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Master's Thesis of Economics

How Did Pandemic and Countermeasures Affect the Labor Market?

– Empirical Analysis of South Korean Case –

코로나19와 대응 정책에 대한 고용 시장의 변화

– 한국 사례에 대한 실증 분석 –

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Graduate School of Economics
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How Did Pandemic and Countermeasures Affect the Labor Market?

– Empirical Analysis of South Korean Case –

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Submitting a master's thesis of
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Abstract

This paper examines the heterogeneity concerning changes in the labor market for the last two years by COVID-19 and compares them with the 2008 financial crisis and recent phenomena in foreign countries. The regression model of Nam and Lee (2021) is mainly used by expanding periods of panel data in use. The negative impact of the pandemic usually occurred the temporary worker, self-employed, women, the elderly, people with low education, and the industries with social necessity or face-to-face tasks in a majority. There exist industries with the pandemic's effect different by gender and weekly working hours of the laborers. However, it is uncertain whether regional heterogeneity exists and whether the intensity of COVID-19 affects the labor market.

Keyword : COVID-19, Labor market, Social distancing, Stimulus Check, Heterogeneity, Regression Analysis

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Chapter 1. Introduction

Two years have passed since the COVID-19 spread ignited the global pandemic. The virus influenced the world economy as much as the financial crisis in 2008 did. The report from International Monetary Fund (2021) reveals stagnated world economic growth in 2020 with -3.1% and -4.5% for developed countries' economies. Bank of Korea (2021), the central bank of South Korea, announced the country stepped back only with -0.9% of economic growth, which is a moderate number among all the countries. Indeed, they lost nearly 220,000 employees in a single year, which is not ignorable in scale. For the economy to overcome such economic catastrophes, policymakers introduced comprehensive financial support, and monetary authorities suppressed interest rates as a response, leading to an unprecedented level of government expenditure and monetary expansion.

Over the last two years of the pandemic and following policies, much economic research examined the precise impact of COVID-19 on the national economy and assessed the effect of relevant policies in protecting the economy from such a destructive event. In the early stage, economists attempted to measure how much the pandemic affected the labor market. In brief, their works imply that 1) there was a universal movement in the labor market of every country and 2) there is an evident distinction between current recession and that of 2008. Take the case of the United States first. Coibion et al. (2020) analyzed the dynamics of the American labor market from January to April 2020. They found that the economic impact in early 2020, followed by the disappearance of 20 million jobs and a 7%p decrease in labor market participation rate, was somewhat more prominent than that of the 2008 financial crisis. In addition, Albanesi and Kim (2021) checked if there is any difference between the current recession and historical ones from

various perspectives. In a general recession, women tend to supply more labor in case of a recession in order to prepare decrease in household income. (Lundberg and Shelly, 1985) However, they lost more jobs than men during the pandemic. Also, the service sector, the usually counter-cyclical industry with female-majority, experienced a contraction in demand for goods and labor supply more than most other industries. It contradicts Albanesi's (2019) argument that women's labor supply is mainly countercyclical. Other developed countries had economic recessions similar to America's. According to Kikuchi et al. (2020), Japan's labor market fluctuates much in the same fashion. Moreover, they mentioned that reduction in employment and wage usually happened to temporary, young workers in an industry where daily tasks are done face-to-face. Analogous shock also emerged in the European labor market, damaging self-employed workers in the United Kingdom and Germany in terms of the availability of job positions and sales.

Unfortunately, COVID-19 kept spreading worldwide, troubling labor market participants and motivated governments to put more effort into protecting their citizens. As a result, additional government expenditure was endorsed, and medical policies such as social distancing, tracking patients, and funding vaccine production persisted. Therefore, researchers focused on the ex-post assessment of countermeasures against COVID-19 and provided comments. A representative work would be Farrell et al. (2020), which describes how the Biden administration's action to distribute unemployment benefits to more people promptly affected aggregate consumption. Another critical case is Bhattarai et al. (2020), which examines which combination of amount and distributive method of government expenditure can generate the best economic outcome. Also, Korea Development Institute (2020) estimated the effect of stimulus checks by utilizing sales in credit card payments.
Apart from the works mentioned above, there are numerous researches about the impact of the pandemic on the economy. Nevertheless, they own limitations in that most of them consider

time series data ranging a year or so, while the pandemic is still ongoing for over two years. Not only did the pandemic-led recession last longer, but the pandemic also produced several shocks in addition due to the emergence of deadly variants and a surging number of positive cases. In response, households, firms, and governments had to repeat diminishing and resuming economic activities. It is one of the unique traits of the recession that occurred by COVID-19, compared to the other economic busts in history where single or multiple shocks emerged in an initial period and abated throughout the long term. Several minor shocks of COVID-19 occurred over a year, so studies conducted during the pandemic are insufficient to analyze the overall effect of COVID-19 on the economy. Therefore, reusing an identical methodology with a more extended time series in 2020 and 2021 can rediscover the short-term impact of COVID-19 and find new implications about the impact and dynamics in the long term as well.

Regarding new implications, it is possible to find a unique aspect of the current recession, especially concerning heterogeneity. In the literature prior to the pandemic, Doepke and Tertilt (2016) argue that male labor supply is much more procyclical than female's because the majority of male workers participate in the highly procyclical industry while female workers do not. On the other hand, Alon et al. (2020) point out that the pandemic resulted in a comparatively more decrease in females' labor supply, which is contrary to the trend during the recession before 2020. They attribute the phenomenon to lockdowns and the prevalence of working from home. Such change is not affordable for the industries in which women usually participate, so firms decide not to innovate their way of working and not to maintain employment but to lay them off. In this sense, COVID-19 triggered characteristic shock, and this shock probably reveals heterogeneity in terms of age, education level, and a variety of aspects of the household as well as gender.

This paper, therefore, explores a new aspect of literature on the economic effect of COVID-19. By studying its effect on the

labor market for the last two years, we will compare the labor market trend of Korea with that of other developed countries from relevant studies and see if the COVID shock affected diverse groups of laborers in different fashions. Furthermore, we will briefly check whether governmental policies related to the pandemic influenced the Korean labor market. In doing so, this study can be a cornerstone of further precise examination of the long-term effect of COVID-19 and related political measures on the economy. Note that this paper's primary objective is observing the dynamics in the labor market with various scopes, so the regression methodologies do not fully resolve endogeneity between variables.

The contents of this paper are listed as the following. In Section 2, we look over data used for regression, focusing on its composition and how the relevant studies employed them. In Section 3, the regression model is introduced followed by in-depth details about what kind of data is selected and how it is to be utilized. Regarding Section 4, we will interpret the results with graphs and tables by looking at each category: gender, age group, education, region, and the other factors. Then, we may examine the path of the labor market of each group during the pandemic. In the end, Section 5 concludes the paper and hints at possibilities for further research.

To leak the result, we find that temporary and self-employed workers are damaged more severely than any other types of workers in the labor market. In terms of other heterogeneous aspects, women, youths, and the old tend to suffer more from the pandemic. For the academic background, the less the worker learns, the more he or she gets negative impact from the pandemic. A polarized consequence between industry sectors is found. Most of them reduced employment while the health sector expanded in response to the pandemic. From a perspective of weekly working hours, employment for less than 36 hours a week significantly increased, but a job with over 53 hours a week decreased.

Chapter 2. Data

This paper's primary data is collected from the original panel data named ‘Labor Population Survey’ of MicroData Integrated Service (MDIS) (2022) of Statistics Korea. It comprises a monthly survey from the constant number of sample households, adjusted to represent the entire population, and then posted on their website. It provides detailed information about individuals, such as participating industry, working hours, reasons for unemployment, etc., which is an appropriate series of data to observe dynamics in the labor market. Unfortunately, each individual’s information is anonymous, and sensitive personal information like residence area, amount of income, and wealth is omitted. In case we need such deleted data, we use the aggregate level data from the Korean Statistical Information Service (KOSIS) (2022) of Statistics Korea as an alternative source. One of the critical parts of the MDIS panel data is ‘weight.’ It is essential when interpreting the society through panel data since the composition of the sample and the population do not perfectly coincide. For example, the age distribution of the sample is rarely identical to that of the original population of the society. Thus, the panel data producer assigns weight to each individual with a specific characteristic, and weight times 1,000 would be the number of populations with shared traits. By using the weights, this paper imports weight-adjusted numbers from the panel data to provide a trustworthy analysis.

For data about coronavirus, we use the number of positive COVID cases and summarized information on the COVID-19 countermeasure. The former refers to daily new cases of COVID-19 written by the Ministry of Health and Welfare and distributed by Kdx.kr (2022). The statistic was introduced in December 2019 when the first infected patient was found in Korea, and it has been renewed every day since January 2020. This paper turns the daily data from January 2020 into monthly form and uses the number of

monthly new cases and the accumulative number of monthly cases for the regression.

The representative component of preventive measures against COVID-19 in South Korea would be 'Social Distancing' and 'Stimulus Check.' The social distancing policy consists of several levels according to the pandemic's severity. The actual level was designated by Central Disaster and Safety Countermeasures Headquarters (CDSCHQ) every one or two weeks, initiated in January 2020 and officially lifted in May 2022. The scheme was at first composed of three levels: levels 1, 2, and 3. After a few months, a new level 2.5 between levels 2 and 3 was introduced, and the system underwent reform with new criteria and a new numbering: 1, 2, 3, and 4. The level was assigned uniformly to all the regions in the beginning, but some regions offered a lower level occasionally, and sometimes it was changed within days due to spark increase in daily new cases. In more detail, there was a series of regulations limiting the number of people per table at the restaurant, places to mandate wearing a facial mask, etc., and they were adjusted numerous times according to the trend of daily new cases as well. In an effort to deal with such flexibility, this paper considers the social distancing level of Seoul and surrounding provinces. It is because more than half of the total population of South Korea lives in the area, and domestic transportation was not prohibited at all throughout the pandemic period. Also, we use the level of social distancing before the reform for consistency. Since the name and criteria were revised by reform, we match the levels of the two schemes, following similarities between the two levels. For instance, level 2.5 before reform is closest to level 3 after reform, so this paper assumes level 3 after reform as level 2.5. (For more detail, see Table 1.1 and Table 1.2.)

Stimulus check has been distributed five times in total, but such cash distribution can be distinguished into 1st and 2nd through fifth. According to the Ministry of Culture, Sport, and Tourism (2021), the first one was available to all the households regardless of their income, wealth, and any other condition, while the other

provisions were offered selectively to particular households and firms below a specific income level or firm size. (Detailed description is included in Table 1.3.) The common aspect of the stimulus package series is that the benefit was offered in a non-monetary form like credit card points. It also has a limited place of usage; people could not spend their points at stores of conglomerates chain, but only small or middle-sized stores or traditional marketplaces. The most conclusive characteristic of the benefit is that it was designed to expire after 1~2 months from receipt so that people would spend all the points in the short term or lose the rest after the expiration date. This paper focuses on this aspect. We divide all 24 months in 2020 and 2021 into two groups: months with benefit and no benefit to assess the stimulus package's efficacy in boosting the labor market. In Table 1.3, the usable period is from the first month when the package is released to two months after when it is about to be expired.

Also, we need to determine whether each month was either an economic boom or a bust. The main reason is that it is one of the goals of this paper to compare the dynamics of the labor market in two distinct periods: 2008 and 2020, as Nam and Lee (2021) did. Since their work took into account only two and a half years prior to and six months after the 2008 financial crisis and the pandemic, the events that lasted longer than six months for sure, it was unnecessary to consider when the 2008 financial crisis ended up. However, this paper covers two consecutive years after each event, so it is inevitable to include a post-crisis period after 2008 in the regression. It depends on the researcher's idea of when did the 2008 crisis end, but we mainly refer to Weinberg's (2013) assertion and assume the crisis continued until June 2009. As an alternative method, we would apply the determination of business cycles done by Statistics Korea (2019). According to its analysis, the earliest trough and peak of the Korean economy after the financial crisis are February 2009 and August 2011, respectively. Therefore, it is likely that the economy would escape from recession and meets the long-term trend between the two periods.

Hence, we set May 2010 as the middle of the two periods as another candidate for the recession's end. For recession during the pandemic, we assume it started on a par with the pandemic in January 2020 and remained until December 2021, the last month to be considered in the regression.

Additionally, there are graphical resources showing panel data from various points of view. Note that each sampled individual’s weight is applied to the panel data, and then the data is displayed in the tables and graphs. For example, table 2 categorizes samples into groups of gender, age group, and education level and shows an average value of indices of the labor market and their standard deviation. Each column shows a specific period, which constitutes four periods in total: before−crisis, after−crisis, before−pandemic, and after−pandemic. Also, Figure 3.0.1 through Figure 3.0.5 display trends of the Korean labor market in 2006~2010, and Figure 3.0.6 through Figure 3.0.10 shows them in 2017~2021. The red vertical line in each graph emphasizes the period of the advent of the financial crisis and the pandemic.

Chapter 3. Model

A series of regression models used in the paper is based on Nam and Lee (2021). Most of them are identical to the original one, but the third model includes new variables. All the models below have three common characteristics: 1) Labor market indices such as employment rate, unemployment rate, etc. are dependent variables on the left−hand side of the model, denoted by Y, and 2) the right−hand side of the equation consists of independent variables on our interest and fixed−effect variables denoted by α, β, γ where each letter respectively defines fixed−effect of cohort or region, month, and year and 3) unlike original model with 2−year−data, all of our models use time−series data covering four years in maximum. In order to examine both dynamics of the labor

market and the pandemic’ s impact on it, we apply four groups of periods by adding four months additionally for each period as the following: 1) February 2006 ~ January 2009, July 2017 ~ June 2020 (Identical to Nam and Lee (2021)), 2) February 2006 ~ July 2009, July 2017 ~ December 2020, 3) February 2006 ~ January 2010, July 2017 ~ June 2021, and 4) June 2006 ~ July 2010, July 2017 ~ December 2021. Understandably, the former period of each group includes the 2008 financial crisis, and the pandemic period is amid the latter period of each group.

3.1 Basic Form of Aggregate Level Regression Model

$$Y_{c,m,t} = \theta \cdot 1(m \times t \in Recession) + \alpha_c + \beta_m + \gamma_t + \epsilon_{c,m,t}$$

The equation above is the simplest type among this paper's regression models. On the left−hand side, $Y_{c,m,t}$ would use indices of the labor market as the following: employment rate, labor market participation rate, unemployment rate, percentage of the temporary worker, and percentage of self−employed workers. The parameter to be examined is θ on the right−hand side, which can be interpreted as the size of the effect of recession on a labor market index on an aggregate level. Subscript c refers to cohort type, one of the combinations of 2 genders, nine age groups, and six education levels of sample individual. Hence, there would be 108 cohort types and their fixed effects in the model. Subscript m and t refer to the data's month and year. $\epsilon_{c,m,t}$ defines residual of the regression model.

3.2 Extended Form of Aggregate Level Regression Model

$$Y_{c,m,t} = \theta_1 \cdot 1(m \times t \in Recession) + \theta_2 \cdot 1(m \times t \in covid) + \alpha_c + \beta_m + \gamma_t + \epsilon_{c,m,t}$$

One more independent variable regarding the presence of

COVID−19 is added to the first version of the model. Therefore, θ_1 shows the magnitude of the recession's effect on the labor market index as usual and θ_2 captures COVID's effect. In this way, we can decompose the effect of the recession, which is unsure if it is the recession itself or its origin (it would be COVID−19 in this case) that fluctuates the labor market indices. All the other components of the model are identical to the first model.

3.3 Form of Aggregate Level Regression Model with Countermeasure Variables

$$Y_{c,m,t} = \theta_1 \cdot 1(m \times t \in Recession) + \theta_2 \cdot 1(m \times t \in covid) + \theta_3 \cdot 1(m \times t \in Stimulus\ Check) + \theta_{4,1,m.t} + \theta_{4,2,m.t} + \theta_{4,2.5,m.t} + \theta_{4.3,m.t} + \alpha_c + \beta_m + \gamma_t + \epsilon_{c,m,t}$$

In this case, two more independent variables are attached to the second form of the model. The third independent variable defines the presence of a stimulus check in a particular month and year, and θ_3 captures the amount of effect of stimulus check on the labor market index. The other distinctive component is a series of $\theta_{4,s,m,t}$ which captures the effect of social distancing level s of on month m and year t, on the labor market. The fourth coefficient is not followed by an indicator function but is an array of variables in a fixed−effect form since the level of social distancing itself implies nothing but a comparison between different levels of social distancing can tell us about the effect of each level of the measure on the labor market index.

3.4 Individual Level Regression Model

$$Y_{g,c,m,t} = \sum_{k=1}^{G} \theta_k \cdot 1(m \times t \in covid) \times 1(g \in k) + \alpha_c + \beta_m + \gamma_t + \epsilon_{c,m,t}$$

The significant difference between this model and the first one is that this one takes into account a variety of individual characteristics such as gender, age group, and education level. Therefore, subscript g defines such characteristic, and θ_k indicates the size of the effect of COVID-19 on the labor market index of individuals who owns characteristic g. In detail, we designate a baseline for each category and identify the effect of COVID-19 on the 'difference' between a specific group's and the baseline's labor market index. When figuring out the effect of the pandemic on female's employment rate, for example, we set the male's employment rate as a baseline so $Y_{g,c,m,t}$ would indicate the difference between the employment rate of men and women. In this sense, a baseline for age group, education level, and weekly working hours would be the group age 60 or older, and high school graduates, and 53 hours or more per week, respectively.

3.5 Industry Level Regression Model

$$Y_{i,c,m,t} = \sum_{j=1}^{J} \theta_k \cdot 1(m \times t \in covid) \times 1(i \in j) + \alpha_c + \beta_m + \gamma_t + \epsilon_{c,m,t}$$

This model considers an individual's participating industry instead of the other characteristics. Therefore, instead of subscript g, subscript i presents a particular industry i. Among all the 20 industries, manufacturing is a baseline. In addition, $Y_{i,c,m,t}$ would be the difference in log number of workers, temporary workers, and self-employed workers of industry i and manufacturing sector, and difference of share of two industries in the market.

The model would be further decomposed by gender and weekly working hours for more detailed observation. By applying sample data from only male, female, and four categories of working hours, it is possible to compare regression results between males and females and four types of labor hours.

3.6 Regional Level Regression Model

$$Y_{r,m,t} = \sum_{k=1}^{R} \theta_k \cdot 1(m \times t \in covid) + \alpha_r + \beta_m + \gamma_t + \epsilon_{r,m,t}$$

For this model, it is unable to find out the individual's residence area as mentioned above. As an alternative, we use the final version of the Labor Population Survey (Statistics Korea, 2022), which conceals regional information of the sample but discloses regional data of the entire population adjusted by weight. Also, subscript r means a specific region r in South Korea. The baseline region is chosen to be Seoul, the capital city of South Korea. Then, the data used for $Y_{r,m,t}$ would be the difference between the aggregate-level employment rate and the unemployment rate of region r and Seoul.

3.7 Aggregate Level Regression Model with Intensity of COVID-19

$$Y_{c,m,t} = \theta_1 \cdot 1(m \times t \in Recession) \times \#confirmed\ case_{r,m,t} + \alpha_c + \beta_m + \gamma_t + \epsilon_{r,m,t}$$

This one is to examine if the trend of COVID-19 cases can affect the labor market. The independent variable, $\#confirmed\ case_{r,m,t}$ makes it possible to decompose a single independent variable in model 1 into two variables, and it uses two kinds of data: the number of monthly new cases and the accumulative number of monthly cases. It may be possible to include the number of deaths from COVID-19, but it would be insignificant according to Su et al. (2021) that the number of patients is a critical factor in unemployment more than the death toll is. As the other models do, this one also considers an individual's characteristic c but derives a regression result in a perspective of

aggregate level. Note that this model uses only two kinds of periods: Jan 2020 ~ June 2021 and Jan 2020 ~ December 2021, to improve the significance of the regression result of the model.

Chapter 4. Result and Interpretation

There are 11 subsections below to describe the regression results of all the models in Section 4. To fully explore them, the first step is to glance at graphically summarized figures. The x-axis of the figure denotes four groups of periods mentioned in the first paragraph of Section 3. If too many groups exist in a single picture, the next step would be to concentrate on the part of it, especially on the components that are significantly away from the baseline result. Then, the numbers in the table would quantitatively examine the results with a focus on highly significant coefficients. Note that all the regressions are conducted by R, the statistical analysis software created by R-project (2022) and that they apply the assertion of Weinberg (2013) that the recession ignited by the financial crisis ended in June 2009.

4.1 Aggregate Level

Figure 4.1.1 and Table 3 present the result of model 3.1 with all the five indices. Note that coefficients of unemployment rate turned out to be insignificant. In the figure, employment rate, labor participation rate, and percentage of self-employed workers lost 2%p owing to the pandemic initially but gradually recovered in the long term. For labor participation rate, the shock is smaller than that in the U.S., which is a 7%p drop after the spread of the virus, according to Coibion et al. (2020) Percentage of temporary workers suffered an enormous impact with a 3.5%p drop at first and decreased to nearly −5%p until period three but noticeably recovers in the end. It is nearly equivalent to the outcome of the

Japanese labor market from Kikuchi et al. (2020), with approximately 5%p. This trend shows that the initial impact of the pandemic-related recession was substantial at the first stage, remained in effect for over a year, and the magnitude of the impact hit the temporary workers in particular.

4.2 Aggregate Level – Extension #1

As a result of model 3.2, Figure 4.2.1 and Figure 4.2.2 reveals the trend of the coefficient of recession and COVID-19 for the labor market indices. The result includes some critical points of which Nam and Lee (2021) betrayed insignificance. In Table 4, the recession raised the unemployment rate by 1.2%p in the short run and approximately 0.5%p in the long run. On the other hand, it also influenced the percentage of self-employed workers by dragging the rate down by 0.7%p immediately and 0.5%p in the long term. Thus, the recession came harsher to ordinary workers than self-employed ones in the short run.

