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Master's Thesis of Public Administration

The effect of setting public sector
wage standards on the actual
wages of public sector workers
– focused on Indiana state construction
industry's prevailing wage –

공공부문의 임금체계 설정이 공공부문 근로자의
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The effect of setting public sector
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Abstract

This study analyzed the effect of the government's wage system on the wages and labor market of public sector workers through the case of repeal the prevailing wage system in Indiana state, USA, and sought to derive implications for the introduction of the public sector wage system in Korea. To this end, Indiana and three nearby regions, the construction industry and other industries, the public and private sectors were classified, and the trend of wage changes before and after the repeal of the prevailing wage was compared and analyzed.

The data used in the study were analyzed for real hourly wages (real hourly wages converted to constant in 2019 dollars) using Current Population Survey Outgoing Rotation Groups (CPS-ORG), which is annually investigated by the U.S. Department of Labor Bureau of Labor Statistics (BLS). In addition, the trend and difference in the change amount and rate of change in weekly income and the number of workers were analyzed in the auxiliary data, Quarterly Census of Employment and Wages (QCEW). The period is divided into short-term (2014-2016) and long-term (2012-2019) before and after the repeal of prevailing wages.

The study was largely divided into two categories: an analysis of the wage trend of construction workers and an analysis of the case of construction workers in the public sector in Indiana state. The wage trend analysis of construction workers was conducted on two criteria: region and industry. Geographic criteria were compared and analyzed for wage changes of construction workers in Indiana and three neighboring states to identify the impact of prevailing wage repeal on wages, excluding external factors unrelated to construction industry. Industrial standards excluded factors such as economic changes in the region and compared and analyzed wage changes in Indiana's construction industry and other industries to confirm the effect of repeal of prevailing wages on wages. The intensive analysis of construction workers in the public sector was conducted on 47 construction workers in the public sector. First, compared to the wage change of construction workers in the private sector, the effect of the repeal of prevailing wages on wages in each sector was analyzed. In addition, changes in weekly wages and working hours before and after the repeal of prevailing wages were additionally analyzed

for workers in the public sector. Through this, it was intended to confirm the effect of the repeal of prevailing wages on the actual wages and lives of workers.

According to the study, the repeal of the prevailing wage in Indiana state negatively affected the real hourly wage of construction workers, and the impact on public sector construction workers was even greater. It was found that the real hourly wage due to the repeal of the prevailing wage decreased significantly immediately after the repeal of the prevailing wage system. In the long-term, it was found that the degree decreased compared to the short term, but the real hourly wage also decreased. However, there is a limitation in that it is difficult to give statistical meaning due to the lack of samples of workers in the public sector.

The implications that can be applied to Korea through this study are as follows. First, it was confirmed that the prevailing wage system plays a role in maintaining the wage level of construction workers in the public sector, given that the real wage in the public sector has decreased significantly since the repeal of prevailing wages. Considering this, if Korea introduces a wage system similar to prevailing wages in the public sector, wages in the public sector become higher and are likely to remain higher than those in the private sector even if wages in the market fall due to the economic recession. Second, although there are differences in degree, the wage of not only public sector workers but also private sector workers decreased after the repeal of prevailing wages, indicating that the prevailing wage system has the same effect on wages in the private sector. In conclusion, if Korea introduces a wage system for each type of job in the public sector, the wages of public sector workers will increase additionally regardless of changes in the labor market, and the wages of private sector

workers will also increase.

Keyword : Prevailing wage, public sector, Construction
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Chapter 1. Introduction

1.1. Study Background

Since the start of Moon Jae-in government, about 205,000 people have been converted to full-time employees from 2017 to 2020 through the 'Public Sector Non-Regular Worker Regularization Policy'. This means that nearly half of the number of existing regular workers (about 400,000) in the public sector, is increased in a short period of time. They are separate groups that are currently working in the public sector as public officials or regular workers in public institutions. They are usually hired in a different way than the open competitive recruitment of regular workers. Also, there is a difference in the tasks, mainly simple tasks such as cleaning and security, not core tasks of the institution.

As the size of so-called "public service worker" has increased significantly through the transition to regular workers in the public sector, their employment stability problem can be seen as somewhat resolved, but new conflicts are gradually emerging. The most important issue is the problem that related to improving treatment (mainly wages) of regularized public service worker. This is because the purpose of using non-regular workers was to reduce costs. In addition, jobs such as cleaning and security, which account for a large portion of public service worker, were simple labor jobs that did not require special expertise or skills, which also affected the wage level.

However, demands for better treatment have been expressed as status guarantees have been made through the transition to regular worker positions. As the union membership rate of public service worker increases, calls for better treatment are emerging more collectively and systematically, with the two major labor unions at the center. After all, the demand for better treatment of public service worker in the public sector is deepening not only into conflicts within the public sector but also into social conflicts.

In 2019, a group strike of educational part public service worker began, calling for improved treatment and reorganization of the wage system. In 2020, both major labor unions are suggesting improving the treatment of public service worker as a major policy issue. Specifically, they are strongly calling for the Government to establish a systemically pay system for all types of public service worker in the public sector. To resolve this issue, the government has launched a "public service worker committee" in March 2020 to hold related discussions, but has yet to reach a clear conclusion.

There are pros and cons to establishing a specific public sector wage system. As an advantage, it first leads to wages increase for low-wage workers, which contributes to social stability as they can maintain a stable life. In addition, it may attract skilled workers and improve of worker's ability and contribute to workers' self-development.

However, the establishment of a wage system in the public sector can lead to an increase in labor costs in the public sector, increasing the government's financial burden. In addition, considering the influence of the public sector in Korea, there is a concern that it may lead to a wage increase not only in the public sector but also in society as a whole. In the end, it can cause additional inflation in society as a whole.

In addition, as a practical problem, job analysis for individual occupations constituting 'public service worker' has not yet been properly conducted, which may lead to unexpected side effects. Additional administrative costs may be required to solve this problem and supervise the effective operation of the system.

In conclusion, it is not a simple task to institutionalize a separate pay system for public service worker. At first, it can affect the cost of the public sector and the soundness of the Government's finances. At the same time, a review of how it affects public sector productivity should be preceded. In addition, it can generate wage changes independent of changes in labor productivity to society as a whole (including the private sector in addition to the public sector). Therefore, careful research and review are needed on whether to

introduce an additional wage system for public service worker.

1.2. Purpose of Research

The purpose of this paper is to analyze the government intervention's effect on the actual wages of workers in the public sector when systematically introduced a wage system for each occupation in the public sector.

If one look at the wage system for each occupation currently under investigation in Korea, currently in Korea, there are currently investigating the unit cost of labor for six major occupations. Except for the "unit price of manufacturing labor in small and medium-sized manufacturing industries," which is used as a basis for calculating labor costs when contracting services in the public sector, most of them are used as reference materials.

<Table 1: Details of labor unit price survey by major occupations>

Type	Subject	Period
Unit price of labor in the construction industry	– 2,000 construction sites nationwide – Construction, electricity, information and communications, cultural assets, nuclear power jobs.	2 in a year
Wage of construction project management engineers	– Technicians who performed construction project management tasks – 283 companies that surveyed people belonged.	1 in a year

SW technician wages	– About 1,500 companies reported as software operators and regular members of the Korea Software Industry Association	1 in a year
Engineering Engineer Wages	– 4,924 engineering operators – Machinery/equipment, electricity, information and communications, construction, environment, nuclear power, other, nuclear power generation, industrial plants, construction and other sectors;	1 in a year
unit price of manufacturing labor in small and medium-sized manufacturing industries	1,500 small and medium-sized manufacturers with 20 or more permanent employees	1 in a year
Survey Technician's Wage	Survey Technicians Working for 1,841 Survey company	1 in a year

However, it is structurally difficult to use "unit price of manufacturing labor in small and medium-sized manufacturing industries," in this study. First of all, there is the issue of occupation. This is because the jobs surveyed and the jobs applied are different. "Unit price of manufacturing labor in small and medium-sized manufacturing industries," surveys companies belonging to the 'manufacturing' classification of industries and

calculates the unit price of major detailed occupations. However, under the public sector service contract guidance, the occupation to which this unit price applies is not in manufacturing. It is mainly limited to simple labor jobs such as cleaning and security that belong to the service industry.

Secondly, the standards are not strict because the characteristics of the job are not taken into account. The public sector service contract guidance shall determine the criteria for calculating labor costs based on the overall average of the “unit cost of manufacturing in small and medium-sized manufacturing industries”. That is, it does not reflect detailed changes in the market by simply setting standards without reflecting the characteristics of the detailed occupation.

Thirdly, the “unit cost of manufacturing in small and medium-sized manufacturing industries” is an indicator of a survey of workplaces with more than 20 permanent employees. Even if it is necessary to determine the basis for the unit price of public sector services based on wages in manufacturing, this indicator is not a representative indicator of the entire manufacturing industry.

In addition, public sector service contract guidance is limited to agency worker. Non-regular workers in the public sector can be divided into three main categories: fixed-term workers, dispatch worker, and agency worker. So, only a part of non-regular workers is eligible for this guideline.

Considering that the number of agency workers has decreased significantly through the public sector non-regular worker regularization policy, the impact of public sector service contract guidelines on the entire public sector is limited.

After all, the unit cost of labor by job type, which is currently being investigated by the government, is a simple current status survey, which is hard to see as an example of the government introducing a wage system by job type to the public sector. And also, “the unit cost of manufacturing in small and medium-sized manufacturing industries” which is used as a basis for wage setting in the public sector service contract guidelines, is not appropriate to

be used as a research target due to the limitations of wage setting and investigation methods.

Therefore, to analyze the effect of the institutional introduction of the public sector wage system on workers in the public sector, it is necessary to study overseas cases of introducing a specific wage system in the public sector.

A representative case is the Prevailing Wage introduced at U.S. construction sector. However, that wage system was introduced in the 1930s and is still in operation. Therefore, analyzing the effects of the introduction of the scheme at this point has practical limitations considering the consistency of data. However, this study is ultimately intended to analyze social changes that occur due to changes in the government's wage system. Therefore, an analysis of the effects of changes in the prevailing wage system could achieve the same objective. However, considering that some states have recently abolished the prevailing wage system, analyzing cases of repealing the prevailing wage system may be a realistic solution.

However, it is necessary to analyze with caution that Korea and the United States are in contrast. The context in which the introduction of a wage system is discussed in the public sector in Korea is aimed at improving the treatment of low-wage workers through government intervention to labor market. This treatment improvement is suggested as one of the ways to address social polarization and increase overall social welfare. On the other hand, the recent trend in the United States is intended to prevent artificial distortion of the labor market in line with market principles rather than government intervention by repealing prevailing wage.

Therefore, it is necessary to analyze whether the repealing of prevailing wages simply results in a decreasing wage level, and whether overall social welfare increases as employment increases along with a decrease wage level. This is meaningful in that it can comprehensively analyze the impact of the wage system in the public sector on workers in the public sector and draw implications in Korea.

Of the 43 states that introduced the prevailing wage system, 16 abolished the prevailing wage system. However, it is necessary to analyze the latest possible cases for analyzing the effectiveness of system changes, and at least three years of data accumulation will be required for mid- to long-term effect analysis. Furthermore, only when there is no socio-economic event at the national or global level during the analysis period that can the exogenous errors that can occur in the data analysis process be minimized. This is because these events may have additional effects on the effect of state-level drafting changes, and may result in additional changes unrelated to them.

Among the states that abolished the prevailing wage system, Indiana state abolished the prevailing wage law in 2015, relatively recently, and now has four years of data accumulated until 2019. Also, during the 2012-2019 period, there were no significant event that cause socioeconomic impacts, such as the subprime mortgage crisis in 2006.

Therefore, this paper mainly seeks to study the impact of wage system setting in the public sector on workers' wages, focusing on the Prevailing Wages introduced in Indiana's construction industry. Through a comparative analysis of wage and employment changes for public sector construction workers before and after the repeal of the prevailing wage system, the impact of the public sector wage system on wage changes for public sector workers will be analyzed to derive implications in Korea.

