calculation. Since the Gini coefficient of wages used here is calculated with sample data from the Survey on Labor by Employment Type, it is difficult to say that its absolute value accurately represents the actual wage inequality in Korea. In fact, the Statistics Korean provides the Gini coefficient of income based on the Household Income and Expenditure Survey as just a reference index, not as an official index because of its variability. However, since this study examines the annual trend change in the Gini coefficient before and after the minimum wage increase, the level of the coefficient does not matter if the data used to calculate the Gini coefficient are consistent.

Figure 8. Gini coefficient of monthly wages by industry

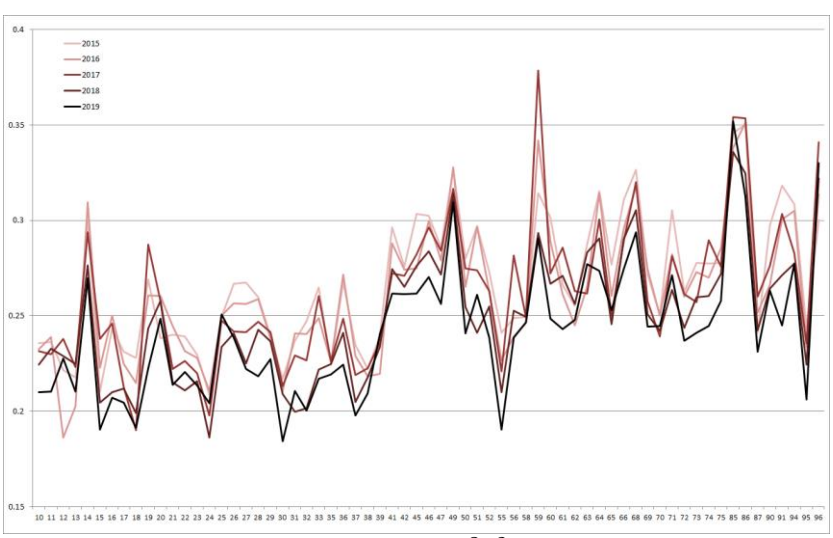


Table 2. Basic Statistics of the Gini coefficient of monthly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	0.267	0.035	0.210	0.350
2016	65	0.262	0.036	0.186	0.351
2017	65	0.261	0.038	0.190	0.378
2018	65	0.249	0.033	0.186	0.336
2019	65	0.242	0.034	0.184	0.352

<Figure 9> and <Table 3> show the Gini coefficient of hourly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that the Gini coefficient of the hourly wage decrease in 2018 and 2019 compared to the previous years.

Figure 9. Gini coefficient of hourly wages by industry

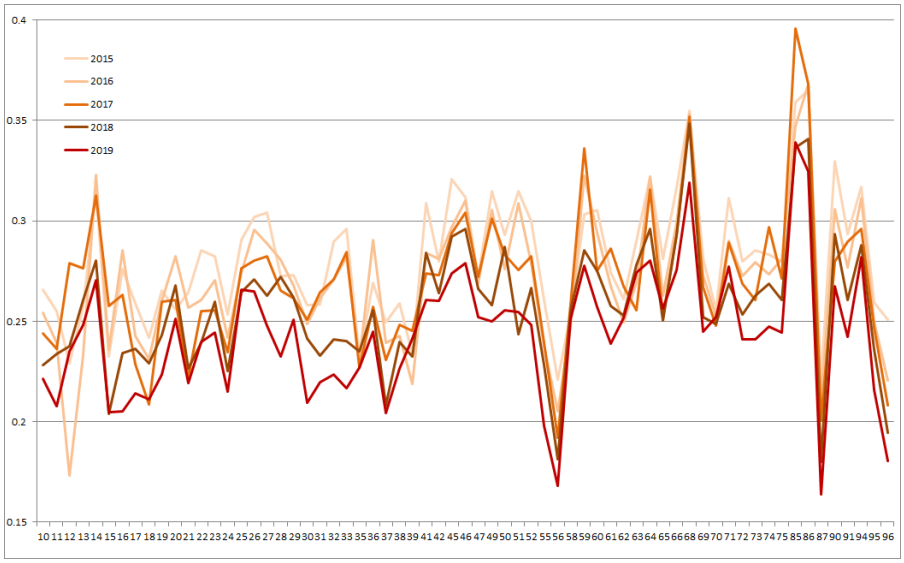


Table 3. Basic Statistics of the Gini coefficient of hourly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	0.281	0.0318	0.221	0.365
2016	65	0.271	0.0352	0.173	0.368
2017	65	0.269	0.0357	0.192	0.396
2018	65	0.256	0.0320	0.180	0.348
2019	65	0.244	0.0324	0.164	0.339

<Figure 10> and <Table 4> show P90/P10 of the monthly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that P90/P10 of the monthly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 10. P90/P10 of monthly wages by industry