On the other hand, the pandemic influenced unemployment by reducing the rate by 0.3~0.6% but cutting nearly 10%p of temporary workers and 6%p of self-employed workers. Surprisingly, the pandemic's effect on the temporary or self-employed workers is 13 to 20-fold of the recession's effect. The stark contrast between the two regression results implies that the effect of the pandemic can be realized unequally depending on the household's profession.

As mentioned in the second section, additional regression was conducted by assuming the recession generated by the financial crisis lasted until May 2015, and the result is available in Table 4.1. Compared to the prior result, most of the coefficients were bigger in values but similar in tendency with more significance. The only distinctive difference can be found in the third subordinate table, which includes the value of −0.627 for the coefficient of COVID-19 for the unemployment rate. It is opposite

to the original component with a value of 0.203.

4.3 Aggregate Level – Extension #2

Table 4.2 shows the regression result of model 3.3, which further decomposes the independent variables of model 3.2 by adding two more variables: the presence of stimulus check and the level of social distancing. Specifically, stimulus checks significantly affected the employment and labor participation rates by lowering them by 1%p or so in the short term and around 0.5%p in the long run. Regarding social distancing, levels 1 and 2 turned out to be a significant factor in the percentage of temporary workers and self-employed workers, in the long run, decreasing the rate by 1.5%p and approximately 2%p, respectively, according to the fourth table of Table 4.2. Also, levels 2.5 and 3, which are comparatively stricter than the others, have contrasting impacts on both rates. While level 2.5 curbed the rate of temporary and self-employed workers by 3.4%p and 2%p, level 3 depreciated the percentage of self-employed workers by merely 1.1%p in the long run. To sum up, the stimulus check did not revive nor trouble the labor market to a large extent, which is a disappointing consequence accounting for the large budget. For social distancing, the result implies that the level is not proportionate to its magnitude of economic impact, and level 2.5 performed the most as an economic suppressor among all the social distancing measures.

For examination of the impact of stimulus checks, we consider two distinctive fashions: 1) divide it into five variables by five provisions of stimulus checks in 2020 and 2021, and 2) split it into three variables by grouping stimulus checks with detailed characteristics in common. The regression result of the first idea is shown in Table 4.3, and the second one is in Table 4.4. In short, comparing Table 4.3 to the result of Table 4.2, COVID-19 reveals a poorer influence on the labor market, while the third stimulus check significantly affects the labor economy in a negative sense. The

social distancing does the same but is limited to self-employed workers in the long run. In Table 4.4, the coefficient of COVID-19 turns out to be significant and more prominent than the previous framework. The stimulus checks from second to fourth inflict an impact only on temporary and self-employed workers. To summarize the findings, it is revealed that stimulus checks from the second to fourth, especially the third, were rather damaging to the labor market than beneficial.

Considering the issue of endogeneity in the model, however, it is possible to interpret the effect of the policies in the other way. The countermeasures against the pandemic would defend the labor market and result in the aftermath, which is smaller than most other developed economies.

4.4 Gender

It is shown in Figure 4.4.1, Figure 4.4.2, and Panel A of Table 5 how the pandemic-related recession affected the labor market of each gender in the short and long term. In a nutshell, the difference in the rates between gender is evident in the short run, and the gap remains in the long run. For males, the pandemic affected all indices but the unemployment rate in both the short and long run, shedding them by 2~3%p. Oddly, the unemployment rate shrunk by 0.7%p significantly due to COVID-19 in the long run. For females, every index except the percentage of the temporary worker had a similar or less influence of 0~1%p in the short run and an even larger percentage point in the long run, which implies that the negative effect on women was either equivalent or minuscule compared to that on men. However, the percentage of temporary workers limited to female samples reported a coefficient value of −2~−3%p through the periods. In addition, most of the coefficients of the recession of groups of gender, age group, and education level, especially regarding temporary and self-employed workers, are more extensive than Nam and Lee (2021). It implies

that the recession led by COVID-19 created a more considerable shock on the labor market than in the previous regression. Also, the number suggests that temporarily working females tend to be laid off more than male workers, which fits Albanesi and Kim (2021) in that COVID-19 provided more negative shock on women.

By skimming the results, it would be impetuous to speculate that there is gender discrimination in the labor market. Perhaps, it is probable that such discrepancy emerges from the extraordinary gender composition of some industries. In other words, some sectors might have a more significant number of female temporary staff than male staff and result in more laid-off females than males even if firms reduce identical percentage point of workers for both sexes. Regardless of the decision from the other firms with different gender ratios, their response could have distorted the result at an aggregate level. To find out which industry is most responsible for the tendency, we will soon decompose the industry-level regression into gender-level again.

4.5 Age Group

In Figure 4.4.3 ~ Figure 4.4.8 and Panel B of Table 5, the regression result based on classification by nine age groups is shown. The baseline group, age 60 or older, seems to gain 2~3%p in employment and labor participation rate, thanks to the pandemic. Meanwhile, the unemployment rate rose by around 0.5%p in the early period but leaped to 1.4%p in the final period. The percentage of temporary and self-employed workers received adverse effects from the pandemic: the former did not fluctuate considerably over all types of periods and decreased by 3~4%p by the shock. The latter lost 1.3%p in the short term but turned out to lose 3%p in the long run. The regression result is doubtful in that COVID-19 increased the first two rates, contrary to intuition: unexpected negative shock on labor demand would reduce labor supply in equilibrium.

For the other age groups, the pandemic diminished part of the employment rate of all groups but age 30~34, as implied by Figure 4.4.4, with all the values being below zero. A similar phenomenon is shown in Figure 4.4.5 of the labor participation rate. A great point regarding the labor participation rate is that younger generations tend to face an enormous impact of the pandemic at a lower rate, which means that group members miss out on possessing current jobs or stop looking for another one. The unemployment rate displays a distinctive trend. Considering age groups with significant coefficients throughout the entire period, young people experienced an unemployment rate of 2%p lower than that of a group of 60 or older. Conversely, the shock to the fifties was similar to that to the sixties since the value of the coefficient for age group 55~59 is 0.62, which tells us that their rate rose 0.62%p higher than the rate of the sixties within half a year since the pandemic. In the long term, the coefficient of age groups 50~54 and 55~59 were approximately −1.4 and −0.4. It is a hint that the pandemic shock lost its power faster in the fifties or that these people recovered faster than in the sixties.

The exciting part is shown in Figure 4.4.7 of the effect on the percentage of the temporary worker. In particular, the pandemic raised the percentage of temporary workers of the age group 15~24 by 11%p in the first period and 13%p if considering the most extended period. On the contrary, the age group 30~34 recorded −2.8%p in the short term and −5.7%p in the long term. The older age groups showed trends converging to that of the baseline, unlike the younger groups and all the groups' trends for other indices.

The last one to examine is the percentage of self−employed workers. Age groups can be divided into two large groups under the qualitative aspect of the pandemic's influence on the percentage for each age group: the rate of all the age group below 40 increased while that of the age group over 40 decreased due to COVID−19. Specifically, the group 15~24 added 2~3%p to their percentage while the age group 55~59 lost the same amount, compared to the age 60 or over.

To sum up, labor market participants at young age seized more job opportunities than the older generation amid the pandemic. Such a trend in Korea contrasts with the one from Kikuchi et al. (2020) that the impact is greater on the young generation in the labor market of Japan. Moreover, it is a phenomenon contradictory to the concern of Choudhry et al. (2010) that a chronic influence on employment in the twenties would remain after the financial crisis. The problem is that most new employments are part-time laborers, which may lead to a decrease in laborers' average working hours, as Takagi et al. (2021) mentioned as a consequence of the pandemic.

4.6 Education Level

Figure 4.4.9 ~ Figure 4.4.14 and Panel C of Table 5 reveal the regression result for the education level of the participants in the panel data. The baseline group is high school graduates. The pandemic depreciated their employment rate, labor participation rate, and percentage of self-employed workers by 1%p in the short run and a bit more in the long run. The impact on the unemployment rate was 0.3%p initially, increased up to 1.2%p, but dropped back to its initial level. The effect on the percentage of a temporary worker is lower than -4%p throughout whole periods. It implies that the pandemic affected the entire high school graduates and temporary workers in particular.

For focusing on the trend of effect on the other groups' labor market indices, there is a single tendency found to be significant: less impact is given to the laborer with higher education and vice versa. Thus, it is a confirmation that a finding by Costa Dias et al. (2020), which argues that, of all Britons, workers with low-leveled skill receives the most severe impact from the pandemic, is also observable in South Korea. Note that the baseline group is the high school graduates; therefore, the effect on the other groups would be measured compared to the coefficient value

of the baseline model as usual. Hence, elementary or middle school graduates experience more severe negative shock on their all rate but unemployment rate while junior or ordinary college graduates go through the opposite situation. For instance, middle school graduates lost employment rate by 4%p in the short term and 2.8%p in the long term, whereas college graduates offered a 3.4%p and 4%p increase in the short and long term, respectively. For a drastic instance, the pandemic reduced the percentage of temporary workers of elementary school graduates by 10%p or more in Figure 4.4.13, which is another evidence that the pandemic is hazardous to employees in precarious positions and that such a trend is likely to be more evident for people with a lower education level. Fortunately, there is also a bright side: the magnitude of negative impact on elementary and middle school graduates diminishes in the long term.

4.7 Industry

The baseline group of this regression, based on model 3.5, is the manufacturing sector. (or category C in some figures) According to Table 6, the regression on the log number of temporary and self-employed workers turned out to be significant. In Figure 4.5.1, the COVID-19 effect is -0.3~-0.36%p on temporary workers and -0.15~-0.24%p on self-employed workers depending on the length of the term used for regression. Again, this reveals that temporary workers are the most exposed group to unexpected shocks like the spread of disease.

For looking at the regression result of model 3.5, it would be convenient to examine Figure 4.5.2 ~ Figure 4.5.4, which shows the effect compared to that on manufacturing. Each figure has four dots for each industry labeled with a capital letter. As the dot gets darker, it means that the dot is a coefficient of regression result with more extended periods, e.g., the darkest one would include data covering July 2017 ~ December 2021 in the regression. By

skimming the figures, it is easily found that some industries outperform manufacturing in terms of the log number of employees thanks to the pandemic, while others dismissed their workers. i.e., some coefficient values are over zero, and others are below zero. Moreover, some industries with all four dots are concentrated around a single point. Therefore, it implies that they did not improve their business nor escape COVID-19 shock in the long term.

Since it is impossible to cover all the industries one by one, this paper selects a number of them to establish two groups: 1) the industries with a positive and comparatively bigger response and 2) the industries with a negative response compared to that of the manufacturing sector. For the convenience of further reference, these two groups are named 'the fortunate' and 'the unfortunate,' and they are colored in red and blue in Figure 4.5.2 ~ Figure 4.5.4, and the following figures in the same fashion to identify the two groups with contrasting consequences. The former group consists of F, M, Q, and R, which refer to construction, business service, health, and leisure. The latter group includes G, I, and P, which are wholesale & retail, accommodation, and education service. These sectors belong to a class of industries with low flexibility of labor input and a high likelihood of employee contact with customers in daily business, according to the classification of industries by Albanesi and Kim (2021). As it is described in Figure 4.5.5 ~ Figure 4.5.10 and Table 6, most of the sectors in the fortunate had a positive effect from the pandemic, which increased the log number of workers by 0.2~0.4%p though the value fluctuates to some extent throughout the periods. On the other hand, the unfortunate suffered the most by downsizing the log number of workers in the short term and doing so extensively for temporary and self-employed workers in the long term. Interestingly, the result revealed a more substantial impact on the employees of most industries with a higher significance level compared to Nam and Lee (2021).

In detail, the health sector is the most benefited industry in

comparison according to Figure 4.5.5, which shows that the pandemic grew the log number of workers by 0.32~0.4%p. Among the unfortunate in Figure 4.5.6, the shock on education service was delayed, reached −0.03% for the lowest, which is still better than its members, and diminished in the long term. In Figure 4.5.7, the fortunate were superior to the baseline sector in terms of maintaining the log number of their temporary workers, while the unfortunate bar the education service, lagged in Figure 4.5.8. For self−employed workers, the business service and construction sector among the fortunate had a significant but contrasting consequence in Figure 4.5.9. The business service sector went through an increase in the log number of self−employed workers by 0.1~0.2%p, but the construction sector lost it by −0.2%p or so. Finally, in Figure 4.5.10, accommodation and wholesale & retail are in a similar relationship in that both diminished the log number of self−employed workers due to the pandemic.

Hence, it is evident that the pandemic was a heterogeneous shock to the industries and more significant damage to industries with social necessity or impossibility of teleworking, which coincides with Alon et al. (2020) and Blau, Koebe, and Meyerhofer (2020) and especially with Kikuchi et al. (2020) in the magnitude of the shock on temporary and self−employed workers of Korea and Japan. We can interpret that the pandemic newly created labor demand on medical staff to deal with the COVID−19 wave and relevant administrative services, leading to an increase in overall employment in the health sector. On the contrary, it is probable that the disease discouraged human interaction, blockaded indoor activities with multiple people, and motivated people to make their living without close contact with possibly infected strangers. Households' demand for service sectors would also contract, leading to cutting operating costs and labor demand of the industries. To absorb a negative impulse on labor demand, the laborers with comparatively volatile contracts and positions would receive it at most, which are either temporary or self−employed workers. For example, Wholesale & retail would have swept away

employees dealing directly with customers, who became less likely to meet them at stores, to focus more on online businesses. The accommodation sector could not have afforded wages while suffering a near absence of visitors for over a year. Education services might have entirely shifted to online services, closing conventional classrooms and laying off their teachers.

4.8 Industry & Gender

As mentioned in subsection 4, we will examine the effect on the industry, focusing more on gender heterogeneity. Figure 4.5.11 ~ Figure 4.5.13 and Table 6.1 summarize the pandemic effect on the log number of all the male workers, temporary workers, and self-employed workers, respectively. Note that the coefficient value of females in Table 6.2 is a regression of the difference in male and female values. Concerning all types of male workers, the business service sector (M) revealed a more positive impact on their log number of workers by 2%p than the manufacturing sector. The contrast between industries was observed when it comes to insecure employment. For temporary workers in Figure 4.5.12, industries in 'the fortunate' were construction (F), business service (M), and education service (P), with increased rates by 0.25%p, 0.39%p, and 0.46%p in the long term due to the pandemic, respectively. However, the accommodation (I) belongs to 'the unfortunate' in the long term, shedding 0.358%p of its log number of temporary workers. For self-employment, ICT (J), finance (K), and education service (P) are turned out to be depressed because of COVID-19, respectively, reducing 0.5%p, 0.3%p, and 0.4%p in the long run.

On the female side, a series of industries can be divided into 'the fortunate' and 'the unfortunate,' as shown in Figure 4.5.14 ~ Figure 4.5.16 and Table 6.2. In terms of aggregate female workers, Health (Q) and Leisure (R) were prosperous compared to the manufacturing sector. From a quantitative perspective, the

pandemic motivated a 4%p increase in all worker's log numbers in the health sector and 2~3%p in the leisure sector. A similar occurrence can be found in terms of temporary workers as well. Two industries received a long-term effect of the pandemic to a more positive degree than manufacturing: business service (M) and leisure (R), which gained about 0.34%p and 0.68%p increase in the log number of temporary workers. On the other hand, real estate (L) lost 0.4%p in additional compared to manufacturing. For self-employed workers, 0.27~0.34%p of the log number of self-employers in education service (P) diminished by the pandemic shock in the long run.

To summarize the comparison of the results between the two genders, we find that a predominance of one gender appears in some industries. In detail, construction was the only industry that revealed a significant increase in the number of employees of males, but not females. Conversely, a significant decrease only in male employment was shown in accommodation, ICT, and leisure industries. In the case of women, the health and leisure sector significantly recruited more female crews, but the real estate industry lessened female staff in response to the pandemic. The darkly colored section of Figure 4.5.11 ~ 4.5.16 indicates industries with a particularly positive impact on each gender (blue for male and red for female); the lightly colored one refers to sectors with a noticeably negative consequence.

4.9 Industry & Weekly Working Hours

Before examining the effect on working hours, remind that the baseline component is the manufacturing sector in terms of industry, and '53 hours or more per week' among four kinds of working hours: 1~14, 15~35, 36~52, and 53 or more hours per week. We further denote each category of working hours as the following for convenience: '1~14', '15~35', '36~52', and '53+'. The baseline regression is shown in Figure 4.5.17 and

Table 6.3 for precision. It turns out that a shock was given to categories ‘1~14’ and ‘53+’ with the contrasting outcome. The log number of employees with ‘1~14’ increased by 0.3~0.5%p throughout the whole period while the log number with ‘53+’ plummeted by 0.8~0.9%p.

To select some industries to focus on, we look at Figure 4.5.18 ~ Figure 4.5.21 and Table 6.3 to choose industries with remarkable and significant regression results about all the types of working hours. Each figure represents a distribution of coefficient values of the log number of employees with particular working hours per week with respect to the pandemic. The sectors colored in red indicate industries comparatively expanded their business in terms of the number of employees with specific weekly working hours, while the blue ones mean the sectors shrunk in the same period. In Figure 4.5.18, construction (F) and transportation (H) significantly increased the log number of ‘1~14’ by 0.5%p and 0.8%p, respectively. In addition, wholesale & retail (G) has a modest increase of 0.4%p or so. Concerning the short term, 0.8%p of the ICT sector vanished during the pandemic. For ‘15~35’ in Figure 4.5.19, it seems all the industries outperform the manufacturing sector. Among them, we focus on construction (F), wholesale & retail (G), transportation (H), and health (Q) since their coefficient values are significant for all periods. In the case of ‘36~52’ in Figure 4.5.20, most of the sectors are better off than manufacturing, while construction (F), wholesale & retail (G), and accommodation (I) are worse off. Due to their satisfactory significant level, they will be examined deeply, including transportation (H) and health (Q) as well. In Figure 4.5.21, most industries eliminated jobs of ‘53+’ more than the manufacturing sector did to endure the pandemic-led recession. The members on interest with significant results: construction (F), wholesale & retail (G), transportation (H), accommodation (I), and health (Q), conducted mass dismissal of staff with extensive labor hours. It is a distinctive phenomenon that these sectors actively reconstructed employment structure by controlling staffs’ working hours to

suffer the pandemic.

Therefore, by integrating regression results for the five industries: F, G, H, I, and Q, we examine how the composition of employees to weekly working hours changed. In a nutshell, all the industries in comparison replaced full-time positions with part-timers but did not fully compensate for the negative shock. For instance, wholesale & retail (G) increased '1~14' workers by 0.5%p and reduced '53+' workers by 0.6%p. For numerical details in the graphic, see Figure 4.5.22 ~ Figure 4.5.37.

4.10 Region

In the regional aspect, we use model 3.6 and choose the regression result of Seoul as a baseline. In Figure 4.6.1 and Table 8, the labor market lost about 1.5%p of its employment rate and labor participation rate in the short term and slowly recovered from the damage in terms of the labor participation rate. To briefly compare it to the result of all the other regions, check out Figure 4.6.2 ~ Figure 4.6.7. Note that all the cities are fully spelled, and provinces are abbreviated in two capital letters. By and large, the coefficient values for employment and unemployment rate are either similar or bigger than those shown in Nam and Lee (2021). Also, it is turned out that the region of Chungbuk (CB), Daejeon, and Gangwon (GW) have a remarkable gain in employment rate and labor participation rate in both the short and long term. On the other hand, Gyeongbuk (GB) showed comparatively poor responses with small or unfavorable changes in both of the rates. Therefore, we cannot find any contrasting features between labor markets of the urban and rural areas.

4.11 Intensity of COVID-19

According to Table 9, most of the values are insignificant. As found in the first table, the only outcome with high significance

is that the log number of cumulative confirmed cases for COVID-19 decreased the employment rate at the aggregate level by 0.8%p in the long term. From our result, it is unsure whether the intensity of COVID-19 matters with labor market fluctuation.

Chapter 5. Conclusion

In this paper, we examined the effect of pandemics and the subsequent economic recession on the Korean labor market. By adopting the methodology of Nam and Lee (2021), the first regression and its expansion versions figured out that COVID-19 destabilized the labor market to a considerable extent. Compared to the financial crisis, the pandemic had a much more severe impact on temporary workers and self-employers. Unfortunately, the countermeasures such as the stimulus package and social distancing did not significantly assist the economy to resurrect; instead, they did nothing or exacerbated the problem.

Many novel discoveries were found in examining heterogeneity, including distinctive long-term trends with higher significance levels than the data in Nam and Lee (2021). In detail, various regression analyses were conducted to measure the pandemic's effect on diverse groups in accordance with the following characteristics: gender, age, education level, industry, and weekly working hours. We found that women are more likely to be dismissed from the workplace than men in the case of temporary workers. In terms of age, it is found that the pandemic damaged more elder workers than young ones. For education level, the recession was less challenging for people with a higher level of education like college or graduate school. Among all the industries and subordinate divisions by gender and working hours, industries with more direct contact and reliance on working at the office suffered a more significant impact from the pandemic, and so did female employees in some sectors and full-time workers.

Moreover, it is found that most results and implications are similar to studies regarding heterogeneous impact in the other developed countries. A significant difference is that the size of the labor market shock in Korea is a bit smaller than those in foreign countries.

However, there are several limitations of this paper. The first point is that the methods mentioned above obtain endogeneity between variables on both sides, so the results do not imply definite causality of the pandemic and relevant policies on the labor market. The other flaw lies in the insufficient explanation of some of the results. We could not find a justifiable tendency from a regional perspective and could not relate the dynamics of the labor market with the intensity of COVID-19 as well.

In terms of discovering heterogeneity, the regression analysis can be expanded further if the panel data provides additional information about the income and wealth of all sample households. In particular, it may be examined whether workers' wage level is affected by the pandemic. Additionally, suppose there is data on samples' wealth portfolios. In that case, we can study the difference between labor and capital income dynamics after COVID shock and observe impulse responses of households with distinctive wealth composition by establishing a hypothetical open economy during the pandemic.