Chapter 2. Prevailing wage in U.S.

2.1. Overview of prevailing wage

2.1.1. Definition of a prevailing wage system and the purpose of its introduction

Prevailing Wage Laws in the United States regulate the wages paid on government funded construction projects (Azari-Rad et al. 2005). Prevailing wage apply to contractors and subcontractors performing on federally funded or assisted contracts in excess of \$2,000 for the construction, alteration, or repair (including painting and decorating) of public buildings or public works (U.S Department of Labor).

In other words, when the public sector starts to manage a construction contract, it is a type of wage system introduced to regulate the wages of workers participating in the project at an appropriate level to prevent wage declines due to excessive cost competition and to ensure the quality of the project.

For the first time, prevailing wages were introduced to protect state workers from low-wage migrant workers. In other words, construction workers' wages in other states with low wages may fall if they bid for public works at low amounts. It was introduced to prevent confusion among construction workers and regional communities.

This can be said to have been greatly influenced by the situation of that times. The U.S. government implemented expansionary fiscal policies to counter the Great Depression that began in 1929 and to prevent household bankruptcy. Specifically, the system was introduced to achieve the purpose of protecting wages for local construction workers by launching a large-scale civil engineering development project represented by the New Deal. (Korea Institute of Construction Policy, 2017)

In the United States, the Prevailing Wages system originated in Kansas, where the first Prevailing Wages Act was passed in 1891. Other states followed suit, and by 1923, seven states had adopted the Prevailing wage Act. The federal Prevailing wage Act was defined by the Davis-Bacon Act of 1931.

2.1.2. Application standards and introduction status of prevailing wages at state level

By Davis-Bacon Act and Related Act, contractors and subcontractors must pay their laborers and mechanics employed under the contract no less than the locally prevailing wages and benefits (health and welfare, pension, vacation and so on) for corresponding work on similar projects in the area.

The Davis-Bacon Act directs the Department of Labor to determine such locally prevailing wage rates (U.S Department of Labor). Thus, At the state level, the Little-Davis-Bacon Act was enacted. the application of criteria, detailed contents and threshold are different from state to state (Kessler 2001). But states are mostly set at \$2,000 to \$100,000 levels.

<Table 2: the threshold of prevailing wage of 2021>

State	Threshold amount
Alaska	\$ 25,000
California	Labor Code Section 1771 provides a minimum threshold of over \$1,000. Labor Code Section 1771.5 provides a higher threshold of over \$25,000 for construction work or over \$15,000 for alteration, demolition, repair or maintenance work under the circumstances specified in that section.
Connecticut	\$ 1,000,000 for new construction \$ 100,000 for remodeling

Delaware	\$500,000 for new construction \$45,000 for alteration, repair, renovation, rehabilitation, demolition, or reconstruction
Hawaii	\$ 2,000
Illinois	None
Maine	\$ 50,000
Maryland	\$ 500,000 and either of the following criteria are met: (1) the contracting public body is a unit of State Government or an instrumentality of the State, and there is any State funding for the project; or (2) the contracting public body is a political subdivision, agency, person, or entity (such as a county), and the State funds 50% or more of the project except for school construction which must be 25% or more State funded.
Massachusetts	None
Minnesota	\$ 25,000 where more than one trade is involved \$ 2,500 where a single trade is involved
Missouri	\$ 75,000
Montana	\$ 25,000
Nebraska	None
Nevada	\$ 100,000
New Jersey	\$ 2,000 \$ 50,000: aggregate cost for maintenance and repair
New Mexico	\$ 60,000
New York	None
Ohio	\$ 250,000 for new construction (\$78,258 for specific works) \$ 75,000 for remodeling (\$23,447 for specific works) *Specific work involves roads, streets, alleys, sewers, ditches, and other works connected to road or bridge construction.

Oregon	None, but major renovations are only considered public works if over \$50,000. Further, any project that uses \$750,000 of public funds is a public work regardless of the contracting entity
Pennsylvania	\$ 25,000
Rhode Island	\$ 1,000
Tennessee	\$ 50,000, but only for highway construction. No prevailing wage on non-highway construction.
Texas	None
Vermont	\$ 100,000 or at least 50% funded by a capital construction act and costs more than \$200,000.
Washington	None. But a separate law applicable only to State college/university construction provides for a \$25,000 threshold amount.
Washington, DC	\$100,000. However, federal Davis–Bacon rates apply to all contracts in excess of \$2,000 for construction of public buildings and public works entered into by the Federal Government or the District of Columbia.
Wyoming	\$ 100,000

Sources: U.S. Department of Labor

These state's Prevailing Wages define the wages of construction workers who participate in state (usually municipal) construction. Currently, 27 states have Prevailing wages. And 16 of the 24 states where Prevailing wages do not exist have been repealed since the Prevailing wages Act was introduced.

<Table 3: Status of introduction of prevailing wage system by state as of 2021>

State	Exist	Repeal date	State	Exist	Repeal date
Alabama	X	1980	Nebraska	O	
Alaska	O		Nevada	O	
Arizona	X	1984	New Hampshire	X	1985
Arkansas	X	2017	New Jersey	O	
California	O		New Mexico	O	
Colorado	X	1985	New York	O	
Connecticut	O		North Carolina	X	
Delaware	O		North Dakota	X	
Florida	X	1979	Ohio	O	
Georgia	X		Oklahoma	X	1995
Hawaii	O		Oregon	O	
Idaho	X	1985	Pennsylvania	O	
Illinois	O		Rhode Island	O	
Indiana	X	2015	South Carolina	X	
Iowa	X		South Dakota	X	
Kansas	X	1987	Tennessee	O	
Kentucky	X	2017	Texas	O	
Louisiana	X	1988	Utah	X	1981
Maine	O		Vermont	O	
Maryland	O		Virginia	X	
Massachusetts	O		Washington	O	
Michigan	X	2018	Washington, DC	O	
Minnesota	O		West Virginia	X	2016
Mississippi	X		Wisconsin	O	2017
Missouri	O		Wyoming	O	

Montana	O			O	
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Sources: U.S. Department of Labor

2.1.3. Federal level prevailing wage calculation method

The first prevailing wage decision way was made in 1935 by Francis Perkins, President Roosevelt's secretary for labor policy. The prevailing wage was determined by the presence of a majority group or group of more than 30 percent: 1) If a large number of groups exist, prevailing wage is determined by wages shall be paid by the large number of groups. 2) If a large number of groups do not exist, when more than 30% of workers in a particular industry, occupation, or region receive the same wage, this is the prevailing wage. 3) If there is no wage for more than 30% of workers get, the average wage for a particular industry, occupation, or region is determined to be the prevailing wage.

These standards have been determined for about 50 years, but in 1985 the Reagan government established a 50% rule. That is, states where wages apply to workers of more than 50 percent in each construction industry (usually the same as those prescribed by collective agreements) are defined, then that wage called as prevailing wage. If there was no such wage, the average wage would be defined as a prevailing wage.

2.1.4. State level prevailing wage calculation method

According to the Davis-Bacon Act, State prevailing wages are to be decided by region, so the application criteria and contents vary from state to state. Some states follow the state's Prevailing Wages and set them higher than other state or federal Prevailing Wages (Kessler, 2001).

Prevailing wages are also different from state to state. Some states adopt a similar switching rule to Davis-Bacon law, whereas others systematically adopt either the mode or the mean. In some states, wages for all contracts are set at the level of collective bargaining wages. Prevailing wage laws can vary in the method and frequency in which prevailing wages are determined, as well as in the area, work, or occupations covered. (H. Azari-Rad et al. 2003)

Each state's method of determining prevailing wages can be divided into five main types depending on its characteristics. The first is the "collective arrangement" set out in accordance with collective agreements with unions. 1) If there is a collective agreement applied by county, the prevailing wage is determined according to the collective agreement. 2) If there is no collective agreement in this county, the wage under the collective agreement in the nearest area shall be the prevailing wage. A case in point is Ohio State.

The second is the "Simple mode" typically introduced by California, Minnesota and etc. The same wage received by the majority or the largest number of workers is the prevailing wage. If not determined in this way, the decision is made in consideration of collective agreements, federal wages, market wages in the nearest area, or other wage surveys.

The third is "minimum % / average method". Let me explain the example of Montana, which is a typical example. Montana divides the state into four regions, three areas (heavy, building construction, and non-construction). First of all, if wages in each region are derived by a collective agreement, the prevailing wages in the region shall be determined in accordance with the collective agreement. If not, it is determined through a wage survey. The decision-making process through the wage survey as follows: There are at least 40 workers throughout the state, and 1) if more than 50% of workers receive the same wage, the prevailing wage in that case is determined to be the highest applicable wage determined by the relevant wage or collective agreement. 2) If more than 50% of workers do not receive the same wage, the prevailing wage for the region shall be determined as the weighted average wage or the highest applicable wage determined by a collective agreement. 3) If less than 40 workers exist throughout the state, the highest wage determined by collective bargaining, or if there is no collective bargaining, prevailing wage is the construction wage of the Montana state Davis-Bacon Act will be set. (As of September 1, of this year)

The fourth is the "Majority/average" approach being applied in Washington

state. This is the method of determining the largest city in each county and setting the prevailing wage based on that city. The prevailing wage is calculated in the following ways: 1) If wages of more than 50% of people get are reported in the largest city in the county, the majority wage is set as the prevailing wage. 2) If there is no wage of more than 50% of people get, the weighted average wage shall be calculated and determined as the prevailing wage. 3) If there is no data from the largest city in the county, calculate the weighted average wage using the county's overall data. 4) If the county does not have full data of county, the existing prevailing wage of the county shall be determined as the new prevailing wage.

The last approach is the "Average" approach being introduced in Vermont. This state divides it into three major regions. The average wage for each region is determined as prevailing wage.

These prevailing wages vary depending on the characteristics of each state, and specific wages vary even in the same state, as there are differences in occupation, county, and proficiency.

<Table 4: Example of how to calculate prevailing wages>

Way to calculate		Example states
collective agreement		Ohio
Mode	Simple mode	Minnesota, California
	Minimum % / average	Montana
	Majority / average	Washington
Average		Vermont

2.1.5. History of Prevailing wage in Indiana state

Indiana uses prevailing wage the name CCW to prevailing wage (to prevent confusion, hereinafter referred to as the prevailing wage). The prevailing Wage Act was enacted in 1935 to protect construction workers in the region due to the influx of unskilled workers. (Vincent, 1990)

Wages are determined in public hearings of Common Construction Wage committees for each county. Each committee consists of five representatives from the local community: an industry representative appointed by the awarding agency, a labor representative appointed by the Indiana AFL-CIO, a contractor representative appointed by the Associated Builders and Contractors (ABC), and two taxpayer representatives appointed by the awarding agency and by the county-level legislative body. After being amended to become the Common Construction Wage (CCW), the determination of the applicable hourly wage is the “most commonly paid construction wages in the project county” (Indiana DOL, 2013).

Threshold, which is excluded from the prevailing wage application, holds public works projects that exceed \$150,000 in total project costs without federal budget. This standard increased to \$350,000 in 2013. Later, Indiana lawmakers repealed the Prevailing Wage Act as of July 1, 2015.

2.2. Advantages of prevailing wage

Since the introduction of the prevailing wage system, many studies have been conducted on the advantages and disadvantages of the prevailing wage system.