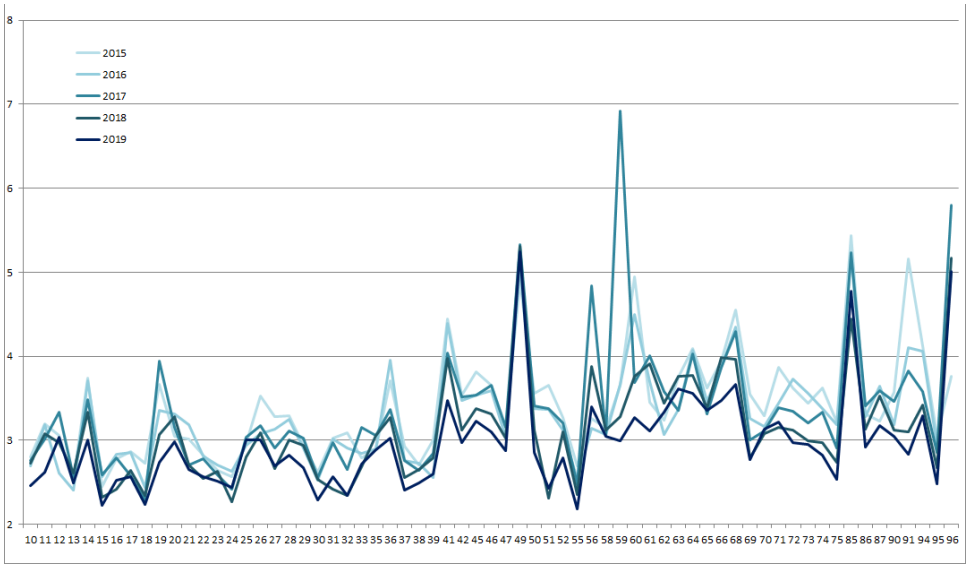


Table 4. Basic Statistics of P90/P10 of monthly wages by industry

Year	Observation	Mean	St. Dev.	Mini	Max
2015	65	3.40	0.635	2.44	5.44
2016	65	3.32	0.626	2.40	5.18
2017	65	3.37	0.815	2.28	6.92
2018	65	3.11	0.616	2.27	5.31
2019	65	2.96	0.581	2.18	5.28

<Figure 11> and <Table 5> show P90/P50 of the monthly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that P90/P50 of the monthly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 11. P90/P50 of monthly wages by industry

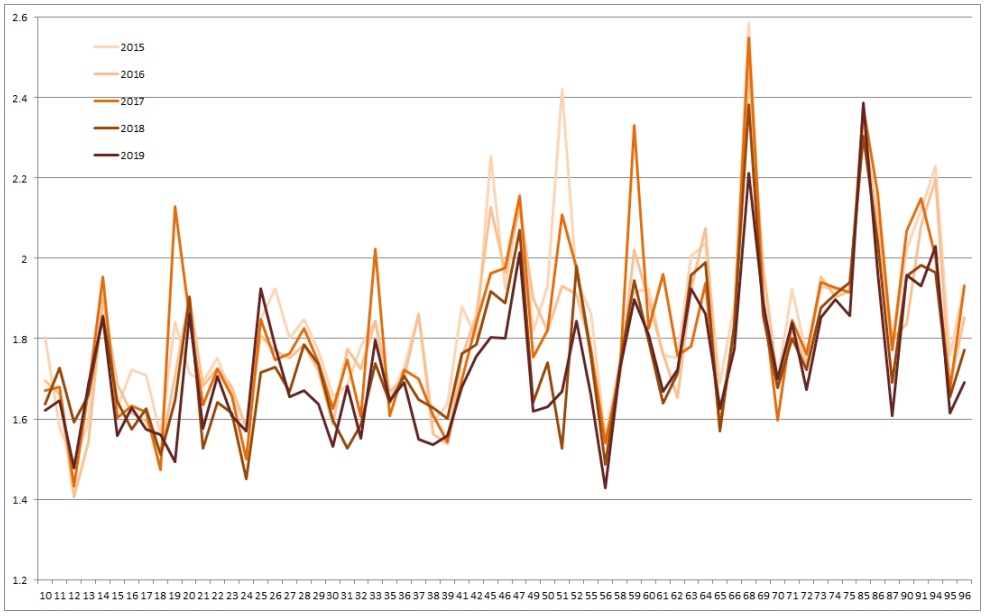


Table 5. Basic Statistics of P90/P50 of monthly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	1.85	0.210	1.49	2.59
2016	65	1.81	0.197	1.41	2.47
2017	65	1.82	0.220	1.43	2.55
2018	65	1.76	0.182	1.45	2.38
2019	65	1.73	0.174	1.43	2.39

<Figure 12> and <Table 6> show the P50/P10 of the monthly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that the P50/P10 of the monthly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 12. P50/P10 of monthly wages by industry

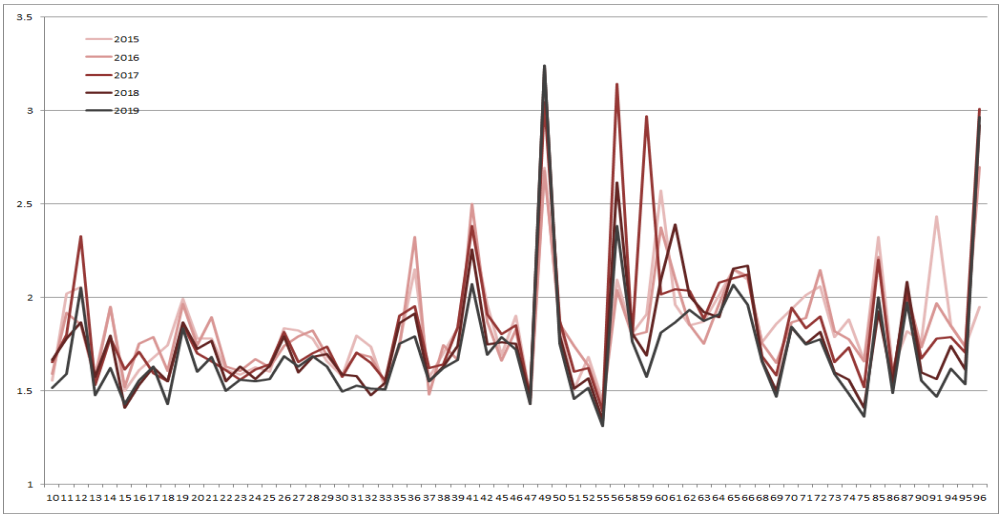


Table 6. Basic Statistics of P50/P10 of monthly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	1.84	0.255	1.44	2.69
2016	65	1.83	0.266	1.42	2.70
2017	65	1.85	0.367	1.39	3.14
2018	65	1.78	0.332	1.34	3.23
2019	65	1.71	0.320	1.31	3.24