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Appendix A. Tables

TABLE 1.1
SOCIAL DISTANCING LEVEL BEFORE AND AFTER REFORM

Level before reform	Level after reform	Status	Details
1	1	Continuous suppression	No limit
1.5 2	2	Local epidemic	Gathering of 9 people or less, Stores close before 24:00
2.5	3	Regional epidemic	Gathering of 5 people or less, Stores close before 22:00
3	4	Pandemic	Gathering of 5 or less before 18:00, 3 or less after 18:00 All businesses close before 22:00

TABLE 1.2
TREND OF LEVEL OF SOCIAL DISTANCING

Date	Jan. 2020	Feb. 2020	Mar. 2020	Apr. 2020	May 2020	Jun. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020
Level	1	1	1	2	1	1	1	2	2.5	2		
Date	Jan. 2021	Feb. 2021	Mar. 2021	Apr. 2021	May 2021	Jun. 2021	Jul. 2021	Aug. 2021	Sep. 2021	Oct. 2021	Nov. 2021	Dec. 2021
Level	2.5	2.5	2	2	2	2	3	3	3	3	3	3

* Reformed system is on effect since July 2021.

TABLE 1.3
SUMMARY OF STIMULUS PACKAGE OF SOUTH KOREA GOVERNMENT

Number	Date	Budget (KRW)	Recipient	Detail
1st	May 2020	7.6 trillion	All households	0.4 mil. KRW for 1-person-household ~ 1 mil. KRW for 4-persron-household. Unable to use at conglomerate stores Expired at the end of August 2020
2nd	September 2020	7.8 trillion	Businesses with 400 mil. KRW income or less, and with loss of income or under COVID restriction	Customized amount of funding for small businesses, vulnerable workers, households in 1st quantile suffering wage decrease, etc.
3rd	January 2021	9.3 trillion	Businesses with 400 mil KRW income or less, and with loss of income or under COVID restriction	1 ~ 3 mil. KRW for small businesses, rent support program, and extra funding for vulnerable workers
4th	March 2021	20.7 trillion	Industry under emergency financial circumstance i.e. Tourism, theatre, and exhibition	Extra funding for businesses with emergency or 60% loss of sales, discount for electricity fee, provision of employment stabilization subsidy
5th	August 2021	11 trillion	Households and businesses in 80th percentile or below of income distribution	0.25 mil. KRW for households in 80th percentile or below, 0.1 mil. KRW for low-income households, subsidy for businesses with COVID restriction, and compensation for sales loss of small businesses

TABLE 2

LABOR MARKET TREND BEFORE AND AFTER OF 2008 FINANCIAL CRISIS AND COVID-19

Variable	Employment Rate				Labor Participation Rate			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Period	2006.02 ~2008.07	2008.08 ~2009.06	2017.07 ~2019.12	2020.01 ~2021.12	2006.02 ~2008.07	2008.08 ~2009.06	2017.07 ~2019.12	2020.01 ~2021.12
All	60.065	59.059	60.905	60.286	62.125	61.188	63.255	62.674
	(0.889)	(1.099)	(0.772)	(0.986)	(0.824)	(1.005)	(0.641)	(0.669)
Gender								
Male	71.601	70.465	70.898	69.920	74.357	73.343	73.730	72.635
	(0.804)	(1.029)	(0.624)	(0.811)	(0.742)	(0.915)	(0.551)	(0.558)
Female	49.069	48.146	51.252	50.946	50.466	49.557	53.136	53.017
	(0.986)	(1.190)	(1.003)	(1.172)	(0.935)	(1.132)	(0.849)	(0.813)
Age								
15~24	26.424	22.397	26.498	26.125	29.155	24.787	29.514	28.857
	(1.566)	(0.907)	(0.700)	(1.629)	(1.858)	(1.048)	(0.843)	(1.392)
25~29	68.508	68.289	69.958	68.034	73.176	73.113	76.475	73.709
	(0.393)	(0.876)	(0.942)	(1.289)	(0.419)	(0.732)	(0.944)	(0.938)
30~34	70.890	69.930	75.598	76.164	73.611	72.847	78.911	79.315
	(0.639)	(0.768)	(0.755)	(0.665)	(0.437)	(0.604)	(0.845)	(0.596)
35~39	75.255	73.667	75.965	74.465	77.204	76.087	77.915	76.638
	(0.739)	(0.945)	(0.503)	(0.766)	(0.669)	(0.778)	(0.507)	(0.734)
40~44	78.828	78.363	77.440	76.207	80.689	80.263	79.392	78.242
	(0.729)	(0.607)	(0.359)	(0.646)	(0.580)	(0.542)	(0.342)	(0.392)
45~49	77.529	77.606	80.133	78.069	79.127	79.405	81.870	79.900
	(0.891)	(0.987)	(0.881)	(0.522)	(0.807)	(0.859)	(0.765)	(0.495)
50~54	NA	73.705	77.979	76.948	NA	75.486	79.896	78.941
	NA	(1.030)	(0.543)	(1.084)	NA	(0.894)	(0.472)	(0.772)
55~59	NA	NA	72.866	72.378	NA	NA	74.715	74.617
	NA	NA	(0.769)	(1.037)	NA	NA	(0.676)	(0.735)
60~	37.730	36.874	40.819	42.633	38.256	37.394	42.115	44.267
	(2.556)	(2.808)	(2.338)	(2.287)	(2.522)	(2.811)	(1.931)	(1.526)
Education Level								
Elementary	43.530	41.973	35.260	35.200	44.278	42.796	36.315	36.628
	(3.303)	(3.472)	(3.222)	(3.246)	(3.272)	(3.437)	(2.702)	(2.121)
Middle	42.742	39.998	NA	NA	44.012	41.251	NA	NA
	(1.306)	(1.129)	NA	NA	(1.350)	(1.039)	NA	NA
High	62.795	61.457	62.137	60.007	65.366	64.139	64.710	62.644
	(0.647)	(1.033)	(0.794)	(1.069)	(0.598)	(0.879)	(0.599)	(0.793)
Junior College	75.660	75.027	75.799	74.720	79.072	78.310	79.051	78.088
	(0.693)	(0.785)	(0.583)	(0.939)	(0.633)	(0.559)	(0.469)	(0.547)
University	74.159	73.393	73.801	73.551	76.421	75.759	76.643	76.058
	(0.396)	(0.505)	(0.475)	(0.760)	(0.362)	(0.329)	(0.379)	(0.502)
Graduate or more	86.184	84.330	81.701	81.331	87.621	85.540	83.268	82.445
	(0.611)	(1.131)	(0.690)	(0.632)	(0.704)	(0.924)	(0.756)	(0.549)

Variable	Unemployment Rate				Percentage of Temporary Workers			
	(9)	(10)	(11)	(12)	(12)	(13)	(14)	(15)
Period	2006.02 ~2008.07	2008.08 ~2009.06	2017.07 ~2019.12	2020.01 ~2021.12	2006.02 ~2008.07	2008.08 ~2009.06	2017.07 ~2019.12	2020.01 ~2021.12
All	3.318	3.481	3.716	3.814	26.656	25.912	18.047	16.818
	(0.265)	(0.404)	(0.512)	(0.760)	(0.559)	(0.473)	(0.492)	(0.659)
Gender								
Male	3.708	3.927	3.841	3.739	19.434	18.228	12.519	11.413
	(0.280)	(0.429)	(0.449)	(0.660)	(0.577)	(0.232)	(0.311)	(0.312)
Female	2.770	2.850	3.549	3.916	36.703	36.680	25.434	24.005
	(0.267)	(0.375)	(0.631)	(0.940)	(0.770)	(0.969)	(0.794)	(1.071)
Age								
15~24	9.340	9.629	10.200	9.509	56.345	59.234	43.093	44.965
	(1.054)	(1.334)	(1.576)	(2.231)	(2.292)	(2.035)	(1.128)	(2.276)
25~29	6.378	6.597	8.515	7.695	35.447	32.504	19.527	17.591
	(0.331)	(0.840)	(1.214)	(1.535)	(2.169)	(0.840)	(0.706)	(0.835)
30~34	3.699	4.006	4.196	3.972	26.738	25.183	13.672	11.788
	(0.381)	(0.410)	(0.491)	(0.637)	(0.666)	(0.345)	(1.193)	(0.264)
35~39	2.525	3.182	2.502	2.836	25.049	24.877	12.318	10.361
	(0.255)	(0.345)	(0.416)	(0.523)	(0.610)	(0.414)	(0.708)	(0.493)
40~44	2.308	2.367	2.458	2.601	24.174	23.433	13.192	11.720
	(0.279)	(0.332)	(0.375)	(0.463)	(0.555)	(0.274)	(0.474)	(0.453)
45~49	2.021	2.267	2.123	2.291	21.136	21.083	13.410	11.401
	(0.296)	(0.405)	(0.322)	(0.337)	(0.696)	(0.346)	(0.729)	(0.515)
50~54	NA	2.362	2.399	2.528	20.238	20.074	15.631	13.404
	NA	(0.360)	(0.330)	(0.586)	(0.477)	(0.434)	(0.512)	(0.619)
55~59	2.146	2.346	2.475	3.004	20.156	20.316	15.896	13.592
	(0.312)	(0.331)	(0.410)	(0.657)	(0.935)	(0.668)	(1.122)	(0.361)
60~	1.387	1.396	3.125	3.750	21.200	23.334	25.401	25.319
	(0.288)	(0.442)	(1.581)	(2.102)	(2.157)	(1.731)	(1.540)	(1.794)
Education Level								
Elementary	1.704	1.941	3.023	4.090	21.249	22.802	28.634	30.840
	(0.391)	(0.430)	(2.542)	(3.919)	(1.767)	(1.552)	(2.413)	(2.939)
Middle	2.883	3.044	NA	NA	29.250	28.288	24.930	23.998
	(0.336)	(0.449)	NA	NA	(0.859)	(0.886)	(0.567)	(1.274)
High	3.933	4.185	3.979	4.214	33.095	32.797	22.527	20.725
	(0.309)	(0.451)	(0.506)	(0.783)	(0.564)	(0.549)	(0.553)	(0.577)
Junior College	4.314	4.193	4.114	4.315	28.099	25.480	14.423	13.048
	(0.556)	(0.529)	(0.480)	(0.842)	(1.181)	(0.538)	(1.184)	(0.458)
University	2.959	3.123	3.707	3.298	17.165	16.796	10.821	10.179
	(0.327)	(0.438)	(0.588)	(0.528)	(0.465)	(0.467)	(0.351)	(0.450)
Graduate or more	1.638	1.416	1.881	1.351	12.060	9.666	8.025	7.277
	(0.609)	(0.307)	(0.379)	(0.318)	(0.912)	(0.934)	(0.574)	(0.609)

Variable	Percentage of Self-employed Workers			
	(16)	(17)	(18)	(19)
Period	2006.02 ~2008.07	2008.08 ~2009.06	2017.07 ~2019.12	2020.01 ~2021.12
All	27.942	26.759	20.920	20.388
	(0.593)	(0.426)	(0.295)	(0.263)
Gender				
Male	32.887	31.811	25.934	25.443
	(0.732)	(0.505)	(0.388)	(0.178)
Female	21.063	19.684	14.218	13.663
	(0.497)	(0.423)	(0.206)	(0.430)
Age				
15~24	6.381	6.719	2.577	2.863
	(0.448)	(0.601)	(0.215)	(0.459)
25~29	7.029	7.145	5.204	6.324
	(0.304)	(0.381)	(0.300)	(0.293)
30~34	16.095	13.691	9.896	10.255
	(0.899)	(0.752)	(0.267)	(0.333)
35~39	22.948	20.563	14.848	15.766
	(1.166)	(0.580)	(0.551)	(0.322)
40~44	28.710	26.003	19.303	17.419
	(1.534)	(0.381)	(1.030)	(0.449)
45~49	34.853	32.235	23.325	21.489
	(0.901)	(0.902)	(0.438)	(0.411)
50~54	37.994	35.720	25.060	22.971
	(1.101)	(0.337)	(0.576)	(0.648)
55~59	41.767	40.264	28.462	25.447
	(1.699)	(1.026)	(1.175)	(0.725)
60~	56.112	54.545	36.909	35.332
	(3.527)	(3.998)	(1.137)	(1.197)
Education Level				
Elementary	45.273	44.164	32.537	32.205
	(2.709)	(3.327)	(1.534)	(1.747)
Middle	35.659	35.178	28.393	28.372
	(0.719)	(0.453)	(0.528)	(0.746)
High	27.862	27.171	22.870	22.815
	(0.553)	(0.220)	(0.285)	(0.273)
Junior College	15.621	15.143	15.159	15.173
	(0.267)	(0.763)	(0.348)	(0.264)
University	22.445	21.200	17.022	16.009
	(0.506)	(0.394)	(0.274)	(0.267)
Graduate or more	15.142	15.461	15.175	14.712
	(0.780)	(0.378)	(0.548)	(0.495)

TABLE 3
IMPACT OF COVID-19 ON LABOR MARKET BASED ON INDIVIDUAL-LEVEL DATA

(2017.7 ~ 2020.6)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-2.230***	-2.301***	0.058**	-3.647***	-2.239***
	(0.233)	(0.396)	(0.198)	(0.348)	(0.153)
R-sq (Adjusted)	0.929	0.937	0.341	0.729	0.906
Mean Dep.	65.77	68.54	4.23	21.74	16.24
No Obs.	3,847	3,888	3,847	3,847	3,847

(2017.7 ~ 2020.12)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-2.256***	-2.462***	0.197	-4.194***	-1.982***
	(0.181)	(0.307)	(0.143)	(0.260)	(0.114)
R-sq (Adjusted)	0.922	0.929	0.331	0.723	0.904
Mean Dep.	65.53	68.25	4.18	21.31	16.08
No Obs.	4,488	4,536	4,488	4,488	4,488

(2017.7 ~ 2021.6)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-1.730***	-1.928***	0.027	-4.867***	-2.265***
	(0.237)	(0.401)	(0.176)	(0.341)	(0.157)
R-sq (Adjusted)	0.917	0.924	0.330	0.698	0.885
Mean Dep.	65.38	68.12	4.23	21.02	15.95
No Obs.	5,131	5,184	5,131	5,131	5,131

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.945***	-1.504***	-0.241*	-3.048***	-1.651***
	(0.186)	(0.317)	(0.138)	(0.267)	(0.148)
R-sq (Adjusted)	0.916	0.922	0.313	0.703	0.837
Mean Dep.	65.44	68.09	4.13	21.02	15.92
No Obs.	5,772	5,832	5,772	5,772	5,772

TABLE 4

COMPARISON OF LABOR MARKET IMPACTS OF THE 2008 FINANCIAL CRISIS AND COVID-19 BASED ON INIDVIDUAL-LEVEL DATA

(2017.7 ~ 2020.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.591**	-0.457	1.274***	0.472	-0.770***
	(0.249)	(0.457)	(0.146)	(0.455)	(0.222)
Additional	0.198	0.156	-0.650***	-9.445***	-9.741***
COVID-19	(0.339)	(0.623)	(0.199)	(0.621)	(0.303)
R-sq (Adjusted)	0.909	0.906	0.392	0.643	0.847
Mean Dep.	65.72	67.90	3.90	26.17	20.34
No Obs.	7,662	7,776	7,662	7,662	7,662

(2017.7 ~ 2020.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.390*	0.455	0.887***	0.395	-0.767***
	(0.213)	(0.396)	(0.125)	(0.386)	(0.188)
Additional	-0.215	-0.054	-0.326**	-9.765***	-9.542***
COVID-19	(0.267)	(0.497)	(0.158)	(0.485)	(0.236)
R-sq (Adjusted)	0.908	0.903	0.375	0.637	0.848
Mean Dep.	65.52	67.69	3.91	25.87	20.15
No Obs.	8,937	9,072	8,937	8,937	8,937

(2017.7 ~ 2021.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.185	-0.351	0.517***	-0.485*	-0.554***
	(0.159)	(0.295)	(0.093)	(0.290)	(0.141)
Additional	0.058	0.458	0.203	-9.266***	-10.047***
COVID-19	(0.254)	(0.472)	(0.150)	(0.464)	(0.226)
R-sq (Adjusted)	0.908	0.903	0.368	0.625	0.843
Mean Dep.	65.39	67.56	3.93	25.70	19.96
No Obs.	10,105	10,368	10,105	10,105	10,105

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.174	-0.338	0.506***	-0.437	-0.553***
	(0.160)	(0.294)	(0.094)	(0.290)	(0.149)
Additional	0.574**	0.723*	-0.210	-8.095***	-9.527***
COVID-19	(0.228)	(0.418)	(0.134)	(0.412)	(0.211)
R-sq (Adjusted)	0.905	0.903	0.357	0.621	0.824
Mean Dep.	65.47	67.51	3.90	25.43	19.71
No Obs.	10,739	11,664	10,739	10,739	10,739

TABLE 4.1

COMPARISON OF LABOR MARKET IMPACTS OF THE 2008 FINANCIAL CRISIS AND COVID-19 BASED ON INIDVIDUAL-LEVEL DATA WITH DIFFERENT SETTING ON RECESSION

(2017.7 ~ 2020.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.591**	-0.457	1.274***	0.472	-0.770***
	(0.249)	(0.457)	(0.146)	(0.455)	(0.222)
Additional	0.198	0.156	-0.650***	-9.445***	-9.741***
COVID-19	(0.339)	(0.623)	(0.199)	(0.621)	(0.303)
R-sq (Adjusted)	0.909	0.906	0.392	0.643	0.847
Mean Dep.	65.72	67.90	3.90	26.17	20.34
No Obs.	7,662	7,776	7,662	7,662	7,662

(2017.7 ~ 2020.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.508**	-0.455	1.279***	0.635	-0.847***
	(0.244)	(0.396)	(0.144)	(0.443)	(0.215)
Additional	-0.095	-0.054	-0.723***	-10.008***	-9.460***
COVID-19	(0.294)	(0.497)	(0.173)	(0.533)	(0.259)
R-sq (Adjusted)	0.908	0.903	0.376	0.637	0.848
Mean Dep.	65.52	67.69	3.91	25.87	20.15
No Obs.	8,937	9,072	8,937	8,937	8,937

(2017.7 ~ 2021.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.481**	-0.351	1.257***	0.378	-0.870***
	(0.241)	(0.295)	(0.142)	(0.441)	(0.215)
Additional	0.389	0.458	-0.627***	-10.149***	-9.665***
COVID-19	(0.326)	(0.472)	(0.192)	(0.595)	(0.290)
R-sq (Adjusted)	0.908	0.903	0.369	0.625	0.843
Mean Dep.	65.39	67.56	3.93	25.70	19.96
No Obs.	10,105	10,368	10,105	10,105	10,105

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
Recession	-0.597**	-0.338	1.332***	0.155	-1.003***
	(0.241)	(0.294)	(0.142)	(0.437)	(0.224)
Additional	1.001***	0.723*	-1.044***	-8.687***	-9.071***
COVID-19	(0.292)	(0.418)	(0.171)	(0.528)	(0.270)
R-sq (Adjusted)	0.905	0.903	0.359	0.62	0.825
Mean Dep.	65.47	67.51	3.90	25.43	19.71
No Obs.	10,739	11,664	10,739	10,739	10,739

TABLE 4.2
IMPACT OF COVID-19 AND RELEVANT POLICIES ON LABOR MARKET BASED ON INDIVIDUAL-LEVEL DATA

(2017.7 ~ 2020.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-2.823***	-3.030***	0.264	-3.463***	-2.033***
	(0.414)	(0.403)	(0.260)	(0.652)	(0.286)
Stimulus Check	-1.643***	-1.036***	1.112***	-0.805	0.593**
	(0.350)	(0.341)	(0.220)	(0.552)	(0.242)
Social Distancing					
Level 1	1.734***	1.548***	-0.665**	0.076	-0.477
	(0.442)	(0.431)	(0.278)	(0.697)	(0.305)
Level 2	N/A	N/A	N/A	N/A	N/A
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)	0.931	0.938	0.471	0.729	0.907
Mean Dep.	66.43	69.20	4.09	21.73	16.24
No Obs.	3,807	3,807	3,807	3,807	3,807

(2017.7 ~ 2020.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.909***	-2.098***	0.272	-4.530***	-1.889***
	(0.303)	(0.295)	(0.187)	(0.472)	(0.207)
Stimulus Check	-0.587***	-0.443**	0.265*	-0.228	0.247
	(0.224)	(0.218)	(0.138)	(0.349)	(0.153)
Social Distancing					
Level 1	0.372	0.324	-0.300	0.733	-0.388*
	(0.299)	(0.292)	(0.185)	(0.466)	(0.204)
Level 2	0.140	-0.170	-0.535**	0.199	-0.107
	(0.340)	(0.332)	(0.210)	(0.530)	(0.232)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)	0.929	0.936	0.456	0.723	0.905
Mean Dep.	66.23	69.96	4.06	21.28	16.07
No Obs.	4,437	4,437	4,437	4,437	4,437

(2017.7 ~ 2021.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.607***	-1.578***	0.498***	-5.321***	-2.357***
	(0.307)	(0.299)	(0.188)	(0.489)	(0.226)
Stimulus Check	-0.586***	-0.538***	0.144	-0.706***	-0.160
	(0.168)	(0.163)	(0.102)	(0.267)	(0.123)
Social Distancing					
Level 1	0.961***	0.771***	-0.439***	1.828***	-0.233
	(0.263)	(0.257)	(0.161)	(0.420)	(0.194)
Level 2	0.936***	0.500**	-0.619***	1.752***	0.260
	(0.242)	(0.236)	(0.148)	(0.386)	(0.178)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)	0.927	0.934	0.452	0.698	0.886
Mean Dep.	66.06	68.81	4.13	20.98	15.94
No Obs.	5,073	5,073	5,073	5,073	5,073