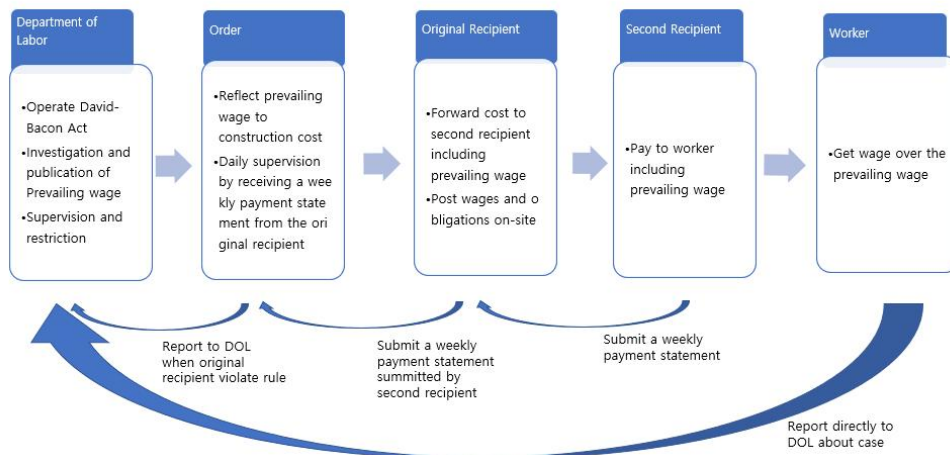
First, the Prevailing wage system has the advantage of ensuring an appropriate wage level by suppressing competition for wage cuts that may occur in the bidding process for construction. In general, the construction industry needs price competition for bidding. And the construction industry is not easy to reduce costs for other input elements, so there is always a temptation to reduce wages that are relatively easy to adjust.

Secondly, the prevailing wage is announced by occupation and skill. And also, in addition to wages, company have duty to pay fringe benefits (medical insurance, pensions, etc.). Therefore, it has the effect of substantial wage increases and supports the stable lives of workers.

Thirdly, the introduction of prevailing wages can lead to a transparent and systematic overhaul of the wage payment process. As shown in Figure 1, wages are mandatory paid weekly under the prevailing wage system. And the government will be overseeing the whole wage process, so it can curb wage arrears. This is also meaningful in that it can provide stable living conditions for workers.

Fourth, it allows workers to put in the effort to improve their skills. prevailing wages also have a wage gap depending on proficiency of its skill, which motivates workers to improve their skills. This improves individual worker's productivity, and consequently improves the quality of construction products.

< Picture 1: Operating structure of prevailing wage >



In addition, there are advantages from the perspective of businesses. First of all, the prevailing wage system can secure an appropriate level of construction costs. This will help secure the necessary skilled workers, which will improve productivity and improve the quality of construction products. In addition, worker training reduces industrial accidents and fatalities (Philips 2016).

And also, both workers and operators can be protected from other local businesses seeking to win construction at low labor costs.

2.3. Disadvantages of prevailing wage

The biggest problem with prevailing wages is that the problem of labor market distortions can arise. It is reasonable that wages in capitalism are determined by the supply and demand of manpower in accordance with the principles of the market economy.^① However, the government's determination of

^① Wages will, of course, be determined by other institutional and social

a minimum wage level for a particular job distorts this market principle. As a result, inefficient allocation of human resources can occur.

Secondly, the problem of increasing construction costs is raised. Prevailing wages are often set higher than market wages, it results in excessive labor costs. It has been consistently pointed out that this could result in excessive government budgets. On the other hand, some argue that prevailing wages do not affect the increase in construction costs. There have been various debates so far on the relationship between prevailing wages and construction costs, and we will take a closer look in Chapter 3.

Thirdly, discrimination against low skilled workers may emerge due to reasonable wages. If the actual market wage rises due to the effect of the prevailing wage, the oversupply of workers occurs. In this case, employer will exclude low skilled workers first for effective construction work, and low skilled workers will be unemployed or leave the construction industry. This is likely to result in the collapse of the base of skilled workers in the mid to long term.

Fourthly, there can be a debate of equity with the private sector. This is because the prevailing wage system applies to the public sector and does not apply directly to the private sector. Therefore, even with the same construction, different costs will be incurred by the owner, which will inevitably cause confusion in the labor market. In particular, if the wages of those who participate in public sector construction are higher than those of the private market, there is a risk that the controversy over equity will intensify. Eventually, labor market distortion also occurs because the supply of workers is concentrated in the public sector.

In addition, prevailing wages may limit price competition among companies and result in institutional restrictions on efforts to reduce costs in the tendering process. This may unnecessarily increase construction costs and make a social negative impact. There is a risk that the management information of individual companies will be exposed during the wage investigation process. Construction is an industry where labor is important. Consequently, the disclosure of detailed payments by the Government's investigation of labor costs means that the entity's core management information related human resource management is exposed.

Lastly, the disadvantages are that the administrative procedures related to the setting and payment of Prevailing Wages are complicated and there is room for expedient handling, which can lead to significant administrative costs for supervision. It is also noted that confusion may exist due to the lack of systematic job classification (Korea Institute for Construction and Industry 2011).

factors, as well as differences in wage bargaining power between labor and management by region and occupation.

Chapter 3. Literature Study Review

3.1. Prevailing wage's impact on construction costs

Recently, In Kentucky (2017), Wisconsin (2017), Arkansas (2017), and Michigan (2018), these states are repealed Little-Davis-Bacon Act. There are controversies over the Prevailing Wages system has continued in some states.

There will be a number of issues about prevailing wage, but the biggest of them is the impact of Prevailing Wages on construction costs. In the meantime, there have been various reviews of the impact of the Prevailing Wages on government construction costs.

In the early days, studies on the effect of the prevailing wage system on construction costs implemented by the federal government were mainly conducted. Thieblot (1975) presented a result that public construction costs increased by about 1.5% due to the appropriate wage system. On the other hand, Gould & Bittlingmayer (1980) criticizes Thieblot's research as an underestimate result of not considering the inflation rate during this period and the information available in the bidding process. Reflecting these factors, the actual construction cost increased by 4% to 7% during the period due to the introduction of appropriate wages.

The General Accounting Office (1979) compared less biased data on wages paid in specific regions to estimate the impact of the prevailing wage system on public construction at the federal level. Using a method of multiplying wage differences by estimates of annual working hours in the public sector, it was concluded that the prevailing wage system increased public construction costs by 3.4%.

On the other hand, Allen (1983) argues that in previous studies, the effect of the prevailing wage system was underestimated. This is due to the fact that when operators face a prevailing wage system, they overlooked the possibility of injecting capital instead of existing workers or replacing them with skilled workers.

Fraundorf et al. (1984) used regression analysis by investigating the overall project cost to estimate the impact of the prevailing wage system. Specifically, a method was used to compare the cost of public construction projects affected by the prevailing wage system and the cost of private construction projects not covered by the prevailing wage system. They collected data on 215 buildings built in the provinces in 1977 and 1978. About half of these buildings, 113 were federal

construction projects subject to the prevailing wage system, and the remaining 102 were private buildings subject to the prevailing wage system. They predicted the log of the total construction cost based on the size of the building, dummy variables of various construction materials, and local dummy variables. According to the results of this study, the construction cost of the public sector was 26% higher than that of private buildings due to the appropriate wage system.

However, Bilginsoy and Philips (2000) criticizes this approach. This analysis failed to control the difference between private and public construction, resulting in upward bias in estimates of the effectiveness of the prevailing wage system. They argued that the cost of building schools in British Columbia has risen by 9.4% since the introduction of the prevailing wage system, but the difference is not statistically significant. In addition, it was found that construction costs were increasing before the enforcement of the law, but decreased after the enforcement of the law. These changes over time suggest that the impact of the prevailing wage system gradually decreases. They estimate that construction costs have returned to the level before the introduction of the appropriate wage system in about 20 months. However, as they predicted, it is not clear whether the effect of the prevailing wage system will decrease. In addition, this study did not clearly suggest the reason why the effect of introducing the prevailing wage system decreases over time. It is not clear whether the business operator has acquired and adapted to new regulations or is due to other factors. However, if there are other factors, there is no reason to say that the effect of the prevailing wage system decreases over time. If operators had adapted to new regulations, the time trend would not have appeared as linear as their model. Therefore, it is concluded that the decline over time would have slowed as the impact of the prevailing wage system was partially reduced (Clark, 2005).

Azari-Rad et al. (2003) also criticizes the limitations of the findings of Fraundorf et al. (1984). As of 1982, the labor cost of construction workers in the United States is 30% of the total construction cost. However, it is unlikely that the application of the prevailing wage system alone will increase 26% of the total construction cost. Azari-Rad et al. argue that these differences can be explained as cost differences between public and private buildings. In general, it is thought that the public sector will design buildings with longer life expectancy than the private sector. Therefore, facilities and components of public buildings may be more expensive, and quality and manufacturing specifications are likely to be higher. In addition, the political and economic pressures of carrying out construction projects in the public sector are different from those in the private sector. For this reason, the cost of public buildings is likely to be higher regardless of the introduction of the prevailing wage system.

As such, early empirical studies suggest that although there are differences in the prediction range, they generally increase construction and labor costs (Kessler 2001). Since then, Sarah Dunn et al. (2005), Philips (2001), and Clark (2005) have consistently presented the results of an increase in construction costs due to the introduction of the prevailing wage system.

On the contrary, Allen and Reich (1980) and Azari-Radelal. (2003) presented the results that prevailing wages did not have a statistically significant effect on construction costs. Azari-Rad et al. (2002, 2003) reviewed the effect of the prevailing wage system on the construction cost of public and private schools. As a result of controlling the size and type of schools, construction start season, and market impact, both studies concluded that the prevailing wage system did not have a statistically significant effect on the construction cost of new schools.

This approach is reasonable because it only controls the type of school and the size of the school, but in practice, there are some limitations. This is because other factors such as the number of floors also have a great influence on school construction costs. In addition, prevailing wage system can have different effects on construction costs depending on school characteristics – some school officials in Kentucky point out that prevailing wages do not constrain for large or complex projects. The reason is that only large businesses bid for such projects, and large businesses are likely to have unions. According to the data for Kentucky's prevailing wage decision, about 61% are based on union wages. Since Kentucky's prevailing wages are the same as the wages determined by the union, the prevailing wages do not affect the project. Therefore, further work will be needed to determine whether the results of Azari-Rad et al. (2003, 2002) are maintained under other conditions (Clark, 2005).

Waddoups and May (2014) examined the effectiveness of the "responsible contractor" policy, which requires operators to provide health insurance, severance pay, apprenticeship training, or prevailing wages. As a result, it was concluded that schools built under the "responsible contractor" requirement were no more expensive than schools built without this policy.

Wial (1999), Prus (1999), Azari-Radell. (2005), Philips (2001), Mahalia (2008), Duncan (2018), Waddups and Duncan (2019) analyzed the effect of prevailing wage changes on construction costs at the state level or interstate level. As a result, it was found that the prevailing wage did not have a significant effect on the construction cost.

However, it is not easy to draw a clear conclusion due to the difference between the methodology and the analysis model that investigates the increase in construction costs. Vincent and Monkkonen (2010) using the same data source during the same period as Azari-Rad et al. (2003) reported statistically significant

wage cost effects between 8% and 13%. In addition, the reliability of the survey method conducted by the survey is a problem, and the survey results may be distorted and statistical errors may occur due to differences in positions between employers and labor unions. In fact, WHD (Wage and Hour Division) is using surveys, and the U.S. Department of Labor is using interviews. The survey results of the two institutions are different (Korea Institute of Construction Industry 2011).

3.2. Prevailing wage's impact on worker's wage

In contrast to discuss about construction costs, Early studies estimated the impact of the prevailing wage system as the difference between the prevailing wage and the actual average wage of construction workers announced by the U.S. Department of Labor. These studies agreed that the prevailing wage increased the government's labor costs for construction work, but the estimates varied widely (4% to 38%)

After these studies, many studies have agreed that the repeal of the prevailing wage system negatively affects the wages of construction workers (Clark, 2005; Harris et al, 2016; Kessler et al, 2001; Price, 2005). Most of them are studying the wages of construction workers, but Peterson (2000) and Price (2005) focus on and analyze changes not only wages but also health insurance and pensions.