<Figure 13> and <Table 7> show P90/P10 of the hourly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that P90/P10 of the hourly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 13. P90/P10 of hourly wages by industry

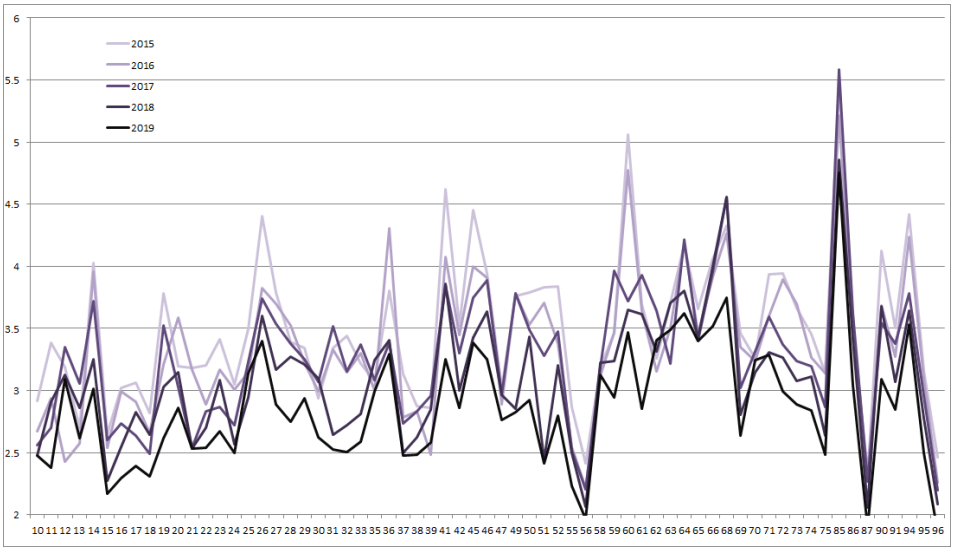


Table 7. Basic Statistics of P90/P10 of hourly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	3.49	0.601	2.30	5.47
2016	65	3.34	0.592	2.22	5.21
2017	65	3.27	0.574	2.20	5.59
2018	65	3.09	0.532	2.06	4.86
2019	65	2.86	0.493	1.86	4.76

<Figure 14> and <Table 8> show P90/P50 of the hourly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that P90/P50 of the hourly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 14. P90/P50 of hourly wages by industry

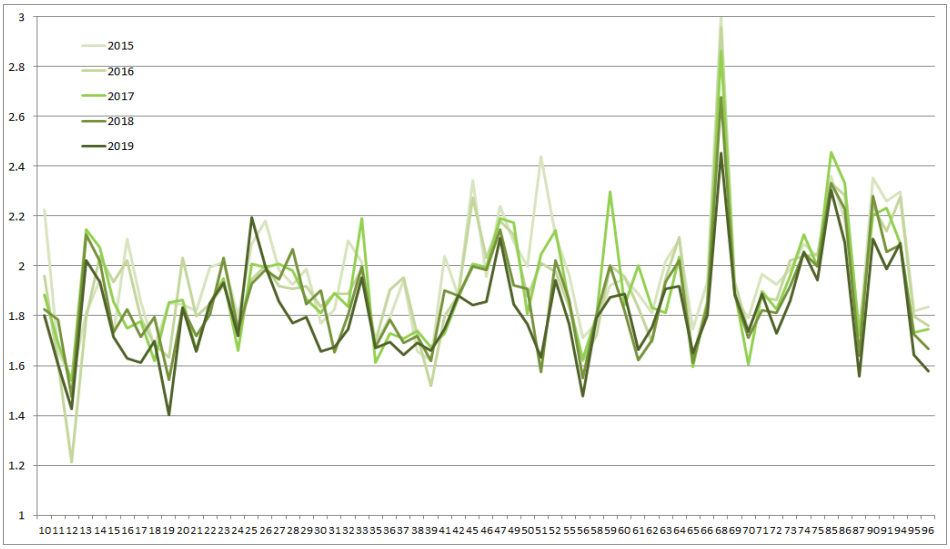


Table 8. Basic Statistics of P90/P50 of hourly wages by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	1.97	0.236	1.54	3.00
2016	65	1.92	0.235	1.21	2.96
2017	65	1.91	0.232	1.54	2.86
2018	65	1.87	0.207	1.48	2.68
2019	65	1.81	0.196	1.40	2.45

<Figure 15> and <Table 9> show P50/P10 of the hourly wages by industry. Likewise, the color of the graph lines has been marked darker in recent years. From the graph and the sample mean and max values in the table, we can also observe that P50/P10 of the hourly wages by industry decrease in 2018 and 2019 compared to the previous years.