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-0.356	-1.122***	-0.472**	-2.036***	-0.436
	(0.336)	(0.330)	(0.215)	(0.531)	(0.296)
Stimulus Check	-0.457***	-0.436***	0.153	-0.718***	-0.102
	(0.156)	(0.153)	(0.100)	(0.247)	(0.137)
Social Distancing					
Level 1	-0.372	0.248	0.594**	-1.468**	-2.150***
	(0.395)	(0.387)	(0.253)	(0.624)	(0.347)
Level 2	-0.421	-0.035	0.373*	-1.566***	-1.703***
	(0.329)	(0.322)	(0.210)	(0.519)	(0.289)
Level 2.5	-1.375***	-0.559*	0.960***	-3.358***	-1.955***
	(0.332)	(0.326)	(0.213)	(0.525)	(0.292)
Level 3	0.448	0.412	-0.052	1.029**	-1.117***
	(0.325)	(0.319)	(0.208)	(0.514)	(0.286)
R-sq (Adjusted)	0.926	0.931	0.405	0.704	0.837
Mean Dep.	66.16	68.82	4.04	20.97	15.91
No Obs.	5,703	5,703	5,703	5,703	5,703

TABLE 4.3
DETAILED IMPACT OF COVID-19 AND RELEVANT POLICIES ON LABOR MARKET BASED ON INDIVIDUAL-LEVEL DATA

(2017.7 ~ 2020.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-2.830***	-3.030***	0.264	-3.463***	-2.033***
	(0.414)	(0.403)	(0.260)	(0.652)	(0.286)
Stimulus Check					
#1	-1.643***	-1.036***	1.112***	-0.805	0.593**
	(0.350)	(0.341)	(0.220)	(0.552)	(0.242)
#2	N/A	N/A	N/A	N/A	N/A
#3	N/A	N/A	N/A	N/A	N/A
#4	N/A	N/A	N/A	N/A	N/A
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	1.735***	1.548***	-0.665**	0.076	-0.477
	(0.442)	(0.431)	(0.278)	(0.697)	(0.305)
Level 2	N/A	N/A	N/A	N/A	N/A
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.	66.43	69.20	4.09	21.73	16.24
No Obs.	3,807	3,807	3,807	3,807	3,807

(2017.7 ~ 2020.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.953***	-2.173***	0.294	-4.483***	-1.854***
	(0.332)	(0.323)	(0.205)	(0.516)	(0.226)
Stimulus Check					
#1	-0.625**	-0.507**	0.284*	-0.188	0.278
	(0.252)	(0.245)	(0.155)	(0.392)	(0.172)
#2	-0.498	-0.292	0.221	-0.323	0.176
	(0.350)	(0.341)	(0.216)	(0.545)	(0.239)
#3	N/A	N/A	N/A	N/A	N/A
#4	N/A	N/A	N/A	N/A	N/A
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	0.432	0.427	-0.330	0.669	-0.437*
	(0.350)	(0.341)	(0.216)	(0.546)	(0.239)
Level 2	0.167	-0.124	-0.548**	0.171	-0.129
	(0.350)	(0.341)	(0.216)	(0.545)	(0.239)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.	66.23	69.96	4.06	21.28	16.07
No Obs.	4,437	4,437	4,437	4,437	4,437

(2017.7 ~ 2021.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-0.888*	-0.9*	0.561*	-3.131***	-1.505***
	(0.472)	(0.461)	(0.289)	(0.752)	(0.347)
Stimulus Check					
#1	-0.568**	-0.456*	0.279*	0.000	0.274
	(0.255)	(0.249)	(0.156)	(0.407)	(0.188)
#2	-0.500	-0.305	0.208	-0.283	0.195
	(0.354)	(0.345)	(0.217)	(0.564)	(0.260)
#3	-1.827***	-1.638***	0.152	-3.930***	-1.262***
	(0.532)	(0.519)	(0.325)	(0.847)	(0.391)
#4	-0.111	-0.387	-0.226	-1.178*	-0.934***
	(0.383)	(0.374)	(0.234)	(0.610)	(0.282)
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	0.468	0.441	-0.367*	0.818	-0.411
	(0.355)	(0.346)	(0.217)	(0.565)	(0.260)
Level 2	0.169	-00.110	-0.532**	0.133	-0.147
	(0.354)	(0.345)	(0.216)	(0.564)	(0.260)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.	66.06	68.81	4.13	20.98	15.94
No Obs.	5,073	5,073	5,073	5,073	5,073

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.007**	-1.621***	-0.510	-1.875**	-0.801*
	(0.511)	(0.501)	(0.327)	(0.808)	(0.449)
Stimulus Check					
#1	-0.507**	-0.391	0.263	-0.017	0.320
	(0.256)	(0.251)	(0.164)	(0.405)	(0.225)
#2	-0.554	-0.377	0.178	-0.245	0.094
	(0.351)	(0.345)	(0.225)	(0.555)	(0.309)
#3	-1.880***	-1.673***	0.225	-3.846***	-1.336***
	(0.530)	(0.520)	(0.339)	(0.837)	(0.466)
#4	-0.113	-0.389	-0.190	-1.156*	-0.947***
	(0,386)	(0.379)	(0.247)	(0.610)	(0.339)
#5	0.249	0.091	0.173	-0.887	0.238
	(0.424)	(0.416)	(0.271)	(0.670)	(0.373)
Social Distancing					
Level 1	0.523	1.094*	0.725*	-0.456	-1.117**
	(0.626)	(0.614)	(0.401)	(0.990)	(0.551)
Level 2	0.273	0.603	0.542	-1.169	-0.839*
	(0.563)	(0.553)	(0.361)	(0.890)	(0.495)
Level 2.5	0.134	0.727	1.018**	-1.421	-0.634
	(0.646)	(0.634)	(0.414)	(1.022)	(0.569)
Level 3	0.543	0.503	-0.021	0.997*	-0.995***
	(0.338)	(0.332)	(0.216)	(0.534)	(0.297)
R-sq (Adjusted)					
Mean Dep.	66.16	68.82	4.04	20.97	15.91
No Obs.	5,073	5,073	5,073	5,073	5,073

TABLE 4.4

DETAILED IMPACT OF COVID-19 AND RELEVANT POLICIES ON LABOR MARKET BASED ON INDIVIDUAL-LEVEL DATA

(2017.7 ~ 2020.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-2.830***	-3.030***	0.264	-3.463***	-2.033***
	(0.414)	(0.403)	(0.260)	(0.652)	(0.286)
Stimulus Check #1	-1.643***	-1.036***	1.112***	-0.805	0.593**
	(0.350)	(0.341)	(0.220)	(0.552)	(0.242)
#2 ~ #4	N/A	N/A	N/A	N/A	N/A
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	1.735***	1.548***	-0.665**	0.076	-0.477
	(0.442)	(0.431)	(0.278)	(0.697)	(0.305)
Level 2	N/A	N/A	N/A	N/A	N/A
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.					
No Obs.	3,807	3,807	3,807	3,807	3,807

(2017.7 ~ 2020.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.953***	-2.173***	0.294	-4.483***	-1.854***
	(0.332)	(0.323)	(0.205)	(0.516)	(0.226)
Stimulus Check					
#1	-0.625**	-0.57**	0.284*	-0.188	0.277
	(0.252)	(0.245)	(0.155)	(0.392)	(0.172)
#2 ~ #4	-0.498	-0.292	0.221	-0.323	0.176
	(0.350)	(0.341)	(0.216)	(0.545)	(0.239)
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	0.432	0.427	-0.330	0.669	-0.437*
	(0.350)	(0.341)	(0.216)	(0.546)	(0.239)
Level 2	0.167	-0.124	-0.548**	0.171	-0.129
	(0.350)	(0.341)	(0.216)	(0.545)	(0.239)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.					
No Obs.	4,437	4,437	4,437	4,437	4,437

(2017.7 ~ 2021.6)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.749***	-1.676***	0.610***	-5.127***	-2.156***
	(0.350)	(0.341)	(0.214)	(0.558)	(0.257)
Stimulus Check					
#1	-0.726***	-0.634***	0.254*	-0.515	0.037
	(0.236)	(0.230)	(0.144)	(0.375)	(0.173)
#2 ~ #4	-0.435*	-0.434*	0.026	-0.911**	-0.373**
	(0.245)	(0.239)	(0.150)	(0.390)	(0.180)
#5	N/A	N/A	N/A	N/A	N/A
Social Distancing					
Level 1	1.082***	0.855***	-0.534***	1.663***	-0.404*
	(0.300)	(0.293)	(0.183)	(0.478)	(0.220)
Level 2	0.999***	0.543**	-0.668***	1.666***	0.172
	(0.253)	(0.247)	(0.155)	(0.404)	(0.186)
Level 2.5	N/A	N/A	N/A	N/A	N/A
Level 3	N/A	N/A	N/A	N/A	N/A
R-sq (Adjusted)					
Mean Dep.					
No Obs.	5,073	5,073	5,073	5,073	5,073

(2017.7 ~ 2021.12)

Sample	**Age 15+**		**Labor Force**	**Employed**	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-employed workers
	(1)	(2)	(3)	(4)	(5)
COVID-19	-1.068**	-1.651***	-0.484	-1.897**	-0.763*
	(0.510)	(0.501)	(0.327)	(0.807)	(0.449)
Stimulus Check					
#1	-0.663***	-0.564**	0.252*	-0.537	0.082
	(0.235)	(0.231)	(0.151)	(0.372)	(0.207)
#2 ~ #4	-0.474*	-0.477**	0.033	-0.877**	-0.430**
	(0.244)	(0.240)	(0.156)	(0.386)	(0.215)
#5	0.273	0.107	0.166	-0.860	0.237
	(0.424)	(0.416)	(0.271)	(0.670)	(0.373)
Social Distancing					
Level 1	0.345	0.784	0.624*	-1.584*	-1.772***
	(0.557)	(0.547)	(0.357)	(0.881)	(0.490)
Level 2	0.309	0.522	0.448	-1.623*	-1.197**
	(0.537)	(0.527)	(0.344)	(0.849)	(0.472)
Level 2.5	-0.660	-0.001	1.084***	-3.346***	-1.324***
	(0.563)	(0.553)	(0.361)	(0.891)	(0.495)
Level 3	0.605*	0.528	-0.052	0.995*	-1.050***
	(0.336)	(0.330)	(0.215)	(0.531)	(0.295)
R-sq (Adjusted)					
Mean Dep.					
No Obs.	5,073	5,073	5,073	5,073	5,073

TABLE 5
HETEROGENOUS IMPACT OF COVID-19

(2017.7 ~ 2020.6)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-Employed workers
No Obs.	5,658	5,745	5,658	5,658	5,658
	(1)	(2)	(3)	(4)	(5)
Panel A. by Gender					
Recession	-2.175***	-2.686***	-0.014	-3.025***	-2.302***
	(0.298)	(0.296)	(0.181)	(0.401)	(0.228)
X Female	0.740*	0.977**	0.409*	-2.467***	0.129
	(0.399)	(0.405)	(0.221)	(0.589)	(0.321)
R-sq	0.933	0.944	0.572	0.717	0.924
Mean Dep.	75.57	77.88	4.74	15.19	20.18
Panel B. by Age					
Recession	2.978***	3.160***	0.708***	-3.974***	-1.294***
	(0.370)	(0.323)	(0.209)	(0.466)	(0.339)
X aged 15-24	-5.853***	-8.582***	-2.269**	11.360***	2.078***
	(0.834)	(0.769)	(0.976)	(2.269)	(0.488)
X aged 25-29	-6.156***	-11.947***	-1.869***	-0.347	1.899***
	(1.071)	(1.334)	(0.519)	(1.214)	(0.662)
X aged 30-34	0.023	1.704**	-1.139***	-2.801***	-0.222
	(0.717)	(0.840)	(0.366)	(0.958)	(0.634)
X aged 35-39	-7.372***	-11.212***	-0.236	3.525***	-2.619***
	(0.795)	(0.802)	(0.548)	(1.040)	(0.557)
X aged 40-44	-2.375***	-2.198***	0.109	2.745***	-0.068
	(0.697)	(0.748)	(0.361)	(0.915)	(0.711)
X aged 45-49	-7.157***	-8.252***	1.263***	2.501***	-1.416***
	(0.524)	(0.547)	(0.391)	(0.770)	(0.535)
X aged 50-54	-5.826***	-6.928***	-0.189	1.465***	-2.535***
	(0.448)	(0.425)	(0.264)	(0.510)	(0.556)
X aged 55-59	-3.337***	-2.883***	0.620**	-0.483	-2.193***
	(0.448)	(0.388)	(0.240)	(0.598)	(0.537)
R-sq	0.949	0.961	0.439	0.867	0.962
Mean Dep.	44.76	45.48	3.10	24.08	33.89
Panel C. by Education Level					
Recession	-1.170***	-0.933***	0.357***	-4.859***	-1.218***
	(0.148)	(0.151)	(0.112)	(0.192)	(0.133)
X Elementary School	-4.018***	-5.943***	-0.844*	-8.813***	-4.624***
	(1.094)	(1.143)	(0.463)	(1.640)	(0.757)
X Middle School	-4.094***	-3.068***	1.875***	3.540***	-2.676***
	(0.564)	(0.483)	(0.403)	(0.680)	(0.424)
X Junior College	1.125***	0.642**	-0.365*	0.653**	-0.567**
	(0.277)	(0.269)	(0.190)	(0.324)	(0.243)
X College	3.478***	2.496***	-0.775***	2.268***	-0.567**
	(0.209)	(0.239)	(0.138)	(0.261)	(0.244)
X Graduate or more	0.428	-1.955***	-1.080***	3.025***	0.395
	(0.438)	(0.586)	(0.251)	(0.402)	(0.349)
R-sq	0.993	0.993	0.794	0.963	0.988
Mean Dep.	68.09	69.94	4.05	22.06	20.83

(2017.7 ~ 2020.12)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-Employed workers
No Obs.	6,591	6,699	6,591	6,591	6,591
	(1)	(2)	(3)	(4)	(5)
Panel A. by Gender					
Recession	-2.475***	-3.159***	0.017	-3.019***	-2.061***
	(0.227)	(0.241)	(0.138)	(0.299)	(0.172)
X Female	0.730**	1.300***	0.602***	-3.032***	0.146
	(0.301)	(0.308)	(0.171)	(0.435)	(0.240)
R-sq	0.931	0.934	0.551	0.714	0.921
Mean Dep.	75.30	77.46	4.67	14.91	20.03
Panel B. by Age					
Recession	2.687***	2.824***	0.506***	-2.710***	-1.569***
	(0.275)	(0.247)	(0.150)	(0.353)	(0.282)
X aged 15-24	-3.713***	-6.831***	-2.267***	6.776***	1.763***
	(0.693)	(0.632)	(0.689)	(1.625)	(0.381)
X aged 25-29	-4.857***	-10.217***	-1.797***	-2.510***	2.109***
	(0.771)	(1.057)	(0.372)	(0.953)	(0.515)
X aged 30-34	0.015	0.335	-0.328	-4.571***	0.171
	(0.532)	(0.624)	(0.269)	(0.766)	(0.480)
X aged 35-39	-7.503***	-9.555***	0.630	0.906	-0.930**
	(0.586)	(0.596)	(0.395)	(0.756)	(0.439)
X aged 40-44	-4.634***	-4.262***	0.476	0.219	-0.587
	(0.585)	(0.626)	(0.308)	(0.697)	(0.539)
X aged 45-49	-7.795***	-8.447***	1.026***	-1.031*	-1.525***
	(0.388)	(0.411)	(0.291)	(0.595)	(0.432)
X aged 50-54	-6.216***	-6.684***	-0.206	0.900**	-2.570***
	(0.325)	(0.312)	(0.200)	(0.403)	(0.427)
X aged 55-59	-2.896***	-2.520***	0.375**	-1.081**	-1.962***
	(0.340)	(0.300)	(0.172)	(0.438)	(0.410)
R-sq	0.947	0.958	0.433	0.855	0.952
Mean Dep.	44.99	45.77	3.01	24.02	33.73
Panel C. by Education Level					
Recession	-1.738***	-0.933***	0.842***	-4.187***	-1.008***
	(0.120)	(0.151)	(0.088)	(0.150)	(0.100)
X Elementary School	-4.292***	-6.240***	-0.123	-11.501***	-3.879***
	(0.812)	(0.885)	(0.368)	(1.232)	(0.553)
X Middle School	-3.499***	-3.109***	0.507*	0.708	-1.880***
	(0.414)	(0.366)	(0.300)	(0.511)	(0.315)
X Junior College	1.623***	0.925***	-0.918***	0.816***	-0.952***
	(0.206)	(0.203)	(0.142)	(0.236)	(0.192)
X College	3.465***	2.402***	-1.029***	2.030***	-0.964***
	(0.163)	(0.180)	(0.109)	(0.205)	(0.199)
X Graduate or more	1.239***	0,002	-1.589***	2.145***	0.163
	(0.346)	(0.453)	(0.186)	(0.311)	(0.283)
R-sq	0.991	0.992	0.778	0.960	0.988
Mean Dep.	67.96	69.93	4.08	21.72	20.83

(2017.7 ~ 2021.6)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-Employed workers
No Obs.	7,536	7,656	7,536	7,536	7,536
	(1)	(2)	(3)	(4)	(5)
Panel A. by Gender					
Recession	-2.381***	-2.985***	-0.134	-3.916***	-1.989***
	(0.291)	(0.324)	(0.177)	(0.376)	(0.253)
X Female	1.086***	1.961***	1.131***	-3.120***	-0.612*
	(0.397)	(0.431)	(0.220)	(0.586)	(0.322)
R-sq	0.929	0.925	0.542	0.720	0.893
Mean Dep.	75.05	77.23	4.68	14.69	19.95
Panel B. by Age					
Recession	1.776***	2.576***	1.609***	-4.226***	-2.826***
	(0.366)	(0.327)	(0.224)	(0.476)	(0.357)
X aged 15-24	-1.295	-6.849***	-3.452***	6.640***	3.470***
	(0.926)	(0.992)	(0.850)	(2.339)	(0.464)
X aged 25-29	-0.274	-2.667*	-1.825***	-1.848	1.788***
	(1.026)	(1.364)	(0.483)	(1.239)	(0.626)
X aged 30-34	0.943	-0.577	-1.365***	-4.730***	2.789***
	(0.680)	(0.763)	(0.359)	(1.041)	(0.606)
X aged 35-39	-5.709***	-7.761***	-0.707	2.183**	1.946**
	(0.753)	(0.769)	(0.504)	(0.959)	(0.854)
X aged 40-44	-3.790***	-3.895***	-1.099***	0.814	0.041
	(0.778)	(0.818)	(0.426)	(0.883)	(0.680)
X aged 45-49	-8.267***	-8.659***	0.094	-0.347	-1.946***
	(0.521)	(0.537)	(0.371)	(0.746)	(0.542)
X aged 50-54	-6.378***	-6.813***	-1.020***	3.264***	-2.465***
	(0.435)	(0.407)	(0.298)	(0.534)	(0.537)
X aged 55-59	-3.319***	-3.010***	-0.113	0.135	-2.987***
	(0.434)	(0.391)	(0.239)	(0.588)	(0.501)
R-sq	0.937	0.951	0.379	0.830	0.951
Mean Dep.	44.82	45.78	3.26	23.62	33.58
Panel C. by Education Level					
Recession	-2.223***	-1.654***	1.223***	-4.667***	-1.335***
	(0.157)	(0.159)	(0.112)	(0.199)	(0.128)
X Elementary School	-0.845	-1.906**	-1.062**	-13.592***	-2.820***
	(1.031)	(1.119)	(0.470)	(1.601)	(0.793)
X Middle School	-4.000***	-3.679***	0.574	-0.027	-1.677***
	(0.529)	(0.483)	(0.383)	(0.678)	(0.413)
X Junior College	2.056***	1.527***	-0.786***	1.566***	-1.674***
	(0.265)	(0.262)	(0.180)	(0.297)	(0.244)
X College	4.144***	2.867***	-1.336***	2.735***	-1.284***
	(0.212)	(0.243)	(0.142)	(0.265)	(0.253)
X Graduate or more	2.359***	0.068	-2.142***	1.956***	0.397
	(0.470)	(0.654)	(0.236)	(0.481)	(0.369)
R-sq	0.991	0.991	0.780	0.956	0.987
Mean Dep.	67.70	69.75	4.20	21.53	20.72

(2017.7 ~ 2021.12)

Sample	Age 15+		Labor Force	Employed	
Dep. Variables	Employment	Labor Participation Rate	Unemployment	% of Temporary workers	% of Self-Employed workers
No Obs.	8,469	8,610	8,469	8,469	8,469
	(1)	(2)	(3)	(4)	(5)
Panel A. by Gender					
Recession	-1.687***	-2.985***	-0.718***	-2.756***	-1.505***
	(0.229)	(0.324)	(0.138)	(0.294)	(0.226)
X Female	1.080***	1.961***	1.032***	-2.534***	-0.330
	(0.313)	(0.431)	(0.170)	(0.452)	(0.298)
R-sq	0.928	0.923	0.522	0.717	0.861
Mean Dep.	75.08	77.12	4.51	14.58	19.95
Panel B. by Age					
Recession	1.921***	2.501***	1.427***	-3.130***	-3.079***
	(0.303)	(0.265)	(0.189)	(0.372)	(0.282)
X aged 15-24	-0.757	-5.778***	-2.487***	13.472***	3.266***
	(0.754)	(0.788)	(0.792)	(1.863)	(0.368)
X aged 25-29	2.503***	-0.861	-3.064***	0.758	3.102***
	(0.861)	(1.112)	(0.396)	(0.958)	(0.484)
X aged 30-34	0.838	-0.721	-1.582***	-5.762***	2.647***
	(0.534)	(0.584)	(0.291)	(0.836)	(0.484)
X aged 35-39	-4.833***	-7.140***	-0.919**	0.836	4.915***
	(0.612)	(0.627)	(0.395)	(0.764)	(0.867)
X aged 40-44	-4.419***	-4.482***	-1.187***	1.973***	0.175
	(0.629)	(0.649)	(0.347)	(0.721)	(0.544)
X aged 45-49	-7.140***	-8.219***	-0.925***	-0.549	-1.228***
	(0.431)	(0.432)	(0.295)	(0.565)	(0.430)
X aged 50-54	-5.205***	-5.930***	-1.405***	3.097***	-2.676***
	(0.361)	(0.335)	(0.239)	(0.426)	(0.431)
X aged 55-59	-3.243***	-3.119***	-0.443**	-0.266	-2.014***
	(0.363)	(0.320)	(0.204)	(0.463)	(0.396)
R-sq	0.931	0.948	0.298	0.829	0.951
Mean Dep.	44.96	45.92	3.29	23.46	33.50
Panel C. by Education Level					
Recession	-1.774***	-1.723***	0.376***	-4.245***	-1.287***
	(0.140)	(0.137)	(0.092)	(0.155)	(0.106)
X Elementary School	-0.639	-1.501*	-0.617*	-8.733***	0.608
	(0.814)	(0.895)	(0.359)	(1.242)	(0.803)
X Middle School	-2.882***	-2.516***	0.226	1.422***	-1.692***
	(0.424)	(0.409)	(0.304)	(0.550)	(0.339)
X Junior College	1.961***	1.707***	-0.418***	1.336***	-1.547***
	(0.225)	(0.218)	(0.139)	(0.229)	(0.195)
X College	4.002***	3.210***	-0.677***	2.710***	-1.194***
	(0.175)	(0.197)	(0.112)	(0.207)	(0.202)
X Graduate or more	1.891***	1.287**	-1.132***	1.659***	0.596**
	(0.388)	(0.508)	(0.190)	(0.383)	(0.303)
R-sq	0.988	0.989	0.751	0.955	0.986
Mean Dep.	67.73	69.75	4.09	21.28	20.69