Clark (2005) compared the wages of construction workers at construction sites where prevailing wages are applied and the wages of workers at sites where prevailing wages are not applied to estimate the effect of prevailing wages on actual wages. To this end, a survey was conducted on 267 companies carrying out construction projects in Kentucky state between 1999 and 2000. As a result, 60% of construction projects concluded that workers at workplaces with prevailing wages receive more wages, 12% receive more wages at workplaces without prevailing wages, and 25% do not differ in wages regardless of prevailing wages. As a result, it was found that workers with prevailing wages were about 23% higher in wages on average than those who did not. (Approximately \$3.68)

In terms of research scope, most studies since the 2000s have been striving to accurately analyze the effect of prevailing wages. Kessler et al. (2001) analyzed using the difference in difference model to statistically analyze the effect of the repeal of the prevailing wage system on wages. The analysis targets were all over the United States, and 1.4 million Census data and 1 million CPS-ORG data over 24 years were used. Through this, the effect of the repeal of the prevailing wage system on wage changes was analyzed by dividing the states that repeal the prevailing wage system and the states that did not. Price (2005) also used a similar model to analyze. He derived similar results by analyzing 1.5 million CPS-ORG data in 23 years (1979-2002) all over the United States. Both studies statistically showed that the repeal of the prevailing wage system reduced the hourly wage of construction workers by about 1-2%, although the degree varies depending on conditions such as union membership, race, and job proficiency.

However, Kessler and Price's research is meaningful in that it is an elaborate statistical analysis of the macroscopic and long-term effects of the prevailing wage system on wages, but there are some limitations. First of all, the timing of the repeal of prevailing wages varies from state to state, but the study did not clearly reflect the difference in timing. Kessler et al. (2001) analyzed the model by setting 'before the repeal of prevailing wage' as 1979 and 'after the repeal of prevailing wage' as 1993, and Price (2005) was set the former as 1977 and the later as 2002, respectively. Second, since it has been analyzed for more than 20 years, unexpected factors such as the economic recession may have an effect. Lastly, since the characteristics of the states in United States vary from state to state, the characteristics of the construction industry and construction workers may vary from state to state.

For this reason, research has recently been conducted on specific states and their neighboring states from a relatively microscopic perspective rather than on such a nationwide range of studies. In addition, the research subject is also analyzed based on detailed construction fields (highway construction, school construction, etc.) or detailed occupations rather than the entire construction sector. In addition, even in this case, the majority of them are studying construction costs and changes in the bidding process rather than wages. However, there are not many studies on areas that repeal the prevailing wage system after 2010, which is a relatively recent point.

Despite this microscopic analysis, existing studies do not analyze workers in the private and public sectors separately. It can be expected to be three reasons for this. First of all, it is necessary to consider the characteristics of the construction industry in which the project is carried out through the bidding of each project unit. This may be because it is difficult to establish systematic data on actual wages paid to individual workers in addition to the total wage set at the time of bidding. In fact, Clark (2005) conducted an additional survey of construction project implementers, not government statistical surveys. Second, in the case of the United States, unlike Korea, the private sector is very large compared to the public sector, so it can be assumed that there is no practical benefit to analyze only public sector workers separately. Finally, it may be because the current U.S. government survey does not collect enough samples for statistical use.

Chapter 4. Research Subject and Method

4.1. Research Subject: An analysis of the effect of prevailing wage on construction worker's wage

This study aims to find out whether the repeal of the prevailing wage system substantially affects the wages of construction workers in the public sector. Through the case analysis of Indiana state, we tried to present certain policy implications for the discussion on the introduction of the public sector wage system issued in Korea.

However, it should be considered that prevailing wages are the minimum wage standard enforced by the government and are applied to specific regions and occupations, but the repeal of the system has an external impact not only on the public sector subject to policy but also on other areas.

The external effects that may occur due to the repeal of the prevailing wage system can be considered as follows.

1) The repeal of the prevailing wage system can affect the wages of private workers in the same occupation and the wages of all construction workers in addition to workers in the public sector.

2) Although the number of construction workers is about 5% of the total workers, but it is also necessary to consider the possibility that the repeal of the prevailing wage system will affect the wages of workers in other occupations in the region.

3) It is also necessary to consider whether there are other unexpected factors affecting construction wages during the period by comparing them with neighboring regions (Ohio, Michigan, and Illinois) with similar geographical requirements maintaining a prevailing wage system.

Therefore, it is necessary to conduct studies focusing on construction workers in the public sector of Indiana state, but review the overall trend of construction workers' wages using statistical data.

4.2. Research Method

4.2.1. A trend analysis of wage changes in Construction Workers: Interstate and in-state analysis by terms

This study examines the changes in construction worker wages in Indiana state step by step. Statistical verification is limited due to a lack of samples, but descriptive analysis of the collected data is utilized in various ways.

Basically, CPS-ORG data is used to compare and analyze the trend and difference between the amount of change in wages and the rate of change. The period is divided into short-term (2014-2016) and long-term (2012-2019) before and after the repeal of prevailing wages. In addition, the trend and difference in the change amount and rate of change in weekly income and the number of workers are analyzed in the QCEW data, which is the auxiliary data. At this time, the same period is set to be short-term and long-term.

The object of comparison is largely divided into two layers. First, it analyzes the wage change of Indiana state construction workers before and after the repeal of prevailing wage and compares it with the wage change of construction workers in nearby areas during the same period. Through this process, external characteristics that affect wage changes can be distinguished. Indiana state, which is the subject of analysis, and the three neighboring regions have similar geographical environments, and the difference in industrial structure is not significant. Therefore, it can be assumed that the effect of changes such as macroscopic economic fluctuations on wages will be similar. The only shock that separates Indiana state from the three nearby regions is whether to repeal the prevailing wage. After all, the comparison between regions, it is possible to grasp the impact of the repeal of prevailing wage purely on the wages of construction workers in Indiana state.

The second compares wage changes in Indiana state's construction and non-construction industry workers before and after the repeal of prevailing wage. This has two effects. First of all, it is possible to grasp the economic change in the state by comparing and analyzing the overall wage in Indiana state. Second, it is possible to determine whether the repeal of prevailing wage affected wages in other jobs other than the construction industry. Through this process, it will be possible to analyze the wage trend of the construction industry in the Midwest region and the characteristics of the Indiana state construction industry.

4.2.2. A trend analysis of wage changes in Construction Workers: Flow analysis by using limited data

After macroscopic analysis of wage changes for construction workers due to the repeal of prevailing wage, the 47 public sector construction workers in Indiana state are intensive analyzed to see if the repeal of prevailing wage negatively affected the actual wages of public sector construction workers. These 47 people can be classified into 21 from 2012 to 2014 before the repeal of prevailing wage and 26 from 2016 to 2019 after the repeal.

The analysis consists of two dimensions. First, the difference between the private sector and the public sector is identified by comparing the wage changes of private and public workers during the same period. Through this, it is possible to see which sectors of the public and private sectors are more affected by the repeal of the prevailing wage system.

In addition, changes in weekly wages and working hours before and after the repeal of prevailing wage are additionally investigated for workers in the public sector. Wages and working hours are factors that determine the real income of workers. In general, it is difficult for workers to flexibly reduce consumption according to wage changes in short time. Therefore, if wages decrease, it can be assumed that workers will increase working hours to preserve real income. Through this, it is intended to confirm that the repeal of prevailing wage can negatively affect the actual wages and lives of workers.

4.3. Collecting Data: CPS–ORG and QCEW data

Data used in the study utilizes Current Population Survey Outgoing Rotation Groups (CPS-ORG) data, which is annually investigated by the U.S. Department of Labor Bureau of Labor Statistics (BLS). This is a monthly household survey to measure labor market participation rate and employment and so on, targeting about 60,000 households. This survey provides comprehensive data on labor market participation, employment, unemployment (such as duration), occupation, working

hours, income, and other demographic characteristics. The main analysis target, wages, uses real hourly wages converted to constant in 2019 dollars.

The geographic subjects are Indiana, and the comparative states are the neighboring three states of Ohio, Michigan, and Illinois. These states are adjacent to Indiana in the Midwest region.

<Picture 2: Regional classification in United States>



The period of research is analyzed for 3 years from 2012 to 2014 and 4 years from 2016 to 2019, as of 2015, the time of repeal of prevailing wages in Indiana state.

Among the CPS-ORG data from 2012-2014 and 2016-2019, a total of 916 construction workers in Indiana state are eligible, of which 47 are public sector workers and 914 are private sector workers. A total of 3,916 construction workers lives in nearby three states.

<Table 5: CPS-ORG sample number of construction worker by region and period>

	INDIANA		OTHERS (OHIO, MICHIGAN, ILLINOIS)	
	Before Repeal (12~14)	After Repeal (16~19)	Before Repeal (12~14)	After Repeal (16~19)
PUBLIC	21	26	1,712	2,249
PRIVATE	380	534		
TOTAL	401	560	1,712	2,249

In addition, Quarterly Census of Employment and Wages (QCEW), which is published quarterly by the U.S. Department of Labor Bureau of Labor Statistics (BLS), is also used. Unlike CPS-ORG data, which is a household survey, this data is published based on data reported by employers. It covers more than 95 percent of U.S. jobs. This can be used to understand trends in employment rates, wages, etc. by region and industry.

Chapter 5. Research Result

5.1. Analysis of wage changes for construction workers

5.1.1. Changes in wages of overall construction workers before and after the repeal of prevailing wage

1) Changes in the average of real hourly wages

According to the Current Population Survey Outgoing Rotation Groups (CPS-ORG) data, the real hourly wage of construction workers decreased by about 2 percent due to the repeal of prevailing wage. Table 6 shows the average annual real hourly wage in Indiana state from 2012 to 2019. (Excluding 2015 when the appropriate wage system was repealed) Wage in the table is real hourly wage (real hourly wages converted to constant in 2019 dollars), Change is wage change compared to the previous year, and N is the number of samples.

According to the table, in the short run, the repeal of prevailing wage negatively affected hourly real wages. Wage decreased by \$0.4 and \$0.53 in period from 2013 to 2014 and from 2014 to 2016, respectively, but increased significantly to \$0.35 and \$3.74 in period from 2016 to 2017 and from 2017 to 2018, respectively. Although it decreased by \$1.23 in period from 2018 to 2019, it appears that real hourly wages have increased even after the repeal of prevailing wage in the long run.

<Table 6: Annual changes of construction worker hourly wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
WAGE	25.44	26.43	26.03	25.50	25.85	29.59	28.36
CHANGE		0.99	-0.4	-0.53	0.35	3.74	-1.23
N	125	131	144	159	135	128	137

On the other hand, the neighboring states of Ohio, Michigan, and Illinois were not affected by the repeal of prevailing wage in Indiana state. Table 7 shows the average annual real hourly wage in nearby areas from 2012 to 2019. (Excluding 2015 when the prevailing wage system was repealed) Wage in the table is real hourly wage (real hourly wages converted to constant in 2019 dollars), Change is wage change compared to the previous year, and N is the number of samples. According to the table, it decreased by \$1.67 in 2013, but continued to increase until 2018. In this region, real wages also decreased by \$0.98 in 2019.

<Table 7: Annual changes of construction worker hourly wage in three neighboring states from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
MEAN	27.72	26.05	27.27	28.25	28.27	28.61	27.63
CHANGE		-1.67	1.22	0.98	0.02	0.34	-0.98
N	546	585	581	611	566	556	516

Graph 1 shows annual real hourly wage changes in Indiana state and neighboring areas. As shown in Box (1), real wages in nearby areas increased between 2014 and 2016, while real wages in Indiana state are rather decreasing. This decoupling can be seen as evidence that the repeal of prevailing wage affects the real hourly wage of construction workers.

On the other hand, as shown in Box (2), Indiana state's real wage growth rate from 2017 to 2018 was more than 10 times greater than that of neighboring areas. In addition, Indiana state's decline in 2019 was greater than that of neighboring areas, but Indiana's wages, which repealed prevailing wages, were higher than those of neighboring areas. Wages in neighboring areas are higher than in Indiana, as opposed to 2012. The reason is not clear from the data so far. However, due to the repeal of prevailing wages, the elasticity of wages for construction workers in

Indiana state may have increased, resulting in overshooting of wages. Or it may not appear in the data, but it may be the effect of a short-term external shock in 2017. Additional analysis is needed.