Figure 15. P50/P10 of hourly wages by industry

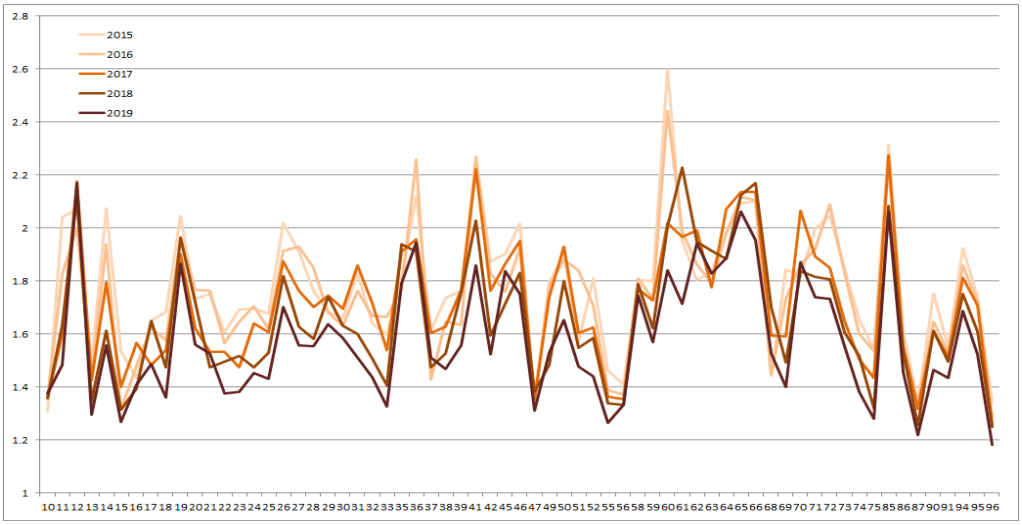


Table 9. Basic Statistics of P50/P10 of hourly wages by industry

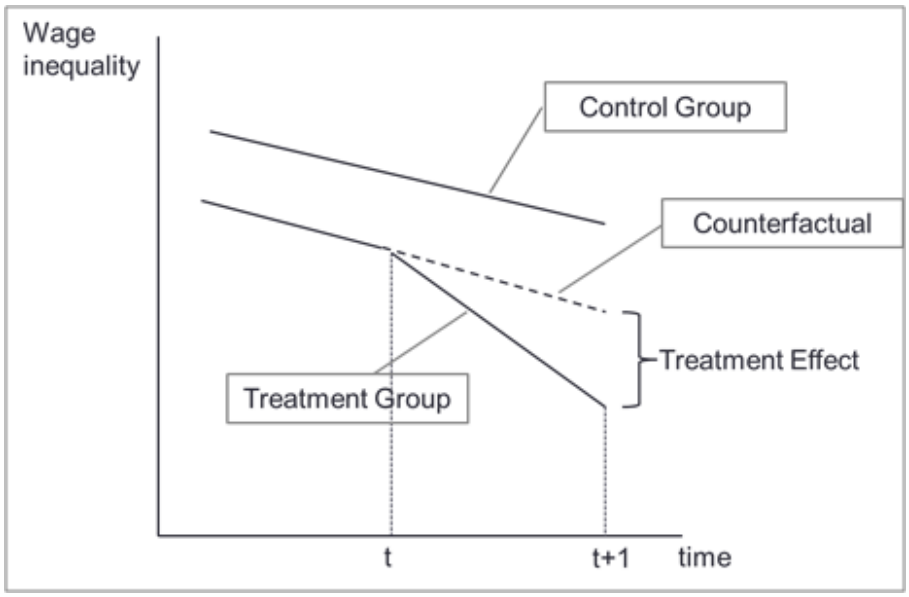
Year	Observation	Mean	St. Dev.	Min	Max
2015	65	1.78	0.250	1.31	2.60
2016	65	1.75	0.249	1.28	2.44
2017	65	1.71	0.239	1.26	2.27
2018	65	1.65	0.239	1.25	2.23
2019	65	1.58	0.226	1.18	2.17

Now, based on these data, this study examines that the higher the influence rate of minimum wage an industry has, the more improved wage inequality in the industry is.

3.2. Research Design

To find out the correlation between the influence rates of the minimum wage by industry and wage inequality change within the industry, this research uses basically the difference-in-differences method. Difference-in-differences is a method, which compares the average change in outcomes across a certain period of time for the treatment group (the first "difference") with the average change in the same period of time for the control group. <Figure 16> shows difference-in-differences intuitively.

Figure 16. Difference in Differences



If there was a group that raised the minimum wage and a group that did not increase the minimum wage, the group that raised it would have become the treatment group, and the group that did not increase it would be the control group in <Figure 16>. However, in this study, treatment is not the minimum wage increase itself, but the intensity that is affected by the minimum wage increase. Thus the method used in this study is somewhat different from the simple difference-in-differences comparing two groups like <Figure 16> in that it examines the difference in the effect of treatment according to the difference in treatment intensity. However, in terms of examining the difference in effects before and after treatment, this method can still be said as a difference-in-differences method.

<Figure 16> shows the effect of the policy when it is assumed that trends of wage inequality by industry are linear. Under the assumption that all industries have linear trends and would have maintained the trend over time without intervention, the most basic and simple relation between two variables is like equation (1).

$$(1) \qquad I_{it} = \beta(W_i \times D_t) + \alpha_i + \tau_t + \epsilon_{it}$$

I_{it} is the logarithm of wage inequality×100, and wage inequality is the Gini coefficient or inter−decile ratio of wage. W_i is the influence rate (%) of minimum wage in industry i. D_t is an indicator variable after the time when the minim wage increased, which means D_t=1 for 2018 and 2019, and D_t=0 for before 2018. D_t reflects that although the minimum wage increase occurred during all periods, the minimum wage increase during the period from 2015 to 2017 was considered as the base trend of the economy, and a further increase in the minimum wage in 2018 and 2019. α_i is a fixed effect by industry, τ_t is a fixed effect by time, and if the influence rate of minimum wage increases by 1%p, inequality changes by β% .

If we assume that the common trend is quadratic, the relation between two variables is like equation (2).

$$(2) \qquad I_{it} = \beta(W_i \times D_t) + \alpha_i + \gamma_1 t + \gamma_2 t^2 + \epsilon_{it}$$

Equation (3) assumes that trends by industry are quadratic but different by industry. g_i is the indicator variable of industry i.

$$(3)\ I_{it} = \beta(W_i \times D_t) + \alpha_i + \gamma_1(g_i \times t) + \gamma_2(g_i \times t^2) + \epsilon_{it}$$

To estimate relationship between variables though the equations, “xtreg” module on STATA is used.