TABLE 6
IMPACT OF COVID-19 ON LABOR MARKET BY INDUSTRY

(2017.7 ~ 2020.6)

Dep. Variables	**Log No of Employees**			**Share by Industry in the Cell**		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.026*	-0.319***	-0.239***	-0.008***	-0.021***	-0.000***
	(0.015)	(0.041)	(0.041)	(0.002)	(0.002)	(0.000)
X Agriculture	-0.017	0.307***	-0.035	0.007***	0.002***	0.000***
	(0.032)	(0.077)	(0.059)	(0.002)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.057***	0.166	0.000**	-0.001	0.007***	-0.000***
	(0.018)	(0.066)	(0.108)	(0.001)	(0.002)	(0.000)
X Wholesale/Retail	-0.022	-0.346***	0.027**	-0.011***	-0.040***	-0.000***
	(0.017)	(0.033)	(0.181)	(0.001)	(0.003)	(0.000)
X Transportation	-0.041	-0.103	-0.100**	0.003***	0.003*	0.000**
	(0.026)	(0.065)	(0.046)	(0.001)	(0.001)	(0.000)
X Accommodation	-0.012	-0.232***	-0.088***	-0.004***	-0.009***	-0.000
	(0.017)	().039)	(0.033)	(0.001)	(0.003)	(0.000)
X ICT	-0.014	0.114	-0.248***	0.003***	-0.000	0.000
	(0.042)	(0.106)	(0.086)	(0.001)	(0.001)	(0.000)
X Finance	0.026	-0.040	-0.424***	-0.001	0.000	-0.000***
	(0.032)	(0.063)	(0.080)	(0.001)	(0.001)	(0.000)
X Real Estate	0.040	-0.287***	-0.015	0.000	-0.008***	-0.000**
	(0.031)	(0.070)	(0.059)	(0.000)	(0.001)	(0.000)
X Business Service	0.182***	0.228	0.130**	0.003***	0.003***	0.000**
	(0.033)	(0.090)	(0.065)	(0.000)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	0.007	0.046	-0.085*	-0.002***	0.010***	-0.000**
	(0.021)	(0.047)	(0.048)	(0.001)	(0.001)	(0.000)
X Health	0.341***	0.171**	0.153**	0.015***	0.037***	-0.000
	(0.027)	(0.070)	(0.073)	(0.001)	(0.006)	(0.000)
X Leisure	0.266***	0.383***	0.226***	0.003***	0.010***	0.000***
	(0.036)	(0.062)	(0.064)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.016	-0.555***	-0.039	-0.003***	-0.019***	-0.000
	(0.021)	(0.047)	(0.040)	(0.001)	(0.002)	(0.000)
X Household Production	0.129	0.069	-0.514***	0.002***	0.010***	-0.000***
	(0.128)	(0.170)	(0.167)	(0.000)	(0.001)	(0.000)
R-sq.	0.977	0.834	0.908	0.987	0.889	0.966
Mean Dep.	10.81	8.33	8.23	0.15	0.08	0.00
No Obs.	19,766	19,766	19,766	73,872	73,872	73,872

(2017.7 ~ 2020.12)

Dep. Variables	**Log No of Employees**			**Share by Industry in the Cell**		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.028**	-0.301***	-0.175***	-0.008***	-0.024***	-0.000***
	(0.012)	(0.033)	(0.032)	(0.001)	(0.002)	(0.000)
X Agriculture	-0.028	0.221***	-0.086*	0.005***	0.003***	0.000***
	(0.025)	(0.063)	(0.046)	(0.001)	(0.000)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.076***	0.260***	-0.146***	0.001	0.008***	-0.000***
	(0.015)	(0.048)	(0.035)	(0.001)	(0.002)	(0.000)
X Wholesale/Retail	-0.033**	-0.317***	-0.058**	-0.012***	-0.036***	-0.000***
	(0.013)	(0.026)	(0.025)	(0.001)	(0.003)	(0.000)
X Transportation	-0.031	-0.065	-0.057	0.003***	0.002*	0.000***
	(0.020)	(0.050)	(0.037)	(0.001)	(0.001)	(0.000)
X Accommodation	-0.043***	-0.260***	-0.071***	-0.006***	-0.015***	-0.000
	(0.014)	(0.030)	(0.026)	(0.001)	(0.003)	(0.000)
X ICT	0.042	0.200**	-0.106	0.002***	0.001	-0.000
	(0.032)	(0.079)	(0.070)	(0.000)	(0.001)	(0.000)
X Finance	0.032	-0.071	-0.409***	-0.001**	-0.001	-0.000***
	(0.024)	(0.046)	(0.061)	(0.000)	(0.001)	(0.000)
X Real Estate	-0.024	-0.384***	-0.013	-0,001***	-0.011***	-0.000***
	(0.024)	(0.052)	(0.043)	(0.000)	(0.001)	(0.000)
X Business Service	0.144***	0.187***	0.130***	0.003***	0.005***	0.000**
	(0.028)	(0.070)	(0.050)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.033**	0.003	-0.190***	-0.004***	0.005**	-0.000***
	(0.016)	(0.036)	(0.038)	(0.001)	(0.002)	(0.000)
X Health	0.329***	0.113**	0.074	0.015***	0.039***	-0.000
	(0.022)	(0.055)	(0.057)	(0.001)	(0.005)	(0.000)
X Leisure	0.206***	0.247***	0.096*	0.002***	0.006***	0.000***
	(0.027)	(0.049)	(0.050)	(0.000)	(0.001)	(0.000)
X Association/Repair	-0.001	-0.546***	0.033	-0.002***	-0.018***	0.000
	(0.016)	(0.036)	(0.031)	(0.001)	(0.010)	(0.000)
X Household Production	0.327***	0.305**	-0.696***	0.002***	0.000***	0.000***
	(0.016)	(0.143)	(0,.136)	(0.000)	(0.000)	(0.000)
R-sq.	0.975	0.799	0.895	0.986	0.876	0.963
Mean Dep.	10.81	8.31	8.21	0.15	0.08	0.00
No Obs.	22,909	22,909	22,909	86.184	86.184	86.184

(2017.7 ~ 2021.6)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.012	-0.365***	-0.207***	-0.009***	-0.030***	-0.000***
	(0.016)	(0.043)	(0.042)	(0.002)	(0.002)	(0.000)
X Agriculture	-0.044***	0.202**	-0.086	0.006***	0.003***	0.000***
	(0.032)	(0.081)	(0.058)	(0.001)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.092***	0.204***	-0.161***	0.003**	0.006***	-0.000***
	(0.019)	(0.062)	(0.044)	(0.001)	(0.002)	(0.000)
X Wholesale/Retail	-0.078***	-0.393***	-0.026	-0.018***	-0.041***	-0.001***
	(0.017)	(0.034)	(0.032)	(0.001)	(0.003)	(0.000)
X Transportation	-0.024	-0.080	-0.146***	0.005***	0.005***	0.000***
	(0.027)	(0.065)	(0.052)	(0.001)	(0.002)	(0.000)
X Accommodation	-0.086***	-0.311***	-0.113***	-0.009***	-0.021***	-0.000
	(0.019)	(0.040)	(0.034)	(0.001)	(0.004)	(0.000)
X ICT	0.016	0.362***	-0.307***	0.003***	0.003***	-0.000*
	(0.040)	(0.099)	(0.086)	(0.001)	(0.001)	(0.000)
X Finance	0.078**	0.079	-0.163**	-0.000	0.002	-0.000***
	(0.032)	(0.059)	(0.079)	(0.001)	(0.002)	(0.000)
X Real Estate	-0.065**	-0.442***	-0.019	-0.001**	-0.012***	-0.000***
	(0.032)	(0.066)	(0.057)	(0.000)	(0.001)	(0.000)
X Business Service	0.222***	0.400***	0.187***	0.004***	0.007***	0.000
	(0.035)	(0.087)	(0.063)	(0.001)	(0.0001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.029	0.098**	-0.385***	-0.003***	0.010***	-0.000***
	(0.021)	(0.047)	(0.050)	(0.001)	(0.003)	(0.000)
X Health	0.384***	0.208***	-0.057	0.019***	0.055***	-0.000**
	(0.028)	(0.070)	(0.071)	(0.002)	(0.008)	(0.000)
X Leisure	0.149***	0.254***	0.021	0.001***	0.006***	0.000
	(0.035)	(0.064)	(0.065)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.040*	-0.615***	0.069*	-0.005***	-0.025***	0.000
	(0.022)	(0.047)	(0.041)	(0.001)	(0.002)	(0.000)
X Household Production	0.415	0.614***	-1.601***	0.001***	0.010***	-0.000***
	(0.166)	(0.221)	(0.201)	(0.000)	(0.001)	(0.000)
R-sq.	0.972	0.783	0.882	0.985	0.874	0.960
Mean Dep.	10.81	8.40	8.20	0.15	0.08	0.00
No Obs.	26,031	26,031	26,031	98,496	98,496	98,496

(2017.7 ~ 2021.12)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.011	-0.367***	-0.151***	-0.011***	-0.031***	-0.000***
	(0.013)	(0.035)	(0.035)	(0.001)	(0.002)	(0.000)
X Agriculture	-0.046*	0.298***	-0.104**	0.005***	0.003***	0.000***
	(0.026)	(0.066)	(0.045)	(0.001)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.101***	0.244***	-0.212***	0.002**	0.005***	-0.000***
	(0.016)	(0.050)	(0.036)	(0.001)	(0.002)	(0.000)
X Wholesale/Retail	-0.085***	-0.392***	-0.023	-0.018***	-0.041***	-0.000***
	(0.014)	(0.028)	(0.026)	(0.001)	(0.003)	(0.000)
X Transportation	-0.000	-0.089*	-0.036	0.006***	0.005***	0.000***
	(0.023)	(0.051)	(0.042)	(0.001)	(0.001)	(0.000)
X Accommodation	-0.072***	-0.254***	-0.069**	-0.009***	-0.017***	-0.000
	(0.015)	(0.032)	(0.028)	(0.001)	(0.003)	(0.000)
X ICT	0.068**	0.355***	-0.312***	0.004***	0.004***	-0.000***
	(0.034)	(0.082)	(0.073)	(0.000)	(0.001)	(0.000)
X Finance	0.078***	0.124**	-0.279***	-0.001	0.002*	-0.000***
	(0.026)	(0.048)	(0.063)	(0.000)	(0.001)	(0.000)
X Real Estate	-0.034	-0.321***	0.035	-0.001*	-0.011***	-0.000***
	(0.026)	(0.052)	(0.046)	(0.000)	(0.001)	(0.000)
X Business Service	0.232***	0.379***	0.128**	0.004***	0.005***	0.000
	(0.027)	(0.068)	(0.051)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.002	0.134***	-0.320***	-0.003***	0.011***	-0.000***
	(0.017)	(0.037)	(0.040)	(0.001)	(0.002)	(0.000)
X Health	0.402***	0.263***	-0.009	0.020***	0.058***	-0.000
	(0.023)	(0.056)	(0.058)	(0.001)	(0.007)	(0.000)
X Leisure	0.167***	0.256***	0.110**	0.001***	0.004***	0.000
	(0.027)	(0.050)	(0.050)	(0.000)	(0.001)	(0.000)
X Association/Repair	-0.028	-0.494***	0.054*	-0.004***	-0.022***	-0.000
	(0.017)	(0.037)	(0.032)	(0.001)	(0.002)	(0.000)
X Household Production	0.489***	0.646***	-1.287***	0.001***	0.007***	-0.000***
	(0.147)	(0.195)	(0.184)	(0.000)	(0.001)	(0.000)
R-sq.	0.968	0.772	0.867	0.981	0.864	0.950
Mean Dep.	10.80	8.28	8.19	0.15	0.08	0.00
No Obs.	29,057	29,057	29,057	110,808	110,808	110,808

TABLE 6.1
IMPACT OF COVID-19 ON LABOR MARKET BY INDUSTRY(MALE)

(2017.7 ~ 2020.6)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.048***	-0.287***	-0.234***	-0.006**	-0.014***	-0.000***
	(0.018)	(0.056)	(0.046)	(0.002)	(0.003)	(0.000)
X Agriculture	-0.037	0.606***	-0.153**	0.008***	0.007***	0.001***
	(0.038)	(0.094)	(0.066)	(0.001)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.0428**	0.197***	-0.224***	-0.003*	0.015***	-0.001***
	(0.019)	(0.069)	(0.043)	(0.002)	(0.004)	(0.000)
X Wholesale/Retail	-0.087***	-0.498***	-0.207***	-0.012***	-0.036***	-0.001***
	(0.018)	(0.049)	(0.031)	(0.002)	(0.04)	(0.000)
X Transportation	-0.045	-0.157**	-0.147***	0.002	0.001	0.000**
	(0.028)	(0.070)	(0.047)	(0.002	(0.002)	(0.000)
X Accommodation	0.004	-0.345***	0.066	-0.001	-0.011***	0.000***
	(0.027)	(0.062)	(0.044)	(0.001)	(0.004)	(0.000)
X ICT	0.130**	0.254*	-0.540***	0.004***	-0.001	-0.000*
	(0.052)	(0.130)	(0.120)	(0.001)	(0.001)	(0.000)
X Finance	-0.015	-0.074	-0.553***	-0.002***	-0.003	-0.000***
	(0.053)	(0.109)	(0.116)	(0.001)	(0.002)	(0.000)
X Real Estate	0.029	-0.290***	-0.187**	0.000	-0.008***	-0.000***
	(0.047)	(0.102)	(0.083)	(0.001)	(0.002)	(0.000)
X Business Service	0.203***	-0.005	0.219**	0.002*	0.001	0.000**
	(0.042)	(0.019)	(0.085)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	0.035	0.504***	-0.249***	-0.000	0.015***	-0.000*
	(0.034)	(0.085)	(0.076)	(0.001)	(0.003)	(0.000)
X Health	0.063	-0.136	0.108	0.007***	0.017***	-0.000
	(0.064)	(0.147)	(0.142)	(0.001)	(0.003)	(0.000)
X Leisure	0.173***	0.030	0.218**	0.002***	0.004*	0.000***
	(0.048)	(0.082)	(0.085)	(0.001)	(0.002)	(0.000)
X Association/Repair	0.029	-0.434***	-0.074	-0.001	-0.017***	-0.000
	(0.026)	(0.073)	(0.053)	(0.001)	(0.002)	(0.000)
X Household Production	N/A	N/A	N/A	0.000***	0.002***	0.000
				(0.000)	(0.000)	(0.000)
R-sq.	0.982	0.799	0.915	0.989	0.875	0.964
Mean Dep.	11.09	8.22	8.82	0.22	0.08	0.00
No Obs.	10,463	10,463	10,463	36,936	36,936	36,936

(2017.7 ~ 2020.12)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.039***	-0.256***	-0.220***	-0.007***	-0.018***	-0.000***
	(0.014)	(0.044)	(0.037)	(0.002)	(0.003)	(0.000)
X Agriculture	-0.018	0.485***	-0.125**	0.007***	0.007***	0.000***
	(0.031)	(0.078)	(0.054)	(0.001)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.070***	0.270***	-0.206***	0.000	0.017***	-0.000***
	(0.015)	(0.051)	(0.033)	(0.002)	(0.003)	(0.000)
X Wholesale/Retail	-0.095***	-0.472***	-0.175***	-0.012***	-0.033***	-0.001***
	(0.014)	(0.039)	(0.024)	(0.001)	(0.003)	(0.000)
X Transportation	-0.040*	-0.101*	-0.142***	0.002	0.001	0.000***
	(0.021)	(0.053)	(0.038)	(0.001)	(0.002)	(0.000)
X Accommodation	-0.062***	-0.364***	0.042	-0.003***	-0.014***	0.000***
	(0.021)	(0.050)	(0.034)	(0.001)	(0.003)	(0.000)
X ICT	0.088**	0.339***	-0.387***	0.004***	0.002*	-0.000*
	(0.038)	(0.096)	(0.093)	(0.001)	(0.001)	(0.000)
X Finance	-0.009	-0.088	-0.448***	-0.001**	-0.002	-0.000***
	(0.037)	(0.078)	(0.082)	(0.001)	(0.001)	(0.000)
X Real Estate	-0.035	-0.419***	-0.128**	-0.001**	-0.011***	-0.000***
	(0.036)	(0.079)	(0.060)	(0.000)	(0.002)	(0.000)
X Business Service	0.207***	0.101	0.171***	0.002**	0.004***	0.000
	(0.032)	(0.084)	(0.063)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	0.014	0.387***	-0.290***	-0.001	0.009***	-0.000**
	(0.026)	(0.066)	(0.061)	(0.001)	(0.002)	(0.000)
X Health	0.177***	0.095	0.106	0.007***	0.020***	-0.000
	(0.054)	(0.128)	(0.115)	(0.001)	(0.003)	(0.000)
X Leisure	0.112***	-0.124*	-0.053	0.002***	0.002	0.000***
	(0.036)	(0.007)	(0.071)	(0.000)	(0.002)	(0.000)
X Association/Repair	0.045**	-0.476***	0.018	-0.001	-0.016***	0.000
	(0.021)	(0.056)	(0.042)	(0.001)	(0.002)	(0.000)
X Household Production	N/A	N/A	N/A	0.000***	0.001***	0.000
				(0.000)	(0.000)	(0.000)
R-sq.	0.979	0.764	0.897	0.987	0.860	0.961
Mean Dep.	11.09	8.21	8.80	0.22	0.08	0.00
No Obs.	12,125	12,125	12,125	43,902	43,902	43,902

(2017.7 ~ 2021.6)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.043**	-0.294***	-0.342***	-0.009***	-0.026***	-0.000***
	(0.018)	(0.057)	(0.049)	(0.003)	(0.003)	(0.000)
X Agriculture	-0.065*	0.364***	-0.166**	0.008***	0.007***	0.001***
	(0.038)	(0.097)	(0.067)	(0.002)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.107***	0.225***	-0.150***	0.004*	0.016***	-0.000***
	(0.020)	(0.064)	(0.042)	(0.002)	(0.004)	(0.000)
X Wholesale/Retail	-0.121***	-0.466***	-0.170***	-0.019***	-0.035***	-0.001***
	(0.019)	(0.051)	(0.031)	(0.002)	(0.004)	(0.000)
X Transportation	-0.015	-0.047	-0.240***	0.006**	0.005*	0.000***
	(0.029)	(0.070)	(0.055)	(0.002)	(0.003)	(0.000)
X Accommodation	-0.097***	-0.408***	0.032	-0.004***	-0.019***	0.000***
	(0.029)	(0.065)	(0.044)	(0.000)	(0.004)	(0.000)
X ICT	-0.020	0.391***	-0.585***	0.004***	0.003**	-0.000**
	(0.047)	(0.119)	(0.111)	(0.001)	(0.001)	(0.000)
X Finance	-0.040	0.001	-0.377***	-0.001	-0.003	-0.000***
	(0.051)	(0.104)	(0.103)	(0.001)	(0.002)	(0.000)
X Real Estate	-0.112**	-0.449***	-0.164**	-0.001*	-0.009***	-0.000***
	(0.047)	(0.096)	(0.079)	(0.001)	(0.002)	(0.000)
X Business Service	0.256***	0.462***	0.181**	0.003***	0.008***	0.000
	(0.039)	(0.106)	(0.079)	(0.001)	(0.002)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.016	0.515***	-0.473***	-0.001	0.009***	-0.000
	(0.033)	(0.082)	(0.079)	(0.001)	(0.003)	(0.000)
X Health	0.148**	0.370**	0.165	0.007***	0.034***	-0.000
	(0.068)	(0.160)	(0.142)	(0.001)	(0.004)	(0.000)
X Leisure	0.042	-0.310***	-0.229**	0.000	-0.002	0.000
	(0.049)	(0.094)	(0.096)	(0.001)	(0.002)	(0.000)
X Association/Repair	0.010	-0.586***	0.001	-0.002***	-0.019***	0.000
	(0.029)	(0.075)	(0.056)	(0.001)	(0.002)	(0.000)
X Household Production	N/A	N/A	N/A	0.000***	0.001***	0.000**
				(0.000)	(0.000)	(0.000)
R-sq.	0.978	0.758	0.888	0.986	0.862	0.958
Mean Dep.	11.09	8.20	8.78	0.22	0.08	0.00
No Obs.	13,806	13,806	13,806	49,248	49,248	49,248