<Graph 1: Annual changes of construction worker hourly wage from 2012 to 2019>

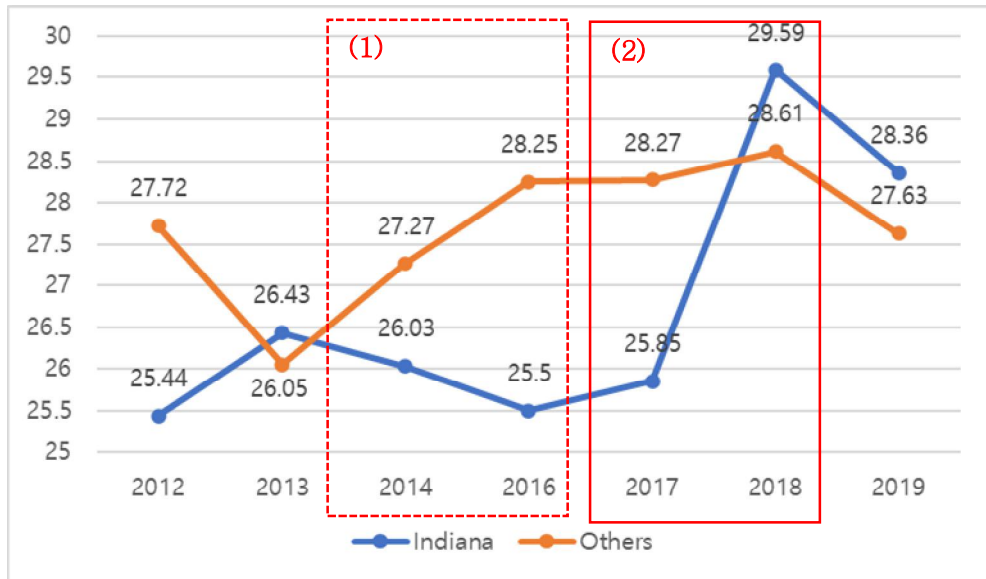


Table 8 compares short-term wage changes for one year by dividing Indiana's construction workers into experimental groups and nearby construction workers into control groups to confirm the short-term effect of repealing prevailing wages. The "Before repeal" is in 2014, and the "After repeal" is 2016. As a result, the experimental group Indiana state decreased by 2.04% during the same period, while the control group nearby increased by 3.59%. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually decreased by 5.63%.

<Table 8: The effect of repealing prevailing wage on construction worker hourly wage in Indiana and other states from 2014 to 2016>

	BEFORE REPEAL	AFTER REPEAL	PERCENTAGE DIFFERENCE
EXPERIMENT	26.03	25.5	-2.04%
CONTROL	27.27	28.25	3.59%
DID			-5.63%

Table 9 compares long-term wage changes by dividing Indiana's construction workers into experimental groups and nearby construction workers into control groups to confirm the long-term effect of repealing prevailing wages. The “Before Repeal” is three years from 2012 to 2014, and the “After repeal” is four years from 2016 to 2019. As a result, in the long run, wages in Indiana, the experimental group, increased by 4.77% compared to 4.48% in the nearby area, the control group. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually increased by 0.29%.

<Table 9: The effect of repealing prevailing wage on construction worker hourly wage in Indiana and other states from 2012 to 2019>

	BEFORE REPEAL (12~14)	AFTER REPEAL (16~19)	PERCENTAGE DIFFERENCE
INDIANA	25.98	27.22	4.77%
OTHERS	26.99	28.20	4.48%
DID			0.29%

This result can be read as meaning that the repeal of the prevailing wage system increases wages in the long run, which is the opposite of the short-term result of Table 8. This seems to be a major factor in the rapid increase in wages in 2017, as shown in box (2) of Graph 1. In order to cross-verify contradictions arising from short-term and long-term data, additional analyzation is

needed. Wage changes are analyzed through QCEW data below.

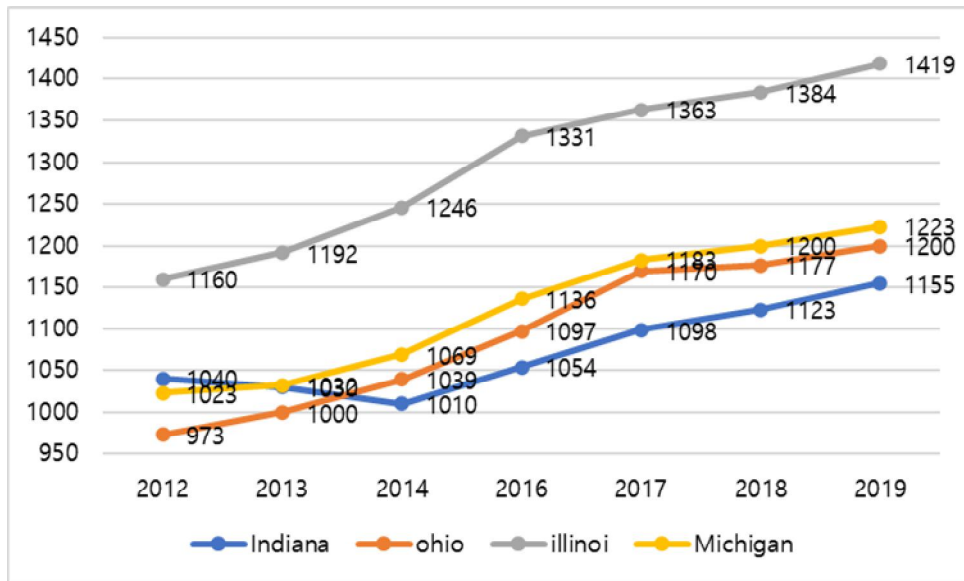
2) Trends in annual weekly income changes (QCEW Data)

Table 10 compares the annual average weekly income of Indiana state construction worker and three neighboring states construction worker by year. (Excluding 2015 when the prevailing wage system was repealed) Graph 2 is a visualization and comparison of the data in Table 10. Except for Indiana state, the three neighboring states continued to increase their annual average weekly income of construction worker for all periods from 2012. On the other hand, Indiana's annual average weekly income decreased during the 2012-2014 period, but after 2014, its annual average weekly income continued to increase despite the repeal of prevailing wages.

<Table 10: Construction worker annual weekly income in Indiana and other states from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
INDIANA	1,040	1,030	1,010	1,054	1,098	1,123	1,155
OHIO	973	1,000	1,039	1,097	1,170	1,177	1,200
ILLINOI	1,160	1,192	1,246	1,331	1,363	1,384	1,419
MICHIGAN	1,023	1,032	1,069	1,136	1,183	1,200	1,223

<Graph 2: Construction worker annual weekly income in Indiana and other states from 2012 to 2019>



All four states are same in that annual average income was increased, but the average annual weekly income growth rate differed by region. Table 11 compares the annual average weekly income growth rate for each state before and after the repeal of prevailing wage system. Depending on the period, it was divided into short-terms from 2014 to 2016 and long-terms from 2012 to 2019. Indiana's annual average weekly income growth rate was 4.36% for the short term and 11.06% for the long term as of 2015, when the prevailing wage was repealed. This is the lowest one among the four regions in both the short and long term. Compared to Illinois state, which has the highest growth rate, the short-term growth rate in Indiana state is only about 64% and the long-term is about 49%. As such, Indiana's annual average weekly income growth rate is significantly low, and this result can be said to have had some impact on the repeal of prevailing wage.

On the other hand, in order to find out the effect of the repeal of prevailing wages on the entire construction industry, additional changes in the number of construction workers are compared. If competition in labor market has increased due to the increase in the number of construction workers, there is a possibility that the average annual weekly income will decrease even if there is no repeal of prevailing wages.

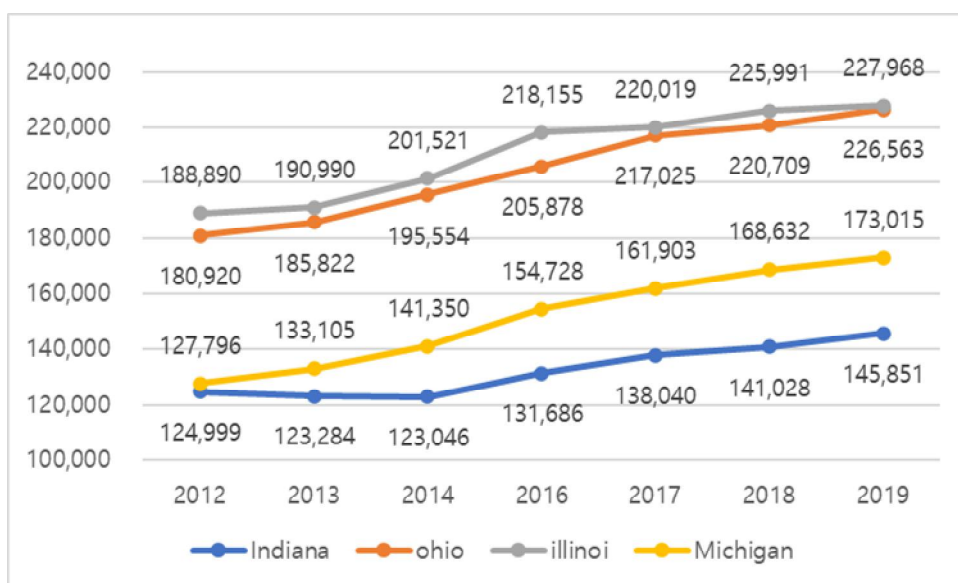
<Table 11: Construction worker annual weekly wage growth rate in Indiana and other states from 2012 to 2019>

	LONG TERM (12~19)	SHORT TERM (14~16)
INDIANA	111.06%	104.36%
OHIO	123.33%	105.58%
ILLINOI	122.33%	106.82%
MICHIGAN	119.55%	106.27%

Table 12 shows the number of construction workers in Indiana state and nearby areas from 2012 to 2019. (Excluding 2015 when the appropriate wage system was abolished) Graph 3 visualized Table 12. According to this, the change in the number of construction workers in these four states is consistent with the direction of change in annual weekly income. Three states except for Indiana, the number of construction workers in all periods has continued to increase since 2012. Indiana state's number of construction workers decreased during the 2012-2014

period, but after 2014, the number of construction workers continued to increase despite the repeal of prevailing wage.

<Graph 3: Annual employees in Indiana and other states from 2012 to 2019>



<Table 12: Annual employees in Indiana and other states from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
INDIANA	124,999	123,284	123,046	131,686	138,040	141,028	145,851
OHIO	180,920	185,822	195,554	205,878	217,025	220,709	226,563
ILLINOI	188,890	190,990	201,521	218,155	220,019	225,991	227,968
MICHIGAN	127,796	133,105	141,350	154,728	161,903	168,632	173,015

There were also regional differences in the growth rate of construction workers. Table 13 compares the growth rate of the number of construction workers by state before and after the repeal of prevailing wage system in Indiana state. Depending on the period, it was divided into short-terms from 2014 to 2016 and long-terms from 2012 to 2019. Indiana's construction worker growth rate was 7.2% in the short term and 16.68% in the long term as of 2015, when the prevailing wage was repealed. Among these four regions, it ranks third in the short term and fourth in the long term. Compared to the growth rate of Michigan, which has the highest growth rate, the short-term growth rate in Indiana state is only about 74% and the long-term is only about 47%.

<Table 13: Annual employees growth rate in Indiana and other states from 2012 to 2019>

	GROWTH RATE (12~19)	GROWTH RATE (14~16)
INDIANA	116.68%	107.02%
OHIO	125.23%	105.28%
ILLINOI	120.69%	108.25%
MICHIGAN	135.38%	109.46%

According to the results of the QCEW data analysis before and after the repeal of prevailing wage, the average annual weekly income of Indiana state construction workers was second out of four regions as of 2012, but became the lowest in 2019. This is because that the annual average weekly income growth rate was also the lowest among the four regions. The number of construction workers in Indiana state was the smallest compared to nearby areas, and the growth rate was also low. This shows that the repeal of prevailing wages negatively affected Indiana's construction labor market.