Chapter 4. Analysis and Finding

In the estimation equations, the independent variable is the minimum wage increase rate (%) and the dependent variables are the logarithm of the Gini coefficient and inter-decile ratios multiplied by 100. If we simply use the log value in this estimate, the result is found in the fourth decimal place. So the log value is multiplied by 100 to make the result value easy to read. If the impact rate of the minimum wage goes up by 1%, it is interpreted that the Gini coefficient or inter-decile ratios change by %. The effect of minimum wage increase as derived from the equations (1), (2), and (3) are shown in <Table 10>.

Some of the results under the common linear trend – equation (1) – are statistically significant, but the results under the quadratic trends – equation (2) and (3) – are not statistically significant. In other words, the less constraints were placed on the wage inequality trend, the less statistically significant the results were. Plus, the absolute value of the estimate decreased from Equation (1) to Equation (3). Since the trend of wage inequality has been already different by industry and the impact from the event will be different from industry to industry, equation (2) and (3), which are less controlled, are more persuasive models about reality than equation (1). From the fact that the results from equation (2) and (3) are not statistically significant, the null hypothesis cannot

be rejected, which means that the 2018 and 2019 minimum wage hike does not affect wage inequality.

Table 10. Effect of Minimum Wage on Wage Inequality

Dependent Variables \ Equation		(1) Common linear trend	(2) Common quadratic trend	(3) Different quadratic trend by industry
Monthly wage	Gini coefficient	.003 (0.955)	.020 (0.734)	.130 (0.327)
	P90/P10	.105 (0.469)	.134 (0.359)	.293 (0.343)
	P90/P50	−.118** (0.049)	−.100 (0.124)	.108 (0.449)
	P50/P10	.223 (0.124)	.234 (0.105)	.184 (0.483)
Hourly wage	Gini coefficient	−.188* (0.095)	−.161 (0.129)	.067 (0.699)
	P90/P10	−.097 (0.538)	−.068 (0.663)	.067 (0.815)
	P90/P50	−.162** (0.013)	−.139* (0.047)	.073 (0.628)
	P50/P10	.064 (0.679)	.071 (0.645)	−.006 (0.974)

Notes: The observation is 325. p−value is shown in parentheses.

***p<0.01, ** p < 0.05, *p<0.1

Although the overall results indicates that the minimum wage did not affect wage inequality, additional interpretations can

be considered from relation between monthly wages and hourly wages and relation among inter-decile ratios.

4.1. Overall Wage Gap: The Gini Coefficient and P90/P10

First, the monthly wage gap widened while overall hourly wage gap may be reduced after the minimum wage increase and this may have to do with the reduction of working hours.

The Gini coefficient and P90/P10 indicate the overall wage gap among workers. From equation (1) and (2), the results of the Gini coefficient and P90/P10 of monthly wages have positive values whereas those of the Gini coefficient and P90/P10 of hourly wages have negative values. In particular, when the dependent variable is the Gini coefficient of hourly wages, the correlation coefficient is -0.188, which is statistically significant.

The values from hourly wage are negative, which means that the overall hourly wage gap is reduced due to the minimum wage increase. The monthly wage gap, however, seems widened with positive values. As the minimum wage increase can lead to a rise in the hourly wages of low-wage workers but also an increase in employers' burden, employers may try to respond to the higher burden by reducing employees' working hours. Although the hourly wage increases, the overall wage gap increase since the total

working hours of low-wage workers decrease. From the fact that the hourly wage gap is narrowed but the monthly wage gap is not, it can be estimated that employers have responded to an increase in the wage burden by reducing working hours. This is consistent with Neumark et al. (2004), which find that the increase in the minimum wage raises hourly wages for low-wage workers, but, in turn, adversely affects the income of low-wage workers by reducing their working hours and employment.

4.2 Wage Gap Between Wage Classes: P90/P50 and P50/P10

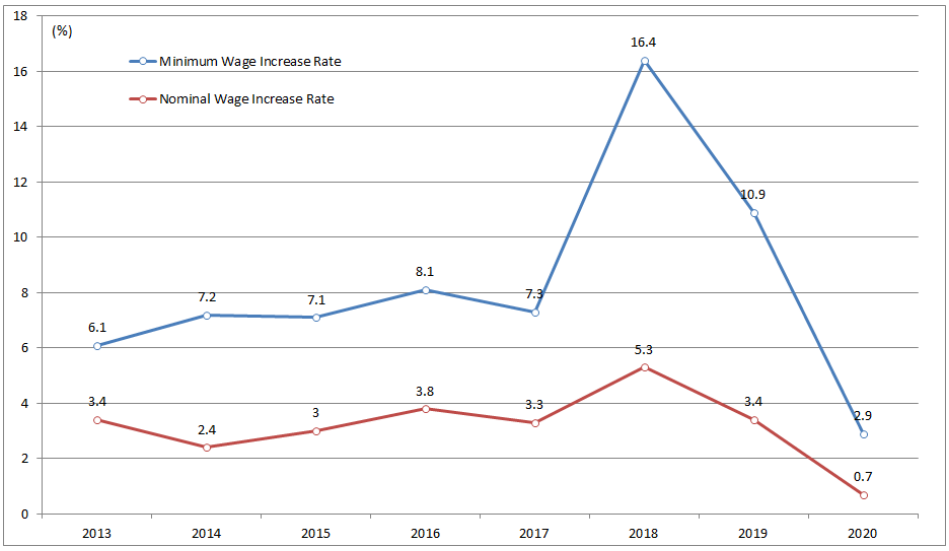
Another notable point is that it can be estimated that wages of the middle-wage class may grow higher than those of the low-wage class after the minimum wage hike.