(2017.7 ~ 2021.12)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.040***	-0.306***	-0.267***	-0.012***	-0.025***	-0.000***
	(0.015)	(0.045)	(0.041)	(0.002)	(0.003)	(0.000)
X Agriculture	-0.062*	0.399***	-0.145***	0.007***	0.006***	0.001***
	(0.032)	(0.080)	(0.053)	(0.001)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.107***	0.254***	-0.205***	0.003	0.012***	-0.000***
	(0.017)	(0.050)	(0.034)	(0.002)	(0.003)	(0.000)
X Wholesale/Retail	-0.132***	-0.477***	-0.171***	-0.020***	-0.037***	-0.001***
	(0.015)	(0.041)	(0.026)	(0.001)	(0.003)	(0.000)
X Transportation	0.009	-0.023	-0.116***	0.008***	0.005**	0.000***
	(0.025)	(0.054)	(0.043)	(0.001)	(0.002)	(0.000)
X Accommodation	-0.065***	-0.358***	0.094***	-0.005***	-0.018***	0.000***
	(0.023)	(0.052)	(0.035)	(0.001)	(0.003)	(0.000)
X ICT	-0.007	0.321***	-0.514***	0.003***	0.002**	-0.000***
	(0.039)	(0.099)	(0.095)	(0.001)	(0.01)	(0.000)
X Finance	-0.010	0.063	-0.306***	-0.002***	-0.004**	-0.000***
	(0.040)	(0.081)	(0.078)	(0.001)	(0.002)	(0.000)
X Real Estate	-0.074**	-0.337***	-0.077	-0.001*	-0.010***	-0.000**
	(0.037)	(0.074)	(0.063)	(0.001)	(0.002)	(0.000)
X Business Service	0.239***	0.392***	0.073	0.003***	0.006***	-0.000
	(0.031)	(0.083)	(0.063)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	0.007	0.466***	-0.410***	-0.001	0.008***	-0.000
	(0.027)	(0.065)	(0.063)	(0.001)	(0.002)	(0.000)
X Health	0.213***	0.344***	0.182	0.008***	0.035***	0.000
	(0.056)	(0.131)	(0.115)	(0.001)	(0.004)	(0.000)
X Leisure	0.056	-0.209***	-0.097	0.000	-0.003*	0.000
	(0.040)	(0.074)	(0.074)	(0.001)	(0.002)	(0.000)
X Association/Repair	0.015	-0.427***	-0.024	-0.002***	-0.014***	0.000
	(0.022)	(0.057)	(0.044)	(0.001)	(0.002)	(0.000)
X Household Production	N/A	N/A	N/A	0.000***	0.001***	0.000
				(0.000)	(0.000)	(0.000)
R-sq.	0.975	0.754	0.871	0.984	0.860	0.949
Mean Dep.	11.09	8.19	8.77	0.22	0.08	0.00
No Obs.	15,427	15,427	15,427	55,404	55,404	55,404

TABLE 6.2
IMPACT OF COVID-19 ON LABOR MARKET BY INDUSTRY(FEMALE)

(2017.7 ~ 2020.6)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	0.004	-0.353***	-0.255***	-0.011***	-0.028***	-0.000
	(0.027)	(0.061)	(0.073)	(0.002)	(0.003)	(0.000)
X Agriculture	0.036	-0.308**	0.240**	0.006**	-0.003***	0.000***
	(0.056)	(0.129)	(0.116)	(0.003)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.157***	-0.092	0.364**	0.002***	-0.002	0.000***
	(0.059)	(0.188)	(0.158)	(0.001)	(0.001)	(0.000)
X Wholesale/Retail	0.034	-0.213***	0.044	-0.010***	-0.045***	-0.000
	(0.027)	(0.044)	(0.056)	(0.002)	(0.005)	(0.000)
X Transportation	-0.036	0.196	0.158	0.003***	0.004***	-0.000*
	(0.071)	(0.183)	(0.145)	(0.001)	(0.001)	(0.000)
X Accommodation	-0.023	-0.127***	-0.221***	-0.008***	-0.008	-0.000***
	(0.022)	(0.047)	(0.050)	(0.002)	(0.006)	(0.000)
X ICT	-0.288***	-0.229	0.230**	0.001*	0.000	0.000***
	(0.069)	(0.179)	(0.111)	(0.001)	(0.001)	(0.000)
X Finance	0.067*	0.009	-0.310***	0.000	0.003	-0.000***
	(0.039)	(0.065)	(0.109)	(0.001)	(0.002)	(0.000)
X Real Estate	0.050	-0.287***	0.149*	0.000	-0.008***	0.000***
	(0.040)	(0.088)	(0.082)	(0.001)	(0.002)	(0.000)
X Business Service	0.155***	0.604***	-0.002	0.004***	0.005***	0.000
	(0.054)	(0.149)	(0.101)	(0.001)	(0.002)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.014	-0.240***	0.006	-0.005***	0.005	-0.000
	(0.026)	(0.053)	(0.062)	(0.001)	(0.005)	(0.000)
X Health	0.396***	0.239***	0.155*	0.228***	0.057***	-0.000
	(0.029)	(0.080)	(0.084)	(0.003)	(0.012)	(0.000)
X Leisure	0.339***	0.676***	0.225**	0.004***	0.015***	-0.000
	(0.053)	(0.090)	(0.095)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.053*	-0.657***	-0.009	-0.004***	-0.020***	0.000
	(0.031)	(0.062)	(0.059)	(0.001)	(0.003)	(0.000)
X Household Production	0.130	0.069	-0.514***	0.003***	0.017***	-0.000***
	(0.129)	(0.172)	(0.168)	(0.000)	(0.002)	(0.000)
R-sq.	0.963	0.866	0.790	9,874	0.901	0.902
Mean Dep.	10.43	8.48	7.42	0.09	0.08	0.00
No Obs.	9,303	9,303	9,303	36,936	36,936	36,936

(2017.7 ~ 2020.12)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	-0.012	-0.358***	-0.119**	-0.010***	-0.029**	0.000
	(0.021)	(0.051)	(0.056)	(0.001)	(0.003)	(0.000)
X Agriculture	-0.051	-0.278***	-0.009	0.004	-0.002***	0.000**
	(0.042)	(0.102)	(0.085)	(0.002)	(0.000)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.109**	0.130	0.274**	0.001***	-0.002**	0.000***
	(0.042)	(0.135)	(0.133)	(0.000)	(0.001)	(0.000)
X Wholesale/Retail	0.019	-0.184***	0.043	-0.011***	-0.04***	-0.000
	(0.021)	(0.033)	(0.042)	(0.002)	(0.004)	(0.000)
X Transportation	0.003	0.148	0.386***	0.003***	0.004***	0.000
	(0.054)	(0.136)	(0.108)	(0.000)	(0.001)	(0.000)
X Accommodation	-0.023	-0.166***	-0.166***	-0.009***	-0.016***	-0.000***
	(0.018)	(0.036)	(0.040)	(0.001)	(0.005)	(0.000)
X ICT	-0.059	-0.131	0.494***	0.000	-0.000	0.000***
	(0.058)	(0.139)	(0.092)	(0.001)	(0.001)	(0.000)
X Finance	0.072**	-0.050	-0.377***	-0.001	-0.000	-0.000***
	(0.031)	(0.047)	(0.089)	(0.001)	(0.002)	(0.000)
X Real Estate	-0.013	-0.352***	0.094	-0.001	-0.011***	0.000***
	(0.033)	(0.068)	(0.063)	(0.000)	(0.001)	(0.000)
X Business Service	0.066	0.338***	0.066	0.004***	0.006***	0.000
	(0.049)	(0.116)	(0.080)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.064***	-0.224***	-0.137***	-0.006***	0.002	-0.000***
	(0.021)	(0.041)	(0.048)	(0.001)	(0.004)	(0.000)
X Health	0.371***	0.118*	0.072	0.023***	0.058***	-0.000*
	(0.023)	(0.062)	(0.066)	(0.002)	(0.011)	(0.000)
X Leisure	0.283***	0.556***	0.217***	0.003***	0.011***	0.000
	(0.039)	(0.066)	(0.070)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.037	-0.597***	0.048	-0.003***	-0.020***	0.000
	(0.024)	(0.047)	(0.046)	(0.001)	(0.002)	(0.000)
X Household Production	0.328***	0.305**	-0.697***	0.003***	0.018***	-0.000***
	(0.107)	(0.144)	(0.137)	(0.000)	(0.002)	(0.000)
R-sq.	0.959	0.831	0.774	0.971	0.889	0.893
Mean Dep.	10.43	8.46	7.41	0.09	0.08	0.00
No Obs.	10,784	10,784	10,784	43,092	43,092	43,092

(2017.7 ~ 2021.6)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	0.033	-0.458***	-0.023	-0.009**	-0.035***	-0.000
	(0.028)	(0.067)	(0.073)	(0.002)	(0.004)	(0.000)
X Agriculture	0.015	-0.043	0.116	0.003	-0.002***	0.000*
	(0.059)	(0.147)	(0.116)	(0.003)	(0.001)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	-0.001	0.049	-0.190	0.001**	-0.003*	0.000
	(0.053)	(0.197)	(0.181)	(0.000)	(0.001)	(0.000)
X Wholesale/Retail	-0.044	-0.336***	0.095*	-0.017***	-0.046***	0.000
	(0.028)	(0.045)	(0.054)	(0.002)	(0.006)	(0.000)
X Transportation	-0.085	-0.213	0.409***	0.004***	0.006***	0.000
	(0.068)	(0.183)	(0.146)	(0.001)	(0.001)	(0.000)
X Accommodation	-0.073***	-0.220***	-0.238***	-0.131***	-0.022***	-0.000***
	(0.025)	(0.048)	(0.051)	(0.002)	(0.006)	(0.000)
X ICT	0.111	0.276	0.258**	0.003***	0.003**	0.000
	(0.073)	(0.179)	(0.126)	(0.001)	(0.001)	(0.000)
X Finance	0.192***	0.156***	0.036	0.001	0.006***	-0.000
	(0.039)	(0.058)	(0.119)	(0.001)	(0.002)	(0.000)
X Real Estate	-0.012	-0.440***	0.137	-0.001	-0.014***	0.000***
	(0.045)	(0.090)	(0.084)	(0.001)	(0.002)	(0.000)
X Business Service	0.176***	0.339**	0.187*	0.005**	0.005***	0.000**
	(0.061)	(0.146)	(0.103)	(0.001)	(0.002)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.036	-0.148***	-0.341***	-0.005***	0.011**	-0.000***
	(0.028)	(0.055)	(0.064)	(0.002)	(0.005)	(0.000)
X Health	0.452***	0.168**	-0.104	0.031***	0.076***	-0.000***
	(0.029)	(0.077)	(0.082)	(0.003)	(0.015)	(0.000)
X Leisure	0.230***	0.679***	0.209**	0.002***	0.015***	-0.000
	(0.049)	(0.083)	(0.087)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.079**	-0.632***	0.127**	-0.007***	-0.031***	-0.000
	(0.033)	(0.061)	(0.059)	(0.001)	(0.003)	(0.000)
X Household Production	0.463***	0.689***	-1.662***	0.003***	0.019***	-0.000***
	(0.171)	(0.227)	(0.207)	(0.001)	(0.003)	(0.000)
R-sq.	0.951	0.805	0.748	0.967	0.878	0.874
Mean Dep.	10.43	8.44	7.41	0.09	0.08	0.00
No Obs.	12,225	12,225	12,225	49,248	49,248	49,248

(2017.7 ~ 2021.12)

Dep. Variables	Log No of Employees			Share by Industry in the Cell		
Sample	Workers	Temporary Workers	Self-Employed Workers	Workers	Temporary Workers	Self-Employed Workers
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	0.028	-0.440***	-0.004	-0.010***	-0.037***	-0.000
	(0.024)	(0.056)	(0.059)	(0.002)	(0.003)	(0.000)
X Agriculture	-0.010	0.152	-0.011	0.002	-0.001	0.000**
	(0.045)	(0.112)	(0.085)	(0.002)	(0.000)	(0.000)
X Mining	N/A	N/A	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A	N/A	N/A
X Construction	0.054	0.104	-0.241*	0.002***	-0.002**	0.000**
	(0.043)	(0.165)	(0.141)	(0.000)	(0.001)	(0.000)
X Wholesale/Retail	-0.046**	-0.322***	0.101**	-0.017***	-0.045***	-0.000
	(0.023)	(0.037)	(0.043)	(0.002)	(0.004)	(0.000)
X Transportation	-0.062	-0.450***	0.474***	0.004***	0.004***	0.000
	(0.053)	(0.149)	(0.123)	(0.000)	(0.001)	(0.000)
X Accommodation	-0.075***	-0.160***	-0.203***	-0.012***	-0.017***	-0.000***
	(0.021)	(0.039)	(0.042)	(0.002)	(0.006)	(0.000)
X ICT	0.261***	0.459***	0.082	0.004***	0.005***	0.000
	(0.051)	(0.144)	(0.107)	(0.001)	(0.001)	(0.000)
X Finance	0.191***	0.192***	-0.234**	0.001	0.009***	-0.000***
	(0.033)	(0.048)	(0.101)	(0.001)	(0.002)	(0.000)
X Real Estate	0.012	-0.310***	0.157**	-0.000	-0.012***	0.000***
	(0.036)	(0.071)	(0.067)	(0.000)	(0.001)	(0.000)
X Business Service	0.223***	0.386***	0.192**	0.005***	0.004***	0.000**
	(0.046)	(0.111)	(0.084)	(0.001)	(0.001)	(0.000)
X Public Service	N/A	N/A	N/A	N/A	N/A	N/A
X Education Service	-0.008	-0.059	-0.273***	-0.005***	0.013***	-0.000***
	(0.022)	(0.044)	(0.051)	(0.001)	(0.004)	(0.000)
X Health	0.448***	0.240***	-0.052	0.032***	0.081***	-0.000**
	(0.024)	(0.061)	(0.066)	(0.003)	(0.013)	(0.000)
X Leisure	0.249***	0.608***	0.264***	0.002***	0.012***	0.000
	(0.037)	(0.065)	(0.067)	(0.000)	(0.002)	(0.000)
X Association/Repair	-0.064**	-0.548***	0.121***	-0.007***	-0.029***	-0.000
	(0.026)	(0.048)	(0.045)	(0.001)	(0.003)	(0.000)
X Household Production	0.527***	0.703***	-1.317***	0.002***	0.013***	-0.000***
	(0.150)	(0.199)	(0.188)	(0.000)	(0.002)	(0.000)
R-sq.	0.942	0.787	0.718	0.961	0.868	0.854
Mean Dep.	10.42	8.39	7.42	0.09	0.08	0.00
No Obs.	13,630	13,630	13,630	55,404	55,404	55,404

TABLE 6.3

IMPACT OF COVID-19 ON LABOR MARKET BY WORKING HOURS PER WEEK

(2017.7 ~ 2020.6)

Dep. Variables	**Log No of Employees**			
Sample	1~14	15~35	36~52	53+
	(1)	(2)	(3)	(4)
Recession	0.482***	0.592***	-0.036	-0.892***
	(0.097)	(0.085)	(0.026)	(0.059)
X Agriculture	0.307***	0.182***	0.102**	0.009
	(0.094)	(0.061)	(0.049)	(0.072)
X Mining	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A
X Construction	0.597***	0.538***	-0.148**	-0.899***
	(0.103)	(0.080)	(0.039)	(0.091)
X Wholesale/Retail	0.499***	0.431***	-0.081***	-0.570***
	(0.067)	(0.058)	(0.026)	(0.038)
X Transportation	0.880***	0.428***	0.061	-0.431***
	(0.123)	(0.105)	(0.047)	(0.076)
X Accommodation	0.417***	0.240***	-0.056	-0.591***
	(0.080)	(0.055)	(0.042)	(0.047)
X ICT	-0.847**	0.647	-0.399**	-0.895**
	(0.329)	(0.635)	(0.171)	(0.425)
X Finance	0.260	0.248	0.058	0.857
	(0.310)	(0.385)	(0.138)	(0.340)
X Real Estate	-0.022	0.226*	-0.047	-0.397***
	(0.124)	(0.129)	(0.077)	(0.106)
X Business Service	0.444**	0.798***	0.094	-0.146
	(0.195)	(0.248)	(0.119)	(0.238)
X Public Service	0.140	0.209	-0.083	0.061
	(0.178)	(0.192)	(0.090)	(0.164)
X Education Service	0.090	0.250***	-0.069*	-0.748***
	(0.076)	(0.071)	(0.041)	(0.083)
X Health	0.248***	0.291***	0.322***	-0.470***
	(0.093)	(0.062)	(0.042)	(0.085)
X Leisure	0.411***	0.422***	0.113	0.149
	(0.122)	(0.140)	(0.097)	(0.146)
X Association/Repair	N/A	N/A	N/A	N/A
X Household	1.416***	0.367*	0.182	0.189
Production	(0.254)	(0.202)	(0.238)	(0.238)
R-sq.	0.245	0.671	0.957	0.87
Mean Dep.	6.98	8.62	10.69	8.64
No Obs.	9,387	9,387	9,387	9,387

(2017.7 ~ 2020.12)

Dep. Variables	Log No of Employees			
Sample	1~14	15~35	36~52	53+
	(1)	(2)	(3)	(4)
Recession	0.412***	0.280***	0.015	-0.738***
	(0.069)	(0.064)	(0.021)	(0.045)
X Agriculture	0.292***	0.172***	0.077**	-0.026
	(0.073)	(0.049)	(0.038)	(0.057)
X Mining	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A
X Construction	0.420***	0.455***	-0.109***	-0.726***
	(0.078)	(0.059)	(0.030)	(0.070)
X Wholesale/Retail	0.416***	0.307***	-0.074***	-0.514***
	(0.050)	(0.044)	(0.020)	(0.031)
X Transportation	0.697***	0.419***	0.043	-0.450***
	(0.095)	(0.080)	(0.035)	(0.060)
X Accommodation	0.354***	0.164***	-0.113***	-0.484***
	(0.061)	(0.044)	(0.032)	(0.038)
X ICT	-0.404*	0.139	0.100	0.075
	(0.216)	(0.384)	(0.121)	(0.264)
X Finance	0.258	0.229	0.074	0.119
	(0.259)	(0.329)	(0.116)	(0.287)
X Real Estate	0.010	0.060	-0.019	-0.352***
	(0.009)	(0.113)	(0.060)	(0.093)
X Business Service	0.310**	-0.016	0.139	-0.022
	(0.144)	(0.218)	(0.090)	(0.168)
X Public Service	0.369***	0.175	0.053	0.030
	(0.130)	(0.148)	(0.065)	(0.118)
X Education Service	0.027	0.044	-0.008	-0.669***
	(0.057)	(0.056)	(0.031)	(0.064)
X Health	0.134*	0.312***	0.299***	-0.582***
	(0.072)	(0.033)	(0.033)	(0.064)
X Leisure	0.449***	0.376***	0.083	0.088
	(0.095)	(0.107)	(0.074)	(0.111)
X Association/Repair	N/A	N/A	N/A	N/A
X Household Production	1.037***	0.500***	0.112	0.124
	(0.195)	(0.140)	(0.160)	(0.162)
R-sq.	0.256	0.631	0.949	0.856
Mean Dep.	7.01	8.63	10.70	8.61
No Obs.	11,026	11,026	11,026	11,026

(2017.7 ~ 2021.6)

Dep. Variables	Log No of Employees			
Sample	1~14	15~35	36~52	53+
	(1)	(2)	(3)	(4)
Recession	0.535***	0.135	0.053*	-0.777***
	(0.090)	(0.084)	(0.027)	(0.061)
X Agriculture	0.376***	0.199***	0.041	0.122
	(0.094)	(0.064)	(0.048)	(0.075)
X Mining	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A
X Construction	0.527***	0.534***	-0.035	-0.824***
	(0.966)	(0.073)	(0.037)	(0.088)
X Wholesale/Retail	0.445***	0.257***	-0.078***	-0.673***
	(0.064)	(0.056)	(0.026)	(0.041)
X Transportation	0.660***	0.492***	0.130***	-0.379***
	(0.116)	(0.099)	(0.042)	(0.073)
X Accommodation	0.437***	0.301***	-0.180***	-0.506***
	(0.073)	(0.054)	(0.041)	(0.047)
X ICT	0.035	-0.011	0.321**	0.413
	(0.249)	(0.422)	(0.137)	(0.308)
X Finance	-0.018	0.584	0.193	-0.129
	(0.307)	(0.371)	(0.139)	(0.316)
X Real Estate	0.170	0.009	0.060	-0.293**
	(0.115)	(0.147)	(0.079)	(0.121)
X Business Service	0.141	-0.023	0.363***	-0.037
	(0.169)	(0.235)	(0.095)	(0.182)
X Public Service	0.641***	0.249	0.020	-0.245
	(0.174)	(0.193)	(0.091)	(0.156)
X Education Service	0.101	0.050	0.082**	-0.682***
	(0.073)	(0.070)	(0.038)	(0.081)
X Health	0.296***	0.412***	0.375***	-0.711***
	(0.093)	(0.061)	(0.044)	(0.084)
X Leisure	0.601***	0.365***	0.075	-0.202
	(0.117)	(0.139)	(0.092)	(0.140)
X Association/Repair	N/A	N/A	N/A	N/A
X Household Production	1.130***	0.506***	-0.729***	-0.509**
	(0.248)	(0.188)	(0.213)	(0.219)
R-sq.	0.270	0.633	0.950	0.878
Mean Dep.	7.05	8.72	10.69	8.58
No Obs.	12,662	12,662	12,662	12,662

(2017.7 ~ 2021.12)