3) Conclusion

Summarizing the results of the CPS-ORG data analysis from Table 6 to Table 9, Indiana state had a different pattern of changes in real hourly wages from neighboring areas as of 2015 when the prevailing wage was repealed. In the short term, real hourly wages decreased, but in the long term, these increased. In 2016, shortly after the repeal of the prevailing wage system, Indiana state construction workers' real hourly wages decreased 2.04% (-0.53 dollars) year-on-year to \$25.55. This was the opposite of the neighboring areas, which increased by 3.59% (+0.98 dollars) during the same period. As a result of adjusting the difference in difference method reflecting regional differences, Indiana's real hourly wage decreased by 5.63%. On the other hand, from the long-term perspective of 2012-2019 based on the repeal of prevailing wages, Indiana's real hourly wages were higher, and the increase rate of real hourly wages was higher. There is a contradiction in short- and long-term analysis in CPS-ORG data, which seems to be the result of a significant increase in real hourly wages in Indiana state in 2017.

In order to significantly utilize these analysis results, additional data review is required. Therefore, QCEW data was used as an auxiliary to additionally confirm the income change of construction workers of Indiana state. Summarizing the results of the analysis from Table 10 to Table 13, all four regions, including Indiana, saw their annual average weekly income of construction workers continue to increase since 2014, but Indiana's growth rate was significantly lower. Indiana's annual average weekly wage growth rate was 4.36% for the short term and 11.06% for the long term as of 2015, when the prevailing wage system was repealed. This is the lowest compared to neighboring regions. And compared to the states with the highest growth rate, Indiana state growth rate is about 64% in the short term and 49% in the long term. And also, Indiana has the lowest number of construction workers compare to neighbor areas, and the growth rate is also low as of 2015.

Analyzing the above data, it can be concluded that the repeal of the prevailing wage system negatively affects the actual wages of construction workers, despite the long-term rise in real hourly wages in Indiana state. The rationale is as follows. First of all, in the short term, the decline in real hourly wage was clearly shown. In addition, in the long run, the number of workers in the construction industry and their income grew relatively less than in other regions.

5.1.2. Changes in wages for construction and non-construction workers in Indiana state before and after the repeal of prevailing wage

1) Changes in real hourly wages

According to the Current Population Survey Outgoing Rotation Groups (CPS-ORG) data, the real hourly wage of construction workers decreased by about 2 percent due to the repeal of prevailing wages. Table 14 shows the average annual real hourly wage in Indiana state from 2012 to 2019. (Excluding 2015 when the prevailing wage system was repealed) Wage in the table is real hourly wage (real hourly wages converted to constant in 2019 dollars), Change is wage change compared to the previous year, and N is the number of samples.

According to the table, it decreased by \$0.4 and \$0.53 in period from 2013 to 2014 and from 2014 to 2016, respectively, but increased significantly to \$0.35 and \$3.74 in period from 2016 to 2017 and from 2017 to 2018, respectively. Although it decreased by \$1.23 from 2018 to 2019, it appears that real hourly wages have increased even after the repeal of prevailing wages in the long run.

<Table14: Annual changes of construction worker hourly wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
WAGE	25.44	26.43	26.03	25.50	25.85	29.59	28.36
CHANGE		0.99	-0.4	-0.53	0.35	3.74	-1.23
N	125	131	144	159	135	128	137

On the other hand, in the case of occupations other than the construction industry, it was found that the repeal of prevailing wages was not affected at all. Table 15 shows the average annual real hourly wage in non-construction industry from 2012 to 2019. (Excluding 2015 when the prevailing wage system was repealed) Wage in the table is real hourly wage (real hourly wages converted to constant in 2019 dollars), Change is wage change compared to the previous year,

and N is the number of samples. It decreased by \$0.66 in period from 2013 to 2014, but after then, it continues to increase until 2018. Real wages in period from 2018 to 2019 decreased slightly to \$0.13.

<Table15: Annual changes of non–construction worker hourly wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
MEAN	22.55	22.98	22.32	22.94	23.80	24.26	24.13
CHANGE		0.43	−0.66	0.62	0.86	0.46	−0.13
N	2,401	2,361	2,451	2,689	2,733	2,712	2,482

Graph 4 is a visualization of Table 14 and Table 15. From this, it can be seen that the change in real hourly wages of construction and non-construction industry in Indiana state is the same except for the period 2014-2016 before and after the repeal of the prevailing wage. In the non-construction industry, real hourly wages continued to increase from 2016 to 2018 despite the repeal of prevailing wage in 2015. On the other hand, in the case of the construction industry, real hourly wages decreased in the short term from 2014 to 2016, right after the repeal of the prevailing wage. Therefore, it can be easily seen that the repeal of the prevailing wage system negatively affected the real hourly wage of construction workers.

<Graph 4: Annual changes of Indiana state worker hourly wage from 2012 to 2019>

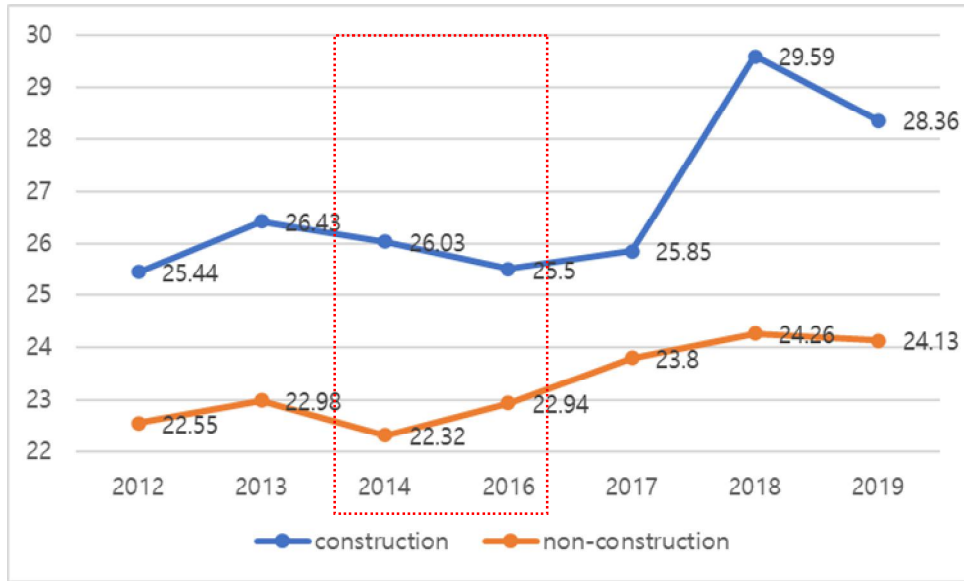


Table 16 compared short-term wage changes in the year before and after 2015, when prevailing wages were repealed, construction workers in Indiana state were classified as experimental groups and workers in non-construction industry were classified as control groups. The "Before repeal" is in 2014, and the "After repeal" is 2016. As a result, it was found that the experimental group, the construction industry, decreased by 2.04%, while the control group, the non-construction industry, increased by 2.78%. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually decreased by 4.82%.

<Table 16: The effect of repealing prevailing wage on construction worker hourly wage in Indiana and other states from 2014 to 2016>

	BEFORE REPEAL	AFTER REPEAL	PERCENTAGE DIFFERENCE
EXPERIMENT	26.03	25.50	-2.04%
CONTROL	22.32	22.94	2.78%
DID			-4.82%

Table 17 compared short-term wage changes in the year before

and after 2015, when prevailing wages were repealed, construction workers in Indiana state were classified as experimental groups and workers in non-construction industry were classified as control groups. “Before repeal” is from 2012 to 2014, and “After repeal” is from 2016 to 2019. As a result, the experimental group, the construction industry, increased by 4.77% during the same period, while the control group, the non-construction industry, increased by 5.13%. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually decreased by 0.36%.

<Table 17: The effect of repealing prevailing wage on construction worker hourly wage in Indiana and other states from 2012 to 2019>

	BEFORE REPEAL (12~14)	AFTER REPEAL (16~19)	PERCENTAGE DIFFERENCE
CONSTRUCTION	25.98	27.22	4.77%
OTHERS	22.61	23.77	5.13%
DID			-0.36%

Compared to other sector in Indiana state, it can be seen that the repeal of the prevailing wage system had a negative impact on both long-term and short-term wages of construction workers. However, in the long run, the impact of the repeal of prevailing wages seems to have decreased. On the other hand, it did not affect the non-construction industry both long-term and short-term too.

2) Trends in annual weekly income changes (QCEW Data)

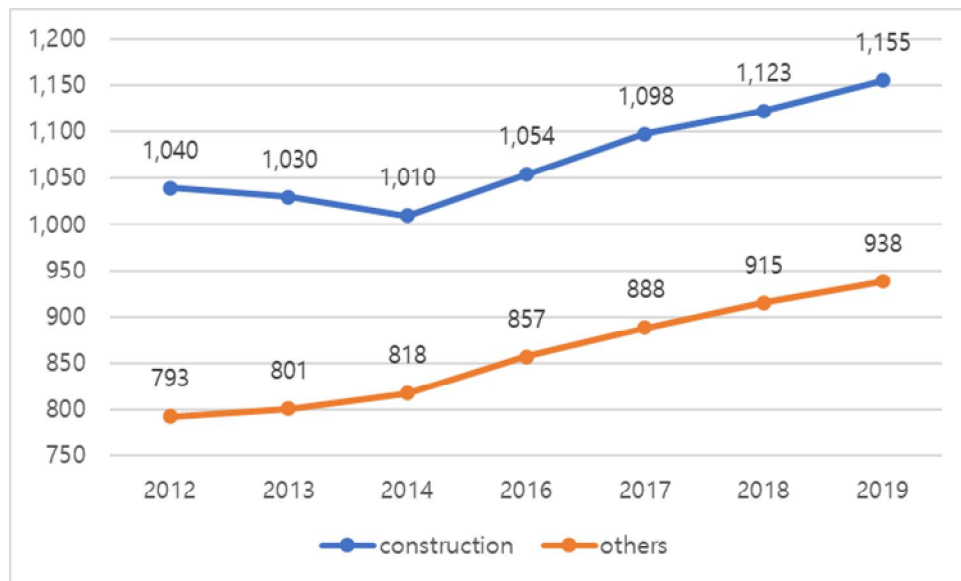
Table 18 shows the average annual weekly income of Indiana state workers divided into construction and non-construction industries by year. Graph 5 is the

data visualized and compared with the data in Table 18. In the non-construction industry, the worker's average annual weekly income for all periods has continued to increase since 2012. On the other hand, construction worker's annual average weekly income decreased during the 2012-2014 period, but after 2014, its annual average weekly income continued to increase despite the repeal of prevailing wage.

<Table 18: Annual weekly wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
CONSTRUCTION	1,040	1,030	1,010	1,054	1,098	1,123	1,155
OTHERS	793	801	818	857	888	915	938

<Graph 5: Annual weekly income in Indiana and other states from 2012 to 2019>



However, there was a slight difference between the construction industry and the non-construction industry in the annual average weekly income growth rate.

Table 19 shows the average annual weekly income growth rate of Indiana state workers divided into construction and non-construction industries by the short-term 2014-2016 and the long-term 2012-2019.

As of 2015, when the prevailing wage system was repealed, the growth rate of the construction industry was lower than that of the non-construction industry in both the short-term 2014-2016 and the long-term 2012-2019.

Summarizing the results of the QCEW data analysis before and after the repeal of prevailing wage, both construction and non-construction workers have the same direction of change in their annual average weekly income since 2014. In addition, the growth rate of weekly income was higher in the non-construction industry than in the construction industry. Although the industrial difference is small compared to the regional differences analyzed in 5.1, it is the same that it shows that the repeal of prevailing wage negatively affected Indiana's construction labor market.