The relation between P90/P50 and the minimum wage increase is negative and statistically significant while the relation between P50/P10 and the minimum wage is positive in both monthly wages and hourly wages. P90/P50 indicates the wage gap between the high-wage class and middle-wage class, and P50/P10 indicates the wage gap between the middle-wage class and low-wage class in the wage distribution. Negative values of P90/P50 means that the wage gap between the high-wage group and the middle-wage group has improved, which also means that the wage growth rate of

the middle-wage group has been higher than that of the high-wage group. Positive values of P50/P10 means that the wage gap between the middle-wage group and the low-wage group has widened, which also means that the wage growth rate of the middle-wage group has been higher than that of the low-wage group. These two results suggest that wages in the middle-wage group have grown to a relatively more extent compared to high-wage class or low-wage class during the same period. From the results, it can be assumed that the minimum wage hike not only affects a direct rise in wages for low-wage workers but also leads to an overall increase in wages in the middle-wage class. This estimation supports Jeong (2011), which finds that there is a spike effect at the minimum wage level in the wage distribution, and not only the minimum wage level and above but also middle-wage classes benefit from the minimum wage increase.

In fact, the nominal wage increase rate was higher in 2018 than in previous years as shown in <Figure 17>. The minimum wage hike has caused an overall nominal wage increase in the labor market. Furthermore, it is estimated that the middle-wage class may benefit more from the minimum wage increase than the low wage class.

Figure 17. Nominal Wage Increase Rate (%)



Source: Minimum Wage Commission of South Korea.

4.3 Limitation

Despite the findings, these results have some limitations. Most of the results are not statistically significant. In general, if the effect of a policy is not statistically significant, the problem of measurement error is considered. The number of samples is only 325 from 65 industries in five years. Since wage surveys are conducted annually, it could be not enough to grasp the trend of wage inequality only for the past three years (2015-2017). In order to complement this limitation, lengthening the analysis year may be considered.

In addition, this paper basically controlled the trend of wage inequality to common linear trends, common quadratic trends by

industry, or different quadratic trends by industry. Common trend assumptions mean that when an event occurs in the economy, it gives equal impact to wage inequality by industry. This assumption is simple to estimate but unrealistic. Since the trend of wage inequality by industry has been already different and the impact from the event will be different from industry to industry, it is desirable to make estimates considering the different trends in wage inequality by industry. For example, the industry where wage inequality was already declining before the minimum wage hike would have seen wage inequality decline even without the minimum wage hike. If the trend is not well taken into account, the industry's reduction in wage inequality itself could be mistakenly attributed to a hike in the minimum wage. Follow-up studies may be able to estimate the minimum wage effect by using a model that has not imposed any restrictions on the trend of wage inequality in each industry.

Chapter 5. Conclusion

South Korea's minimum wage has been raised to an annual average of 7 percent since 2015, but it has risen sharply to 16.4 percent in 2018 and 10.9 percent in 2019. The study estimated the impact of the minimum wage hike in 2018 and 2019 on wage inequality. This study is different from previous studies that mainly examined the effect of the 2018 minimum wage increase on employment in that it estimates that of the 2018 and 2019 minimum wage hike on wage inequality. The difference-in-differences method was used to verify the effect before and after the policy change. It was considered that the period before the policy change was from 2015 to 2017 and that the policy change took place in 2018 and 2019. South Korea's minimum wage applies to all businesses or workplaces at the same rate nationwide. However, by using the fact that the minimum wage influence rates are different by industry, this paper examined the hypothesis that if the minimum wage was raised – that is, a certain industry had a higher minimum wage influence rate, the industry would have the more improved wage inequality. This project used the influence rate of the minimum wage by industry as an independent variable and the Gini coefficient and inter-decile ratios –P90/P10, P90/P50, and P50/P10 – as dependent variables.

As a result, the models presented by the study estimated

that the 2018 and 2019 minimum wage hike does not have a statistically significant impact on wage inequality overall. Plus, some meaningful presumptions can be found from the results.

The relations between the Gini coefficient and the P90/P10 and the minimum wage increase rate in monthly wages have positive values whereas those in hourly wages have negative values. This means that monthly wage gap widened while the hourly wage gap may be reduced the after the minimum wage increased. This implies that the working hours are reduced. From this result, it is presumed that employers have responded to the wage cost burden from the minimum wage increase by reducing working hours. This is consistent with Neumark et al. (2004), which find that the increase in the minimum wage raises hourly wages for low-wage workers, but, in turn, adversely affects the income of low-wage workers by reducing their working hours and employment.

Also, from the results of the P90/P50 and the P50/P10, it is found that the wage gap between the high-wage group and the middle-wage group has narrowed while the wage gap between the middle-wage group and the low-wage group has widened. This points out that the wages of the middle-wage class may grow higher than the low-wage class or high-wage class after the minimum wage hike due to the spillover effect probably. This estimation supports Jeong (2011), which finds that there is a spike effect at the minimum wage level in the wage distribution, and not

only the minimum wage level and above but also middle-wage classes benefit from the minimum wage increase.

This study has some limitations in terms of the amount of data, the measurement of variables, and the suitability of models. In order to better estimate the effect, follow-up research is needed. It can be considered to lengthen the analysis year or utilize the model that does not impose specific control over the wage inequality trend of each industry.