Dep. Variables	Log No of Employees			
Sample	1~14	15~35	36~52	53+
	(1)	(2)	(3)	(4)
Recession	0.305***	0.356***	0.007	-0.804***
	(0.070)	(0.067)	(0.022)	(0.049)
X Agriculture	0.385***	0.195***	0.003	0.015
	(0.074)	(0.051)	(0.038)	(0.061)
X Mining	N/A	N/A	N/A	N/A
X Electronics	N/A	N/A	N/A	N/A
X Construction	0.373***	0.523***	-0.060**	-0.762***
	(0.077)	(0.058)	(0.030)	(0.071)
X Wholesale/Retail	0.388***	0.362***	-0.110***	-0.682***
	(0.051)	(0.044)	(0.021)	(0.034)
X Transportation	0.640***	0.468***	0.134***	-0.415***
	(0.094)	(0.081)	(0.036)	(0.060)
X Accommodation	0.338***	0.238***	-0.218***	-0.474***
	(0.058)	(0.045)	(0.034)	(0.394)
X ICT	-0.229	0.626*	0.029	0.000
	(0.199)	(0.356)	(0.111)	(0.252)
X Finance	-0.017	1.032***	0.278***	-0.250
	(0.223)	(0.276)	(0.101)	(0.227)
X Real Estate	0.171*	0.226*	-0.016	-0.314***
	(0.090)	(0.119)	(0.064)	(0.097)
X Business Service	0.314**	0.429**	0.303***	-0.007
	(0.139)	(0.199)	(0.079)	(0.166)
X Public Service	0.560***	0.619***	-0.112	-0.081
	(0.129)	(0.147)	(0.069)	(0.117)
X Education Service	0.068	0.226***	-0.043	-0.553***
	(0.057)	(0.056)	(0.031)	(0.063)
X Health	0.283***	0.509***	0.378***	-0.624***
	(0.074)	(0.049)	(0.036)	(0.068)
X Leisure	0.578***	0.426***	0.182**	-0.267**
	(0.097)	(0.112)	(0.074)	(0.116)
X Association/Repair	N/A	N/A	N/A	N/A
X Household Production	1.065***	0.463***	-0.621***	-0.520***
	(0.171)	(0.150)	(0.168)	(0.162)
R-sq.	0.251	0.610	0.946	0.838
Mean Dep.	7.05	8.67	10.69	8.55
No Obs.	14,254	14,254	14,254	14,254

TABLE 7

IMPACT OF COVID-19 ON LABOR MARKET BY PROVINCE USING AGGREGATED DATA BY REGION

(2017.7 ~ 2020.6)

Dep. Variables	**Labor Participation Rate**		**Employment Rate**		**Unemployment Rate**	
	(1)	(2)	(3)	(4)	(5)	(6)
COVID-19	0.199**	-	-0.072	-	0.428***	-
	(0.077)		(0.102)		(0.129)	
Recession	-	-0.218**	-	-0.520***	-	0.414***
		(0.092)		(0.106)		(0.152)
Additional COVID-19	-	0.401***	-	0.408***	-	0.045
		(0.113)		(0.130)		(0.186)
R-sq	0.977	0.979	0.958	0.971	0.683	0.717
Mean Dep.	62.56	62.56	60.38	60.38	3.50	3.50
No Obs.	1,152	1,152	1,152	1,152	1,152	1,152

(2017.7 ~ 2020.12)

Dep. Variables	**Labor Participation Rate**		**Employment Rate**		**Unemployment Rate**	
	(1)	(2)	(3)	(4)	(5)	(6)
COVID-19	0.348***	-	0.026	-	0.478***	-
	(0.124)		(0.138)		(0.104)	
Recession	-	-0.170	-	-0.373**	-	0.275**
		(0.165)		(0.179)		(0.135)
Additional COVID-19	-	0.520**	-	0.401*	-	0.201
		(0.207)		(0.225)		(0.169)
R-sq	0.914	0.915	0.895	0.900	0.705	0.719
Mean Dep.	62.46	62.46	60.23	60.23	3.58	3.58
No Obs.	1,428	1,428	1,428	1,428	1,428	1,428

(2017.7 ~ 2021.6)

Dep. Variables	**Labor Participation Rate**		**Employment Rate**		**Unemployment Rate**	
	(1)	(2)	(3)	(4)	(5)	(6)
COVID-19	0.701***	-	0.877***	-	-0.320**	-
	(0.150)		(0.162)		(0.127)	
Recession	-	-0.135	-	-0.216*	-	0.106
		(0.120)		(0.128)		(0.101)
Additional COVID-19	-	0.837***	-	1.095***	-	-0.427**
		(0.192)		(0.206)		(0.163)
R-sq	0.925	0.926	0.918	0.92	0.753	0.753
Mean Dep.	62.39	62.39	60.19	60.19	3.54	3.54
No Obs.	1,632	1,632	1,632	1,632	1,632	1,632

(2017.7 ~ 2021.12)

Dep. Variables	**Labor Participation Rate**		**Employment Rate**		**Unemployment Rate**	
	(1)	(2)	(3)	(4)	(5)	(6)
COVID-19	0.594***	-	0.466***	-	0.179	-
	(0.123)		(0.164)		(0.147)	
Recession	-	-0.123	-	-0.197	-	0.094
		(0.122)		(0.162)		(0.146)
Additional COVID-19	-	0.717***	-	0.663***	-	0.085
		(0.173)		(0.230)		(0.207)
R-sq	0.926	0.926	0.886	0.886	0.591	0.588
Mean Dep.	62.34	62.34	60.10	60.10	3.61	3.61
No Obs.	1,836	1,836	1,836	1,836	1,836	1,836

TABLE 8
IMPACT OF COVID-19 ON LABOR MARKET BY PROVINCE

(2017.7 ~ 2020.6)

Dep. Variables	Labor Participation Rate	Employment Rate	Unemployment Rate
	(1)	(2)	(3)
Recession	-1.458***	-1.328***	-0.068
	(0.188)	(0.219)	(0.201)
X Busan	1.067***	1.031***	-0.066
	(0.222)	(0.202)	(0.212)
X Daegu	1.220***	1.087***	0.161
	(0.297)	(0.312)	(0.220)
X Incheon	3.383***	3.008***	0.325*
	(0.264)	(0.289)	(0.165)
X Gwangju	4.305***	4.181***	-0.168
	(0.281)	(0.263)	(0.211)
X Daejeon	5.832***	5.941***	-0.612**
	(0.263)	(0.244)	(0.261)
X Ulsan	1.950***	1.235***	1.029***
	(0.247)	(0.227)	(0.261)
X Sejong	N/A	N/A	N/A
X Gyeonggi	0.865***	0.417*	0.595***
	(0.208)	(0.219)	(0.205)
X Gangwon	4.502***	2.874***	2.416***
	(0.386)	(0.375)	(0.432)
X Chungbuk	6.576***	5.746***	0.981***
	(0.411)	(0.435)	(0.218)
X Chungnam	0.587	0.065	0.663**
	(0.501)	(0.511)	(0.277)
X Jeonbuk	3.825***	3.775***	-0.137
	(0.356)	(0.342)	(0.216)
X Jeonnam	1.632***	1.224***	0.554**
	(0.281)	(0.344)	(0.260)
X Gyeongbuk	0.011	-0.968**	1.48***
	(0.452)	(0.425)	(0.254)
X Gyeongnam	2.204***	0.876**	1.894***
	(0.329)	(0.334)	(0.205)
X Jeju	-0.39	-0.509	0.195
	(0.404)	(0.374)	(0.302)
R-sq.	0.696	0.958	0.683
Mean Dep.	62.84	60.13	62.84
No Obs.	1,152	1,152	1,152

(2017.7 ~ 2020.12)

Dep. Variables	Labor Participation Rate	Employment Rate	Unemployment Rate
	(1)	(2)	(3)
Recession	-1.288***	-1.228***	0.012
	(0.157)	(0.195)	(0.172)
X Busan	0.778***	0.777***	-0.085
	(0.180)	(0.161)	(0.0163)
X Daegu	0.118	0.075	0.083
	(0.318)	(0.811)	(0.188)
X Incheon	3.301***	3.031***	0.179
	(0.238)	(0.252)	(0.141)
X Gwangju	4.148***	4.188***	-0.385**
	(0.244)	(0.233)	(0.186)
X Daejeon	5.879***	5.700***	-0.135
	(0.208)	(0.197)	(0.215)
X Ulsan	2.101***	1.156***	1.395***
	(0.231)	(0.178)	(0.247)
X Sejong	N/A	N/A	N/A
X Gyeonggi	1.104***	0.740***	0.457***
	(0.174)	(0.178)	(0.172)
X Gangwon	5.393***	3.682***	2.512***
	(0.360)	(0.330)	(0.350)
X Chungbuk	6.892***	6.107***	0.925***
	(0.329)	(0.343)	(0.211)
X Chungnam	0.293	-0.374	0.940***
	(0.378)	(0.389)	(0.218)
X Jeonbuk	3.243***	3.213***	-0.136
	(0.287)	(0.271)	(0.173)
X Jeonnam	1.670***	1.230***	0.580**
	(0.231)	(0.291)	(0.232)
X Gyeongbuk	0.016	-1.079***	1.633***
	(0.350)	(0.322)	(0.211)
X Gyeongnam	2.136***	0.926***	1.740***
	(0.257)	(0.255)	(0.175)
X Jeju	-0.612*	-0.883***	0.420*
	(0.327)	(0.307)	(0.237)
R-sq.	0.728	0.681	0.453
Mean Dep.	62.71	59.96	4.40
No Obs.	1,428	1,428	1,428

(2017.7 ~ 2021.6)

Dep. Variables	Labor Participation Rate	Employment Rate	Unemployment Rate
	(1)	(2)	(3)
Recession	-1.143***	-0.928***	-0.235
	(0.199)	(0.242)	(0.204)
X Busan	0.910***	1.403***	-0.986***
	(0.230)	(0.228)	(0.218)
X Daegu	1.318***	1.579***	-0.513**
	(0.426)	(0.407)	(0.243)
X Incheon	2.425***	2.899***	-0.943***
	(0.310)	(0.327)	(0.197)
X Gwangju	3.012***	3.347***	-0.802***
	(0.338)	(0.343)	(0.254)
X Daejeon	5.414***	6.184***	-1.615***
	(0.303)	(0.287)	(0.262)
X Ulsan	1.273***	0.912***	0.481
	(0.287)	(0.236)	(0.309)
X Sejong	N/A	N/A	N/A
X Gyeonggi	2.125***	2.124***	-0.140
	(0.233)	(0.232)	(0.207)
X Gangwon	5.905***	4.427***	2.087***
	(0.455)	(0.408)	(0.446)
X Chungbuk	6.510***	6.232***	0.152
	(0.431)	(0.447)	(0.251)
X Chungnam	0.2	0.649	-0.731***
	(0.468)	(0.479)	(0.255)
X Jeonbuk	4.263***	4.276***	-0.256
	(0.389)	(0.368)	(0.238)
X Jeonnam	2.560***	2.075***	0.574*
	(0.299)	(0.388)	(0.308)
X Gyeongbuk	-0.990**	-1.024**	0.019
	(0.436)	(0.403)	(0.254)
X Gyeongnam	1.979***	0.925**	1.575***
	(0.356)	(0.375)	(0.238)
X Jeju	-0.386	-1.068***	0.993***
	(0.404)	(0.379)	(0.301)
R-sq.	0.772	0.724	0.510
Mean Dep.	62.57	59.83	4.38
No Obs.	1,632	1,632	1,632

(2017.7 ~ 2021.12)

Dep. Variables	Labor Participation Rate	Employment Rate	Unemployment Rate
	(1)	(2)	(3)
Recession	-1.156***	-1.268***	0.256
	(0.161)	(0.214)	(0.192)
X Busan	0.752***	1.412***	-1.189***
	(0.190)	(0.185)	(0.175)
X Daegu	1.590***	1.761***	-0.329*
	(0.333)	(0.315)	(0.196)
X Incheon	2.836***	3.110***	-0.617***
	(0.249)	(0.255)	(0.172)
X Gwangju	3.320***	3.768***	-0.974***
	(0.272)	(0.271)	(0.210)
X Daejeon	5.301***	6.004***	-1.445***
	(0.240)	(0.229)	(0.221)
X Ulsan	1.128***	0.819***	0.453*
	(0.233)	(0.189)	(0.245)
X Sejong	N/A	N/A	N/A
X Gyeonggi	1.647***	1.636***	-0.095
	(0.193)	(0.195)	(0.168)
X Gangwon	5.726***	4.417***	1.922***
	(0.372)	(0.345)	(0.361)
X Chungbuk	6.474***	6.338***	-0.062
	(0.342)	(0.353)	(0.195)
X Chungnam	0.036	0.330	-0.516**
	(0.357)	(0.366)	(0.199)
X Jeonbuk	4.279***	4.586***	-0.686***
	(0.306)	(0.296)	(0.205)
X Jeonnam	2.324***	2.050***	0.274
	(0.254)	(0.323)	(0.252)
X Gyeongbuk	-0.789**	-1.128***	0.538**
	(0.356)	(0.329)	(0.216)
X Gyeongnam	2.114***	1.075***	1.545***
	(0.272)	(0.285)	(0.195)
X Jeju	0.045	-0.537*	0.791***
	(0.330)	(0.317)	(0.240)
R-sq.	0.764	0.696	0.490
Mean Dep.	62.54	59.74	4.48
No Obs.	1,836	1,836	1,836

TABLE 9
IMPACT OF COVID-19 ON LABOR MARKET BY THE INTENSITY OF COVID-19

(2020.1~ 2021.6)

Sample	Cumulative confirmed cases (per 10,000)	Monthly new confirmed cases (per 10,000)	Log (cumulative confirmed cases) (per 10,000)	Log (new confirmed cases) (per 10,000)
	(1)	(2)	(3)	(4)
Panel A. Labor Participation Rate				
Treat x COVID-	-0.003	0.353	-0.600	0.273
19 Intensity	(0.057)	(0.139)	(0.292)	().146)
R-sq	0.887	0.973	0.963	0.959
Mean Dep.	9.23	1.82	1.73	0.08
Panel B. Employment Rate				
Treat x COVID-	0.051	0.449**	-0.817***	0.375**
19 Intensity	(0.053)	(0.056)	(0.048)	(0.063)
R-sq	0.941	0.998	0.999	0.996
Mean Dep.	9.23	1.82	1.73	0.08
Panel C. Unemployment Rate				
Treat x COVID-	-0.069	-0.287	0.555	-0.263
19 Intensity	(0.025)	(0.186)	(0.302)	(0.140)
R-sq	0.966	0.923	0.937	0.939
Mean Dep.	9.23	1.82	1.73	0.08

(2020.1~ 2021.12)

Sample	Cumulative confirmed cases (per 10,000)	Monthly new confirmed cases (per 10,000)	Log (cumulative confirmed cases) (per 10,000)	Log (new confirmed cases) (per 10,000)
	(1)	(2)	(3)	(4)
Panel A. Labor Participation Rate				
Treat x COVID-	0.002	0.011	-0.560	0.056
19 Intensity	(0.004)	(0.011)	(0.338)	(0.148)
R-sq	0.919	0.927	0.938	0.918
Mean Dep.	21.96	5.48	2.34	0.76
Panel B. Employment Rate				
Treat x COVID-	0.006	0.018*	-0.852***	0.184
19 Intensity	(0.004)	(0.009)	(0.221)	(0.127)
R-sq	0.975	0.977	0.988	0.972
Mean Dep.	21.96	5.48	2.34	0.76
Panel C. Unemployment Rate				
Treat x COVID-	-0.009*	-0.016	0.701	-0.277
19 Intensity	(0.004)	(0.012)	(0.397)	(0.150)
R-sq	0.938	0.920	0.931	0.932
Mean Dep.	21.96	5.48	2.34	0.76

Appendix B. Figures

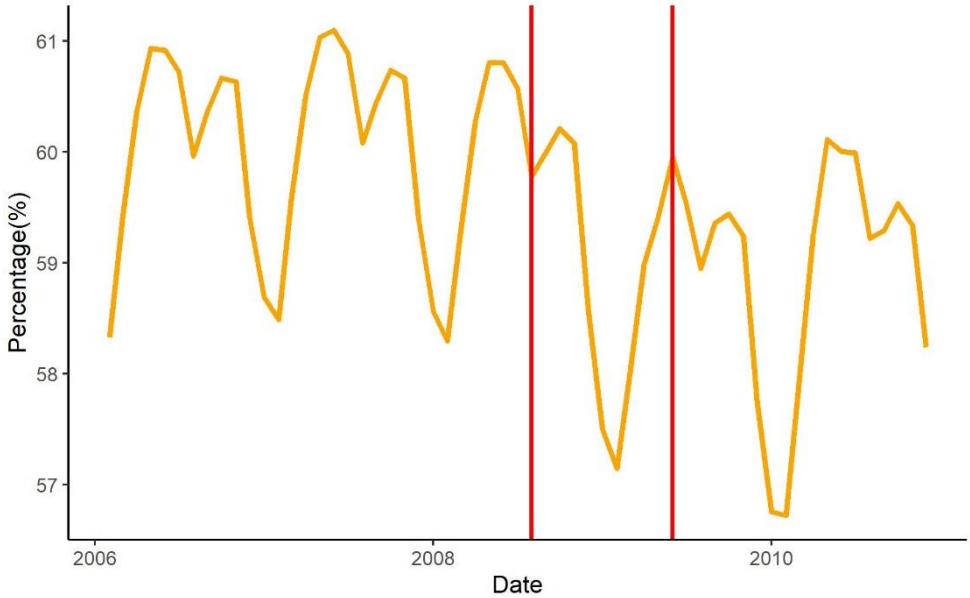

Figure 3.0.1

Trend of Employment Rate (2006 ~ 2010)

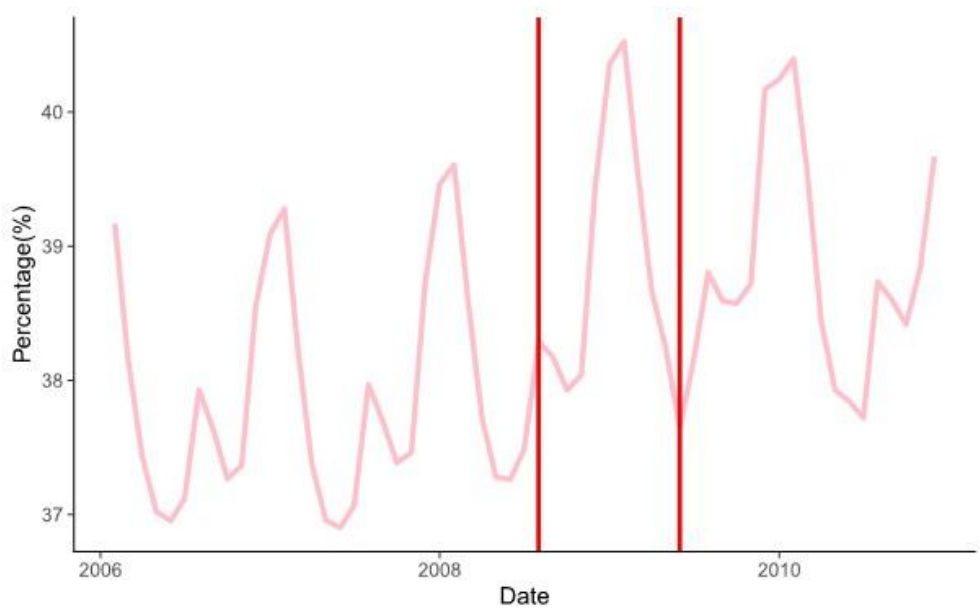

Figure 3.0.2

Trend of Labor Participation Rate (2006 ~ 2010)

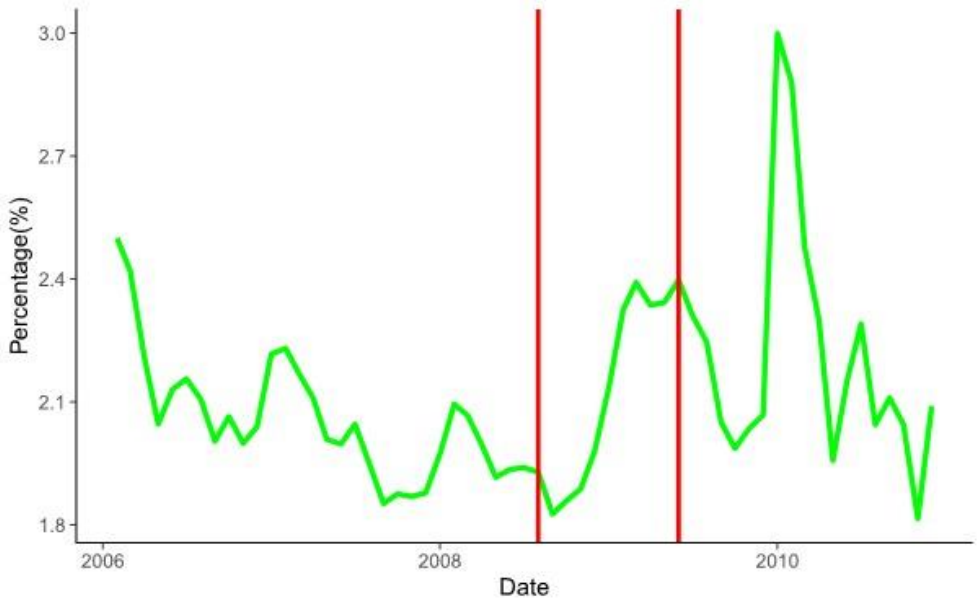

Figure 3.0.3

Trend of Unemployment Rate (2006 ~ 2010)

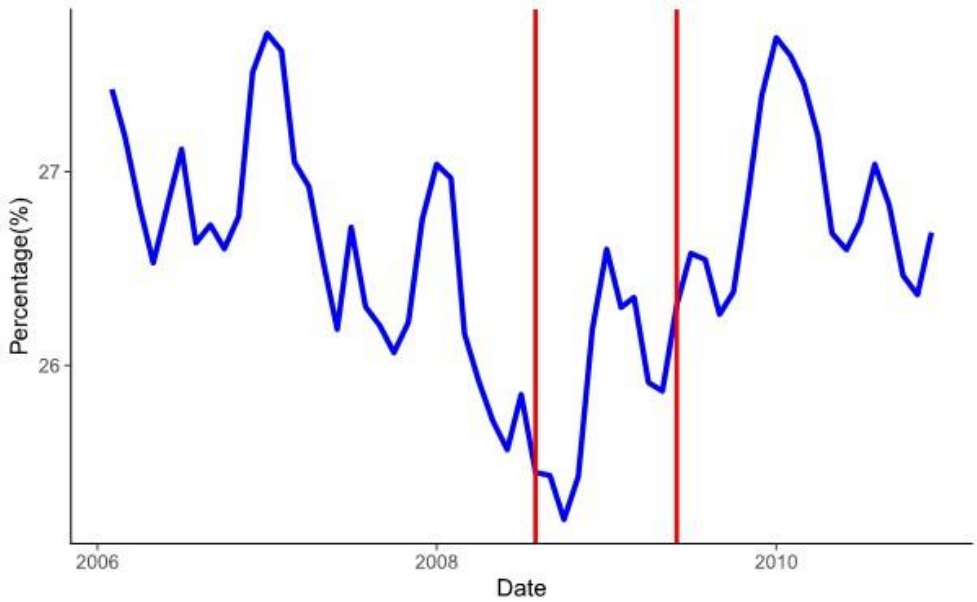

Figure 3.0.4

Trend of Percentage of Temporary Worker (2006 ~ 2010)