<Table 19: Annual weekly wage growth rate in Indiana state from 2012 to 2019>

	LONG TERM (12~19)	SHORT TERM (14~16)
CONSTRUCTION	111.06%	104.36%
OTHERS	118.28%	104.77%

3) Conclusion

Summarizing the results of the CPS-ORG data analysis from Table 14 to Table 17, Indiana's construction industry was able to clearly observe the effect of the repeal of prevailing wage compared to non-construction industries. In both the construction and non-construction industries, the pattern of changes in real hourly wage was the same overall, but only in 2014-2016, immediately after the repeal of the prevailing wage, appeared in the opposite direction. In 2016, shortly after the

repeal of the prevailing wage system, the real hourly wage of Indiana construction workers decreased by 2.04% (-0.53 dollars) compared to the previous year. This was the opposite result of the non-construction industry, which increased by 2.78% (+0.62 dollars) during the same period. As a result of adjusting the difference in difference method reflecting industrial differences, the real hourly wage of Indiana construction workers decreased by 4.82%. From a long-term perspective from 2012 to 2019, based on the repeal of prevailing wage, the rate of increase in real hourly wage in the non-construction industry worker was also higher than construction worker. However, in the case of the long term, the amount of increase was less than in the short term.

Based on the above results, QCEW data was used as an auxiliary to additionally confirm the income change of construction workers. Summarizing the results of the analysis from Table 18 to Table 19, Indiana's annual average weekly income of construction workers has continued to increase since 2014 in both the construction and non-construction industries, but the growth rate of the construction industry has been low. However, unlike CPS-ORG data analysis, the long-term income growth rate was higher than in the short term. As of 2015, when the prevailing wage system was repealed, the average annual weekly wage increase rate was 4.36% for the short term and 11.06% for the long term. This is lower than that of the non-construction industry, which is about 99.7% of non-construction worker in the short term and 93% in the long term.

5.2. Intensive study of Indiana state construction workers in the public sector

5.2.1. Changes in wages for public and private sector construction workers in Indiana state before and after the repeal of prevailing wage

1) General characteristic of public sector construction worker

In the following, an additional study was conducted by dividing 47 workers in the public sector in Indiana state into 21 workers in 2012-2014 and 26 workers in 2016-2019, the period before and after the repeal of prevailing wages. General characteristic of these people is following.

Their average age is 47.89 years old, with the youngest being 27 and the oldest being 67. By gender, there were 42 men, 89.36%, and 5 women, 10.64%. By race, there are 42 white people, 89.36%, there are 2 black people, 4.26%, 3 Hispanics, 6.38%, and there was no Asian. Looking at the marital status, 26 people, 55.32%, are married, and 21 people, 44.68%, are not married (including divorced). On the basis of the children, 13 people, 27.66%, had children, and 34 people, 72.34%, had no children. By education status, 30 students, 63.83%, final educational background are high school graduates, 16 students, 34.04%, are college graduates, and 1 student, 2.13%, is master's or higher.

<Table 20. General characteristic of 47 public sector construction worker>

CONTENTS	
AGE	Mean: 47.89 years old, Min: 27, Max: 67
SEX	Male: 42 (89.36%), Female: 5 (10.64%)
RACE	White: 42 (89.36%), Black: 2 (4.26%), Hispanic: 3 (6.83%)
MARRIED	Yes: 26 (55.32%), No: 21 (44.68%)
CHILD	Yes: 13 (27.66%), No: 34 (72.34%)
EDUCATION	High School: 30 (63.83%), College: 16 (34.04%), Advanced: 1

| (2.13%)

2) Changes in real hourly wages

Tables 21 and 22 show real hourly wages by dividing Indiana's entire construction workers into public and private sectors by year from 2012 to 2019. (Excluding 2015 when the appropriate wage system was abolished)

In the case of workers in the public sector, there is a limitation that it is difficult to give statistical meaning in this study because the number of samples is very limited. However, through a basic analysis of these limited sample, it can be found the basic flow of wage changes before and after the repeal of prevailing wage. Wage in the table is the real hourly wage (real hourly wages converted to constant in 2019 dollars), Change is the amount of change in wages compared to the previous year, and N is the number of samples.

Table 21 shows the real hourly wage of construction workers in the public sector. According to this, the real hourly wage from 2012 to 2017 continued to decrease, and from 2017 to 2019, it shows an increase. In particular, after 2015, when the prevailing wage was repealed, in period from 2014 to 2016 and from 2016 to 2017, it decreased by \$1.63 and \$3.65, respectively. In from 2017 to 2018 and from 2018 to 2019, it increased significantly by \$2.18 and \$6.08, respectively.

<Table 21: Annual changes of public sector construction worker wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
WAGE	26.82	23.47	22.37	20.74	17.09	19.27	25.35
CHANGE		-3.35	-1.1	-1.63	-3.65	2.18	6.08
N	7	5	9	13	6	4	3

The change in the real hourly wage of construction workers in the private sector was different from the change in the public sector. Table 21 shows the change in real hourly wages in the private sector. Real wages per hour increased from 2012 to 2013 and 2016 to 2018, and real wages per hour decreased from 2013 to 2016 and 2018 to 2019. In 2016, right after the repeal of the prevailing wage in 2015, the real hourly wage decreased by \$0.33 but increased by \$0.94 and \$3.05 from 2016 to 2017 and from 2017 to 2018, respectively.

<Table 22: Annual changes of private sector construction worker wage in Indiana state from 2012 to 2019>

	2012	2013	2014	2016	2017	2018	2019
MEAN	25.36	26.55	26.26	25.93	26.87	29.92	28.43
CHANGE		1.19	-0.29	-0.33	0.94	3.05	-1.49
N	118	126	136	146	130	124	134

Graph 6 is a visualization of Table 21 and Table 22. In the case of the private sector, wages are on the rise except for a slight drop of 1.2% from 2014 to 2016, and the repeal of prevailing wages seems to have had little negative impact on real wages per hour. On the other hand, the public sector seems to have a relatively large impact on the repeal of prevailing wages, with wages falling by nearly 25% in 2017 compared to 2014. Although wages in the public sector rose significantly from 2017 to 2019, they are still lower than those in the private sector.

The reason why wages of workers in the private sector have decreased less than those in the public sector since the repeal of the prevailing wage is not shown in the current data, but it is believed that it is due to differences in workers' skill level and productivity. This is because workers with low skill level and productivity are protected if the government defines the lower criteria of wages,

such as prevailing wages. The prevailing wage is announced by job type and skill level, and the prevailing wage announced in Indiana state in 2014 is classified into three level of skill, semi-skilled, and unskilled for 40 jobs. Among them, the only jobs that exceed the average real hourly wage of \$26.26 in the private sector are skilled classes in 25 jobs and semi-skilled classes in 2 jobs.

In the end, many of the private sector workers are skilled workers, and they already receive real hourly wages higher than the prevailing wage, so it can be seen that the wage decline did not appear significantly due to the repeal of the prevailing wage. On the contrary, in the case of public sector workers, wages have fallen significantly due to the repeal of prevailing wages as there are many workers with relatively low skill level and productivity.

<Graph 6: Annual changes of Indiana state worker wage from 2012 to 2019>

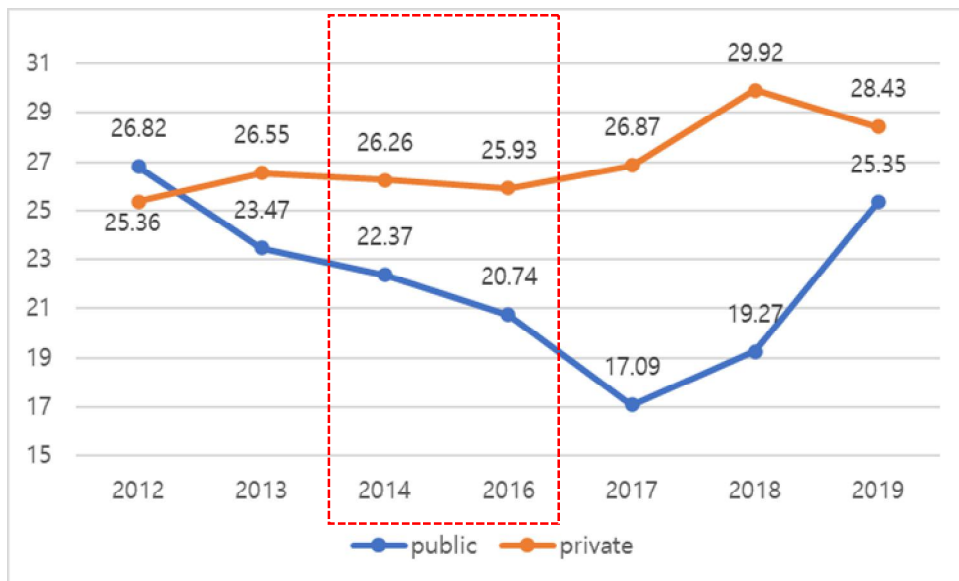


Table 23 compares short-term wage changes for one year before and after 2015 when prevailing wages were repealed by dividing Indiana public sector construction workers into experimental groups and private sector construction workers into control groups. The "Before repeal" is in 2014, and the "After repeal"

is 2016. As a result, it was found that the experimental group, the public sector, decreased by 7.29%, while the control group, the private sector, decreased by 1.26%. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually decreased by 6.03%.

<Table 23: The effect of repealing prevailing wage on construction worker hourly wage in Indiana and other states from 2014 to 2016>

	BEFORE REPEAL	AFTER REPEAL	PERCENTAGE DIFFERENCE
PUBLIC	22.37	20.74	-7.29%
PRIVATE	26.26	25.93	-1.26%
DID			-6.03%

Table 24 compares long-term wage changes based on 2015 when prevailing wages were repealed by dividing Indiana public sector construction workers into experimental groups and private sector construction workers into control groups. “Before repeal” is from 2012 to 2014, and “After repeal” is from 2016 to 2019. As a result, the experimental group, the public sector, decreased by 16.22%, while the control group, the private sector, increased by 6.25%. As a result of adjusting the wage trend in the difference in difference method, it was found that the wage of the experimental group actually decreased by 22.47%.

In conclusion, when Indiana's construction workers were divided into the public and private sectors, it can be seen that the repeal of prevailing wages had a significant negative impact on public sector workers.

<Table 24: The effect of repealing prevailing wage on construction

worker hourly wage in Indiana and other states from 2012 to 2019>

	BEFORE REPEAL (12~14)	AFTER REPEAL (16~19)	PERCENTAGE DIFFERENCE
PUBLIC	24.11	20.20	-16.22%
PRIVATE	26.08	27.71	6.25%
DID			-22.47%

3) Average weekly income change trend (QCEW Data)

In this survey, only the public sector is not separately investigated, so additional analysis using the data is impossible.

5.2.2. Additional Analysis of Construction Workers in the Public Sector

In 5.2.1, it was confirmed that the repeal of prevailing wage had a more negative impact on construction workers in the public sector than in the private sector. Table 25 shows the changes in average weekly income and weekly working hours by dividing before and after 2015 when the prevailing wage was repealed. Through this, we will analyze in detail the impact of the repeal of prevailing wages on the income and life of workers in the public sector.

1) Changes in weekly working hours

Before the repeal of the prevailing wage, 19 out of 21 construction workers in the public sector had constant weekly working hours, and the average working

hours were 39.53 hours. The other two worker had irregular working hours. On the other hand, after the repeal of the prevailing wage, all 26 construction workers had constant weekly working hours, and the average working hours increased to 39.62 hours. (The U.S. has a 40-hour workweek) In addition, it does not appear that they have found any additional jobs other than their main job, the construction industry. There was only one case in which they responded that they were doing a side job, the same as before and after the repeal of the prevailing wage.

In conclusion, it can be seen that the average weekly working hours of construction workers in the public sector increased due to the repeal of prevailing wages. In general, when wages decrease, working hours are often increased to preserve income, and the same is true for construction workers in the public sector.