The minimum wage is a system that guarantees a minimum price for human labor, justified in itself in terms of welfare and labor ethics. Thus, it is introduced in most countries. In recent years, discussions have been underway in several countries, including South Korea and the United States, on raising the minimum wage as a policy for income redistribution. From an economic perspective, however, more empirical research is needed on whether the minimum wage actually will ease the wage gap between workers and improve income distribution along with the employment effect of the minimum wage. Since the minimum wage is set based on hourly wages, the hourly wage of low-wage workers will be raised thanks to the minimum wage increase. But if employers want to reduce their employees working hours due to the labor cost burden, the overall wage of workers can be rather cut. Moreover, this reduction in working hours is more likely to occur for low-wage workers because of their low job security. And even

though wage inequality among the remaining workers in the labor market has improved, if the minimum wage has a negative effect on employment, the income of people who are forced off the labor market will be lowered. This does not work positively on improving income inequality. Therefore, it is important to raise the minimum wage gradually to improve income inequality, taking into account the economy and overall wage increase rate to minimize the negative impact on employment and working hours.

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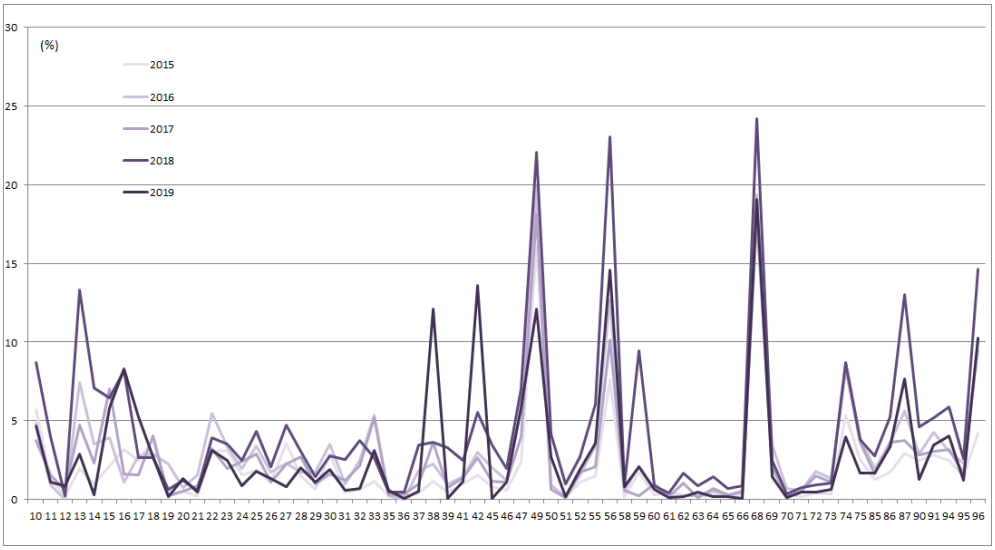
Appendix

1. Minimum Wage Influence Rate by Industry

The influence rate of minimum wage of an industry is defined as the percentage of employees who receive an hourly wage lower than the minimum wage of this year in the industry. (Influence rate = number of beneficiary workers / number of workers covered × 100)

Figure A. Influence rate of the minimum wage by industry (%)



Note 1:

Code	Industry
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
13	Manufacture of textiles, except apparel
14	Manufacture of wearing apparel, clothing accessories and fur articles

15	Manufacture of leather, luggage and footwear
16	Manufacture of wood and of products of wood and cork; except furniture
17	Manufacture of pulp, paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke, briquettes and refined petroleum products
20	Manufacture of chemicals and chemical products; except pharmaceuticals and medicinal chemicals
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products
22	Manufacture of rubber and plastics products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and furniture
26	Manufacture of electronic components, computer; visual, sounding and communication equipment
27	Manufacture of medical, precision and optical instruments, watches and clocks
28	Manufacture of electrical equipment
29	Manufacture of other machinery and equipment
30	Manufacture of motor vehicles, trailers and semitrailers
31	Manufacture of other transport equipment
32	Manufacture of furniture
33	Other manufacturing
34	Maintenance and repair services of industrial machinery and equipment
35	Electricity, gas, steam and air conditioning supply
36	Water supply
37	Sewage, wastewater, human and animal waste treatment services
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
41	General construction
42	Specialized construction activities
45	Sale of motor vehicles and parts
46	Wholesale trade on own account or on a fee or contract basis
47	Retail trade, except motor vehicles and motorcycles
49	Land transport and transport via pipelines

50	Water transport
51	Air transport
52	Warehousing and support activities for transportation
55	Accommodation
56	Food and beverage service activities
58	Publishing activities
59	Motion picture, video and television program production, sound recording and music publishing activities
60	Broadcasting activities
61	Postal activities and telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
64	Financial service activities, except insurance and pension funding
65	Insurance and pension funding
66	Activities auxiliary to financial service and insurance activities
68	Real estate activities
70	Research and development
71	Professional services
72	Architectural, engineering and other scientific technical services
73	Other professional, scientific and technical services
74	Business facilities management and landscape services
75	Business support services
76	Rental and leasing activities; except real estate
84	Public administration and defense; compulsory social security
85	Education
86	Human health activities
87	Social work activities
90	Creative, arts and recreation related services
91	Sports activities and amusement activities
94	Membership organizations
95	Maintenance and repair services of personal and household goods
96	Other personal services activities

Note 2: 01: Agriculture, 02: Forestry, 03: Fishing and aquaculture, 05: Mining of coal, crude petroleum and natural gas, 06: Mining of metal ores, 07: Mining of non-

metallic minerals, except fuel, 08: Mining support service activities, 97: Activities of households as employers of domestic personnel, 98: Undifferentiated goods-and services-producing activities of private households for own use, and 99: Activities of extraterritorial organizations and bodies are not included because of the small number of wage earners.

Table A. Basic Statistics of the Influence rate of the minimum wage by industry

Year	Observation	Mean	St. Dev.	Min	Max
2015	65	2.04	3.12	0.14	18.50
2016	65	3.10	3.81	0	19.88
2017	65	2.69	3.49	0.09	18.16
2018	65	4.57	5.19	0.25	24.20
2019	65	2.91	3.98	0.048	19.08

2. The Minimum Wage of The United States (As of Sep.1, 2020)

	2014	2015	2016	2017	2018	2019	2020
Federal	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Alabama	–	–	–	–	–	–	–
Alaska	7.25	8.75	9.75	9.80	9.84	10.19	10.19
Arizona	7.90	8.05	8.05	10.00	10.50	12.00	12.00
Arkansas	6.25	7.50	8.00	8.50	9.25	10.00	10.00
California	9.00	9.00	10.00	10.00	11.00	12.00	12.00
Colorado	8.00	8.23	8.31	9.30	10.20	12.00	12.00
Connecticut	8.70	9.15	9.60	10.10	10.10	11.00	12.00
Delaware	7.75	8.25	8.25	8.25	8.25	9.25	9.25
Florida	7.93	8.05	8.05	8.10	8.25	8.56	8.56
Georgia	5.15	5.15	5.15	5.15	5.15	5.15	7.25
Hawaii	7.25	7.75	8.50	9.25	10.10	10.10	10.10
Idaho	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Illinois	8.25	8.25	8.25	8.25	8.25	9.25	10.00
Indiana	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Iowa	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Kansas	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Kentucky	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Louisiana	–	–	–	–	–	–	–
Maine	7.50	7.50	7.50	9.00	10.00	12.00	12.00
Maryland	7.25	8.25	8.75	8.75	10.10	11.00	11.00
Massachusetts	8.00	9.00	10.00	11.00	11.00	12.75	12.75

Michigan	8.15	8.15	8.50	8.90	9.25	9.65	9.65
Minnesota	6.50–8.00	7.25–9.00	7.25–9.50	7.75–9.50	8.04–9.86	8.15–10.00	10.00
Mississippi	–	–	–	–	–	–	–
Missouri	7.50	7.65	7.65	7.70	7.85	9.45	9.45
Montana	7.90	8.05	8.05	8.15	8.30	8.65	8.65
Nebraska	7.25	8.00	9.00	9.00	9.00	9.00	9.00
Nevada	7.25–8.25	7.25–8.25	7.25–8.25	7.25–8.25	7.25–8.25	7.25–8.25	9.00
New Hampshire	7.25	7.25	7.25	7.25	7.25	7.25	7.25
New Jersey	8.25	8.38	8.38	8.44	8.60	11.00	11.00
New Mexico	7.50	7.50	7.50	7.50	7.50	9.00	9.00
New York	8.00	8.75	9.00	9.70	10.40	11.80	11.80
North Carolina	7.25	7.25	7.25	7.25	7.25	7.25	7.25
North Dakoda	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Ohio	7.25–7.95	7.25–8.10	7.25–8.10	8.15	8.30	8.70	8.70
Oklahoma	2.00–7.25	2.00–7.25	2.00–7.25	2.00–7.25	2.00–7.25	2.00–7.25	2.00–7.25
Oregon	9.10	9.25	9.75	9.75	10.75	11.25	12.00
Pennsylvania	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Rhode Island	8.00	9.00	9.60	9.60	10.10	10.50	10.50
South Carolina	–	–	–	–	–	–	–
South Dakota	7.25	8.50	8.55	8.65	8.85	9.30	9.30

Tennessee	–	–	–	–	–	–	–
Texas	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Utah	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Vermont	8.73	9.15	9.60	10.00	10.50	10.96	10.96
Virginia	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Washington	9.32	9.47	9.47	11.00	11.50	13.50	13.50
West Virginia	7.25	8.00	8.75	8.75	8.75	8.75	8.75
Wisconsin	7.25	7.25	7.25	7.25	7.25	7.25	7.25
Wyoming	5.15	5.15	5.15	5.15	5.15	5.15	7.25
DC	9.50	10.50	11.50	11.50	13.25	14.00	15.00

* Source: The Department of Labor of The United State

Abstract in Korean

최저임금은 2015년 이후 연간 7% 수준으로 상승하다가 2018년 16.4%, 2019년 10.9%로 큰 폭 인상되었다. 이 연구는 2018년, 2019년 최저임금 인상이 임금 불평등에 미친 영향을 추정한다. 연구 방법으로는 이중차분법을 사용한다. 비교집단을 산업으로 설정하고 산업별 최저임금 영향률을 독립변수로 사용하며, 임금 불평등의 지표로 지니 계수와 분위수 배율(P90/P10, P90/P50, P50/P10)을 이용한다.

추정 결과, 2018년, 2019년 최저임금 인상이 임금불평등에 미친 영향은 대체적으로 통계적으로 유의하지 않았다. 다만, 이 연구는 데이터 양이 작아 최저임금 영향률 추산에 측정오차가 있을 수 있고 추정식이 단순한 한계를 가진다. 그 밖에 동 연구결과로부터 몇 가지 의미 있는 추가 해석이 가능하다.

임금 분포 내 전체적인 임금 불평등을 나타내는 지니 계수와 P90/P10 배율로부터 시간당 임금의 불평등은 개선되었으나, 월간 임금의 불평등은 확대된 경향을 확인하였다. 저임금 근로자의 시간당 임금 상승에도 불구하고 근로시간이 감소하여 월간 임금, 즉 전체 임금 불평등이 개선되지 않은 것으로 보인다. 이는 고용주들이 최저임금 인상 부담을 근로시간 단축으로 대응한 결과인 것으로 추정된다.

아울러, P90/P50, P50/P10 배율과 최저임금 영향률 간 관계로부터 최저임금 인상이 저임금 근로자의 임금 뿐만 아니라 중위 임금 근로자의 임금 상승까지 영향을 미친 것으로 보이며, 중위 임금 근로자의 임금상승률이 저임금 근로자 및 고임금 근로자의 임금상승률보다 높았던 것으로 추정된다.