2) Changes in weekly income

The average weekly income received by 21 construction workers in the public sector before the repeal of the prevailing wage was \$808.59, but the average weekly income of 26 construction workers after the repeal of the prevailing wage decreased to \$742.49. However, the average weekly rate of change was -8.17%, less than the rate of change in real wages per hour, -16.22%. This can be attributed to the increase in working hours by workers in response to the decrease in real hourly wage.

<Table 25: The effect of repealing prevailing wage on public sector construction worker weekly wage and working hour in Indiana state from 2012 to 2019>

	BEFORE REPEAL (12~14)	AFTER REPEAL (16~19)	PERCENTAGE DIFFERENCE
WEEKLY WAGE	808.59	742.49	-8.17%
(HOURLY WAGE)	24.11	20.20	-16.22%
WORKING HOUR	39.53*	39.62	0.2%

* Two out of 21 cases prior to the repeal of prevailing wage are excluded

from the calculation of working hours due to irregular working hours.

3) Conclusion

Although it is difficult to give statistical significance due to the lack of samples of public sector workers, summarizing the results of the CPS-ORG data analysis from Table 21 to Table 24, it can be seen that in Indiana state, the repeal of prevailing wages has a more negative impact on public sector construction workers. In 2016, shortly after the repeal of the prevailing wage system, Indiana's public sector construction workers' real hourly wages fell 7.29% (-1.63 dollars) year-on-year, and in 2017, they fell 17.6% (-3.65 dollars) year-on-year. On the other hand, the private sector decreased by 1.26% (-0.33 dollars) in 2016, and increased by 3.6% (+0.93 dollars) year-on-year in 2017, indicating that it was less affected than public sector worker by the repeal of prevailing wages. As a result of adjusting the results from 2014 to 2016 to reflect sectoral differences by difference in difference method, the real hourly wage of public sector construction workers in Indiana state decreased by 6.03%. From a long-term perspective from 2012 to 2019, based on the repeal of prevailing wages, the real hourly wage in the public sector fell 16.22%. As a result of adjusting the difference in difference method compared to an increase of 6.25% in the private sector, the real hourly wage in the public sector decreased by 22.47%. However, wages that have decreased since the repeal of the prevailing wage have continued to rise since 2016, but are still lower than those of the private sector.

On the other hand, weekly income and weekly working hours were investigated and analyzed for Indiana state public sector construction workers to find out in detail the impact of the repeal of prevailing wages on the public sector. Table 25 shows that the repeal of prevailing wages negatively affects the income and working hours of construction workers in the public sector. As of 2015, when the prevailing wage was repealed, weekly working hours increased by 0.2% compared to before the repeal, but the average annual weekly income decreased by 8.17%. In the end, it can be clearly seen that the repeal of the prevailing wage system had a more negative impact on wages, income, and working hours of construction workers in the public sector.

Chapter 6. Conclusion

6.1. Summary of research results

Recently, calls for improving the treatment of public service worker who have been converted to regular workers have been raised as a major issue in labor-management relations in the public sector. Accordingly, in order to improve the treatment of public service worker, the government's wage system for public sector workers is demanded, centering on the two major labor unions. In Korea, there is already a minimum wage that applies to all workers, and it is necessary to carefully review the advantages and disadvantages that may arise if an additional government wage system is designated only for workers in some occupations. Therefore, through the relatively recent case of the repeal of the prevailing wage system in the United States, tried to analyze the impact of the separate wage system set by the government on the wages and labor market of public sector workers for South Korea.

As a result of the analysis, it was found that the repeal of the prevailing wage in Indiana state negatively affected the real hourly wage of public sector construction workers. It was found that the real hourly wage due to the repeal of the prevailing wage decreased significantly immediately after the repeal of the prevailing wage system. In the long run, it was found that the degree decreased compared to the short term, but the real hourly wage decreased. In addition, it was found that it had a negative effect on the real hourly wage of construction workers in the private sector, although it was less than that of the public sector. By the way, it is difficult to give statistical significance due to the lack of samples of public sector workers.

6.2. Implications for Korea

Based on the results of a study on the effect of the repeal of prevailing wage in Indiana state on the wages of public sector workers, the following implications can be drawn for the discussion on the introduction of a wage system for each job in the public sector in Korea.

First, it was confirmed that the prevailing wage system plays a role in maintaining the high wage level of construction workers in the public sector, given that the real wage in the public sector has decreased significantly since the repeal of prevailing wage. Considering this, if Korea introduces a wage system similar to the prevailing wage in the public sector, the wages of public sector workers in the sector will rise, and even if the economy falls, the wages of the public sector will remain higher than those of the private sector. In addition, considering the political influence of public sector unions in Korean society, the wage system in the public sector is likely to be determined at a considerably higher level than that of the private sector.

Second, although there are differences in degree, wages for not only public sector workers but also private sector workers have decreased since the repeal of prevailing wage, indicating that the prevailing wage system affects wages in the private sector in the same direction as the public sector. Considering this, it can be expected that wages in the private sector as well as the public sector will increase, although there are differences in degree in the case of introducing a wage system for each job in the public sector in Korea. It can cause inflation. In addition, considering that Korea has a greater influence on the public sector than the United States, the impact of the private sector is expected to be even greater.

In conclusion, if Korea introduces a certain wage system for each type of job in the public sector, the wages of public sector workers will increase additionally regardless of changes in the labor market, and the wages of private sector workers will also rise.

6.3. Limitations of study and future research projects

This study analyzed the effect of the repeal of the prevailing wage system on the wages of construction workers in the public sector, focusing on Indiana state, and attempted to differentiate it from previous studies in terms of geography and object. However, the following limitations appeared in the process of research, and the tasks for subsequent research are presented as follows.

First, statistical verification was limited because the number of public sector samples could not be secured due to the limitations of the CPS-ORG survey itself, a method of conducting a survey of 60,000 households across the United States. As of 2019, Indiana had 1.45 million construction workers, but the sample for the year was 134 private sector workers and 3 public sector workers. In order to minimize this problem, auxiliary data were used, and additional survey analysis was conducted on weekly wages and working hours for public sector workers, but there are still limitations. Therefore, in subsequent studies, it is necessary to expand the sample subject to investigation through the cooperation of the state or construction company. Second, in terms of variable composition, this study focused on regional, occupational, and public sector, but failed to reflect various factors that could affect wage changes such as race, gender, education, and work proficiency. Therefore, in future studies, it is necessary to analyze various factors affecting wage changes to confirm their influence.

Third, this study analyzes the Midwest region of the United States, centering on Indiana state, and there is a limit to representing the entire region. Therefore, it is necessary to more accurately analyze the effect of the prevailing wage system on wages by expanding the research target to states in other regions.

Fourth, in order to use this study for recent discussions in Korea, additional consideration is needed on the differences between the construction industry and the occupations constituting public service worker. This is because there is a difference between the construction industry and the public service worker. The construction industry requires some technology, and since wages are relatively higher than other occupations in the first place. Thus, the repeal of prevailing wages has a relatively small impact on other occupations. (See Table 18 and Graph 5) On the other hand, most of the public service workers in Korea consisted in simple labor that does not require skills such as cleaning and security, and most of the wages are formed at the minimum wage level. Therefore, if only the wages of public sector workers increase due to the introduction of the government-set wage system for public service worker, the impact of this on society is expected to be greater and more diverse than construction sector in the United States. For example, there will be a demand for equity between public and private sector workers, and a demand for wage increases in other skilled occupations in which wages have been reversed for public service worker.

In the future, through studies that supplement these limitations, the impact of the government-set wage system on the actual wage and labor market of workers can be more effectively analyzed, and the accumulation of related studies can contribute to the establishment of Korean wage policies.

Abstract

본 연구에서는 미국 인디애나 주의 걱정임금 제도 폐지 사례를 통해 정부가 설정한 별도의 임금체계가 공공부문 근로자의 임금과 노동시장에 미치는 영향을 분석하고, 한국의 공공부문 임금체계 도입 논의에 대한 함의를 도출하고자 하였다. 이를 위해 인디애나 주와 인근 3개 지역, 건설업과 다른 업종, 공공부문과 민간부문을 구분하여 걱정임금 폐지 전후의 임금변화 추세를 비교 분석하였다.

연구에 사용하는 데이터는 U.S. Department of Labor Bureau of Labor Statistics (BLS)에서 매년 조사하는 Current Population Survey Outgoing Rotation Groups (CPS-ORG)에서 시간당 실질임금을 분석하였다. (2019년 물가 기준) 추가적으로 보조데이터인 Quarterly Census of Employment and Wages (QCEW) 데이터에서 주간소득과 근로자 수의 변화량과 변화율의 추세 및 차이를 분석하였다. 기간은 걱정임금 폐지를 전후로 하여 단기(2014~2016)와 장기(2012~2019)로 구분한다.

연구는 크게 건설근로자 임금 추세 분석과, 인디애나 주 공공부문 건설근로자 사례분석의 두 가지로 구분하여 진행하였다. 건설근로자 임금 추세분석은 지역, 산업 두가지 기준으로 진행하였다. 지리적 기준은 산업과 관계없는 외부적 요인을 배제하고 걱정임금 폐지가 임금에 미치는 영향을 확인하기 위해 인디애나 주와 인근 3개 주의 건설근로자의 임금변화를 비교 분석하였다. 산업적 기준은 지역 내 경기변화 등의 요인을 배제하고 걱정임금 폐지가 임금에 미치는 영향을 확인하기 위해 인디애나 주의 건설업과 다른 업종의 임금변화를 비교 분석하였다. 공공부문 건설근로자 사례분석은 공공부문 건설근로자 47명을 대상으로 진행하였다. 우선, 민간부문 건설근로자의 임금변화와 비교하여, 걱정임금 폐지가 각 부문의 임금에 미치는 영향을 분석하였다. 그리고 공공부문 근로자를 대상으로 걱정임금 폐지 전후의 주급과 근무시간 변화를 추가적

으로 분석하였다. 이를 통해 적정임금의 폐지가 근로자의 실제 임금과 생활에 미치는 영향을 확인하고자 하였다.

조사 결과, 인디애나 주의 적정임금 폐지는 건설근로자의 시간당 실질임금에 부정적인 영향을 미쳤으며, 공공부문 건설근로자에게 미친 영향이 더욱 큰 것으로 나타났다. 적정임금 폐지로 인한 시간당 실질임금은 제도 폐지 직후에 크게 감소한 것으로 나타났다. 장기적으로는 단기에 비해서는 그 정도가 줄었으나 여전히 시간당 실질임금은 감소한 것으로 나타났다. 다만, 공공부문 근로자의 샘플 수가 부족하여 통계적인 의미를 부여하기는 어렵다는 한계가 있다.

본 연구를 통해 한국에 적용할 수 있는 시사점은 다음과 같다. 첫째로, 적정임금 폐지 이후 공공부문의 실질임금이 크게 감소하는 모습을 보였다는 점에서, 적정임금 제도는 공공부문 건설근로자의 임금 수준을 높게 유지하는 역할을 하고 있다는 점을 확인하였다. 이를 감안하면, 한국에서 공공부문에 적정임금과 유사한 직종별 임금체계를 도입하는 경우 공공부문 근로자의 임금이 상승하고, 경기가 하락하여 시장의 임금이 하락하더라도 공공부문의 임금은 민간부문에 비해 높게 유지될 가능성이 높다. 두번째로, 정도의 차이는 있으나 적정임금 폐지 이후 공공부문 근로자 뿐만 아니라 민간부문 근로자의 임금도 감소하는 모습이 나타났다는 점에서, 적정임금 제도가 민간부문의 임금에도 공공부문과 동일한 영향을 미친다는 점을 알 수 있었다. 결론적으로는, 한국이 공공부문에 직종별 임금체계를 도입하는 경우 노동시장의 변화와 관계없이 공공부문 근로자의 임금이 추가적으로 상승하고, 이에 영향을 받아 민간부문 근로자의 임금도 일부 상승할 것으로 예상된다.

주요어 : 적정임금, 공공부문, 건설업

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