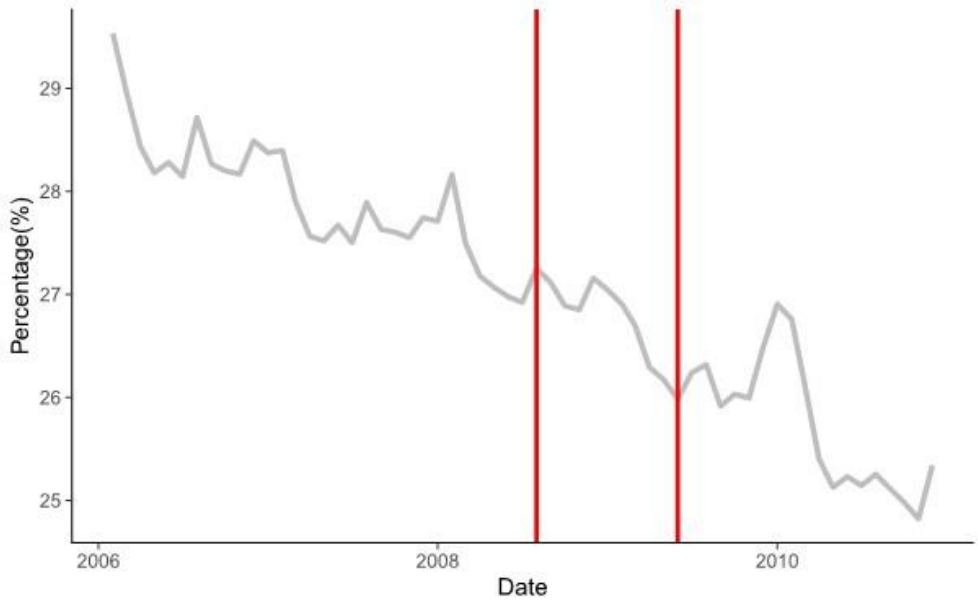

Figure 3.0.5

Trend of Percentage of Self-employed Worker (2006 ~ 2010)

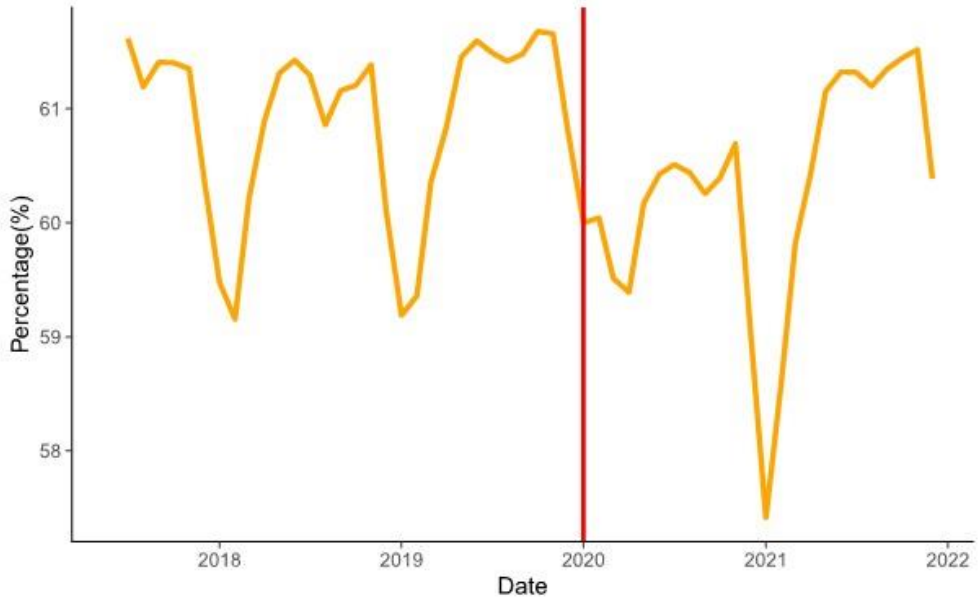

Figure 3.0.6

Trend of Employment Rate (2020 ~)

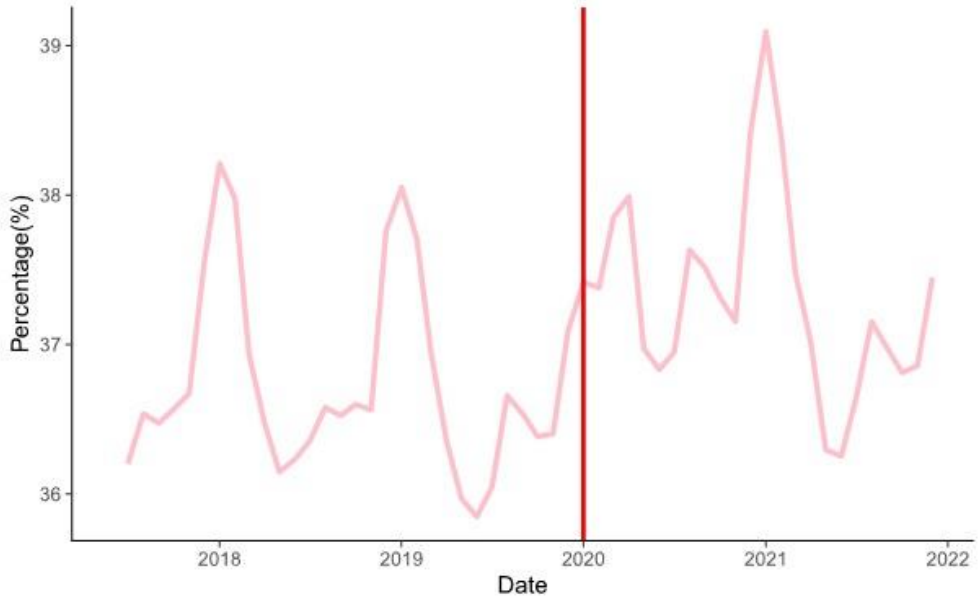

Figure 3.0.7

Trend of Labor Participation Rate (2020 ~)

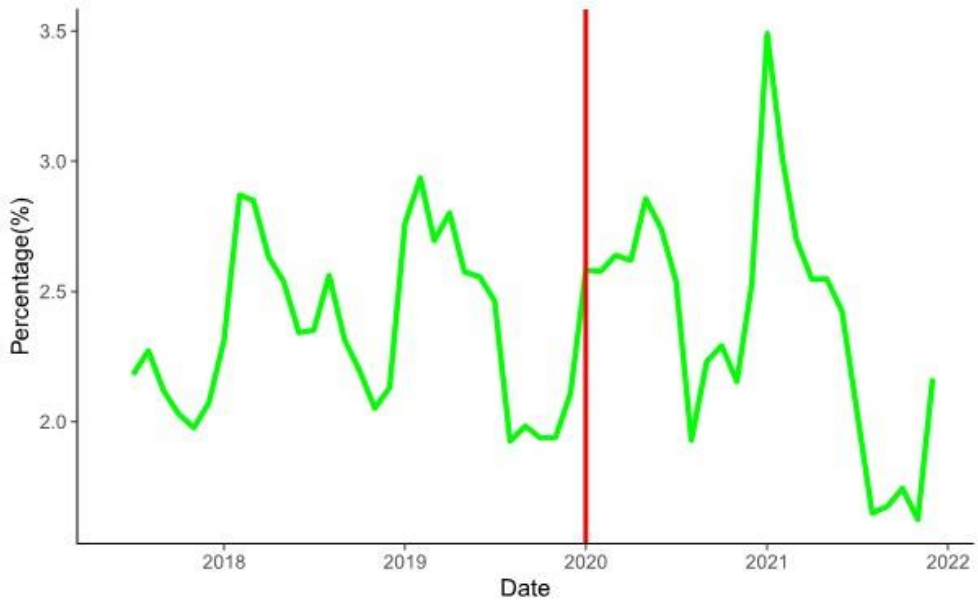

Figure 3.0.8

Trend of Unemployment Rate (2020 ~)

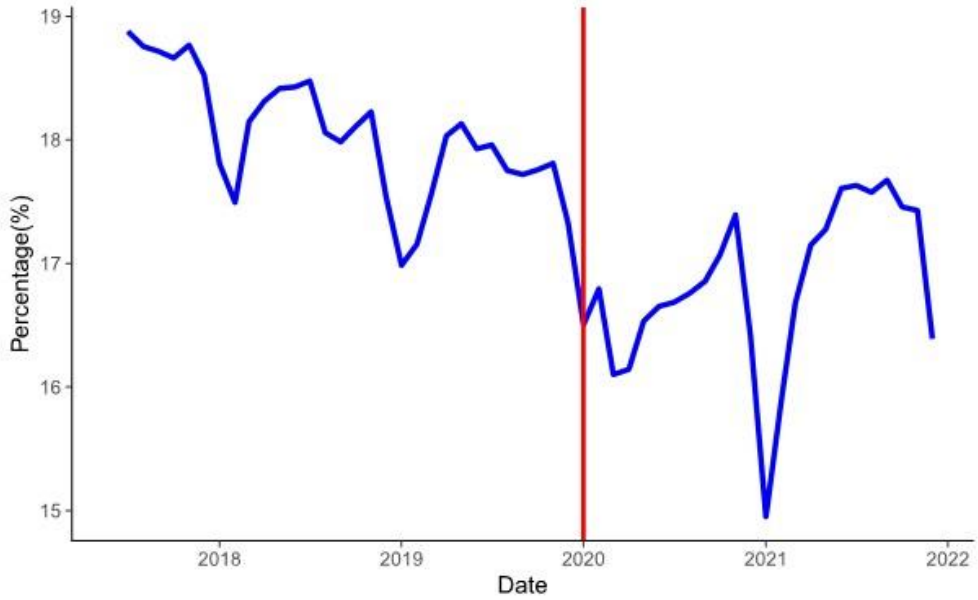

Figure 3.0.9

Trend of Percentage of Temporary Worker (2020 ~)

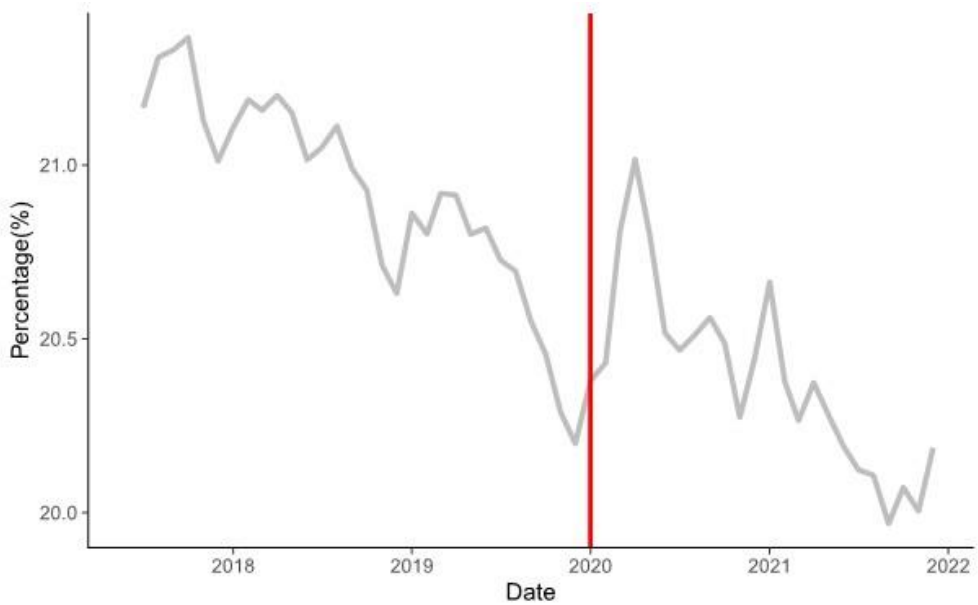

Figure 3.0.10

Trend of Percentage of Self-employed Worker (2020 ~)

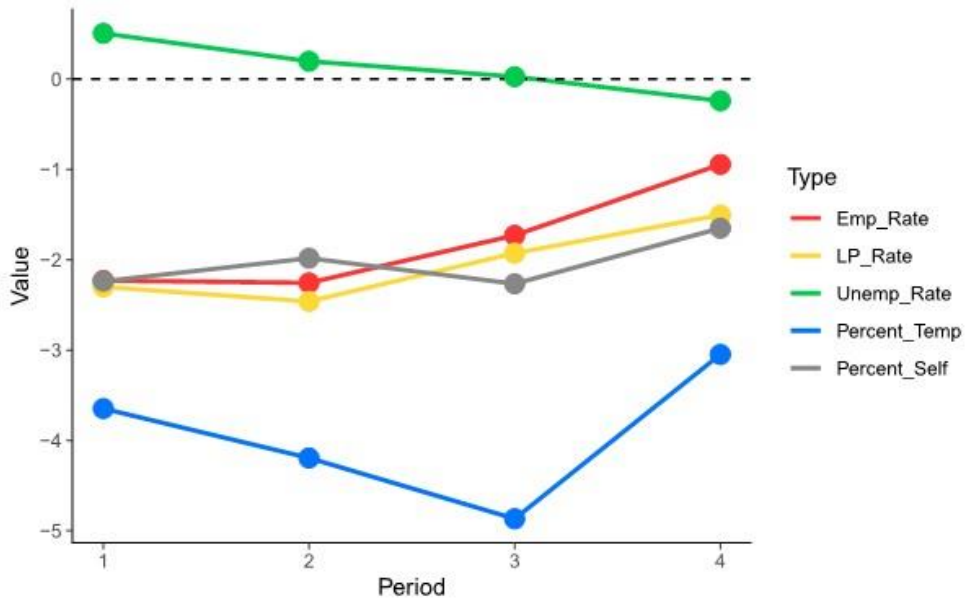

Figure 4.1.1

Regression Result of Model 3.1

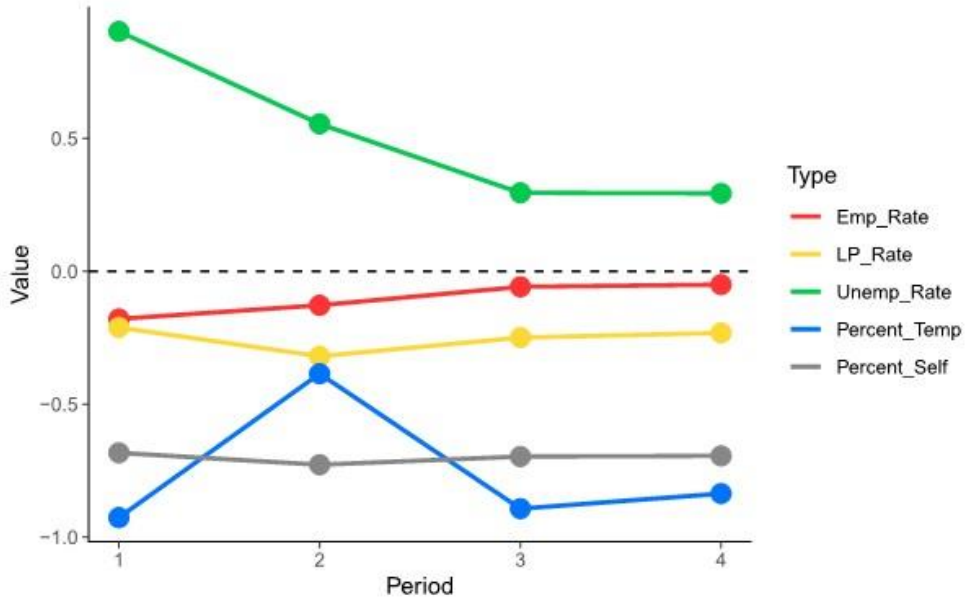

Figure 4.2.1

Regression Result of Model 3.2: Coefficient of Recession

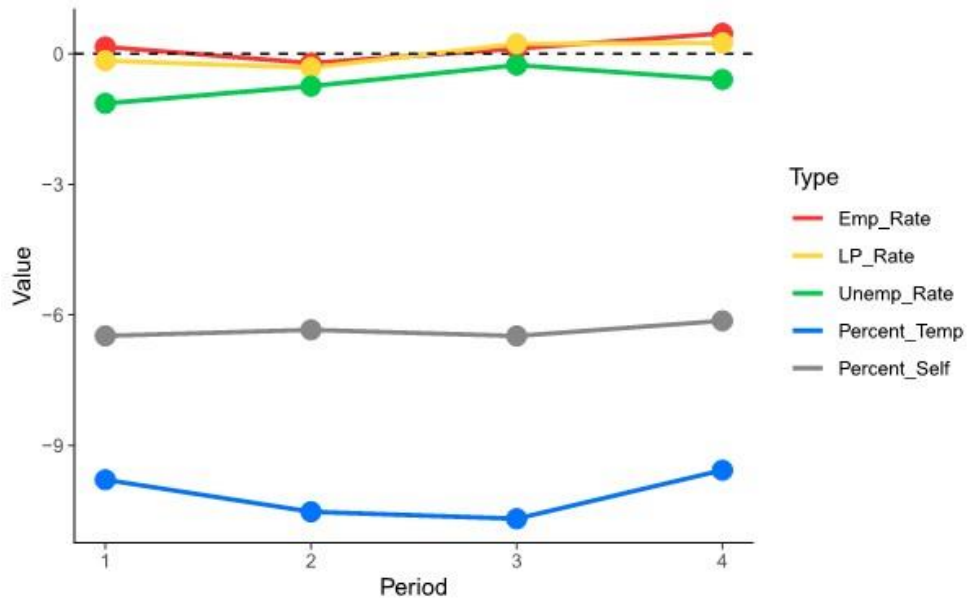

Figure 4.2.2

Regression Result of Model 3.2: Coefficient of COVID-19

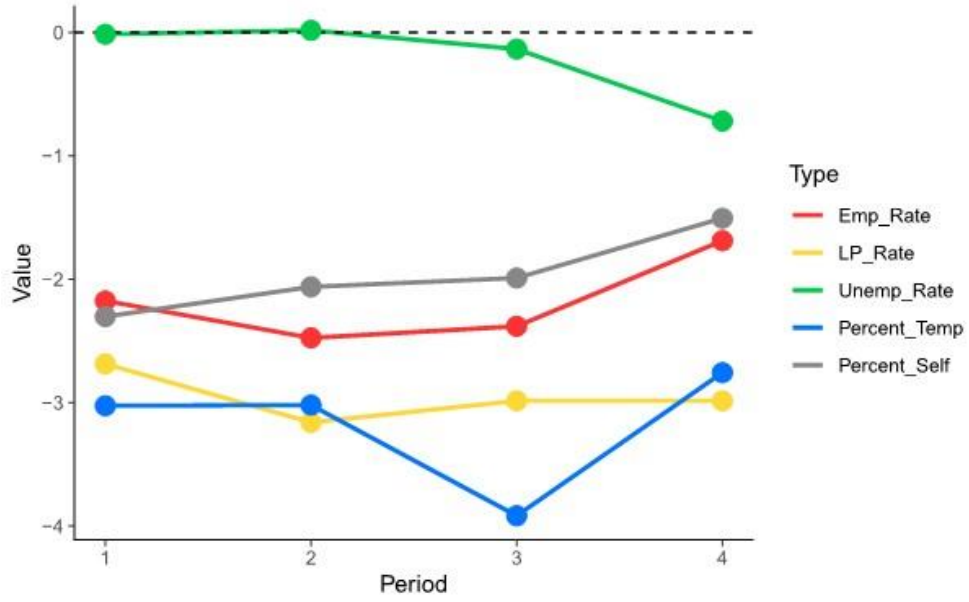

Figure 4.4.1

Regression Result of Model 3.4: Male (Baseline)

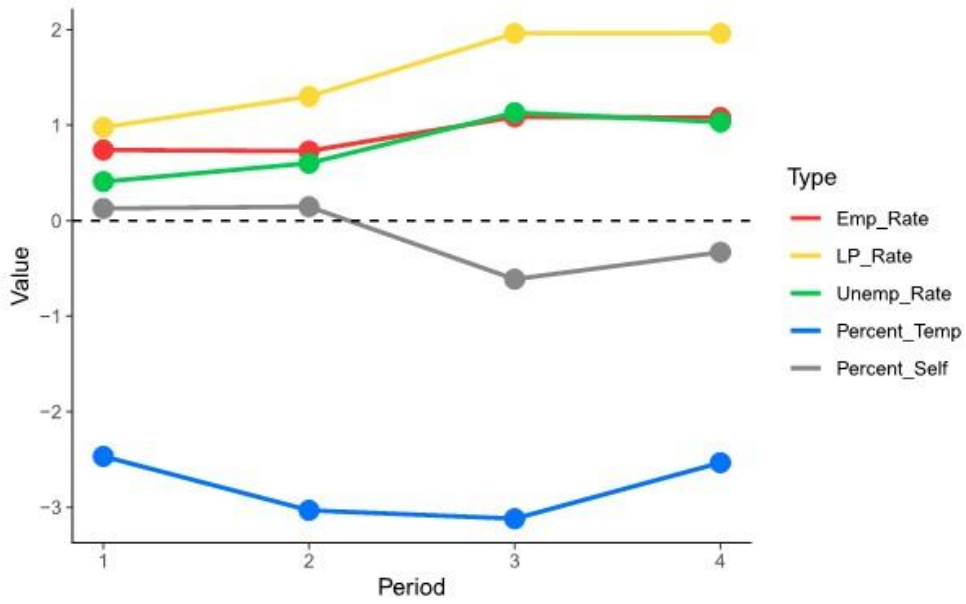

Figure 4.4.2

Regression Result of Model 3.4: Female

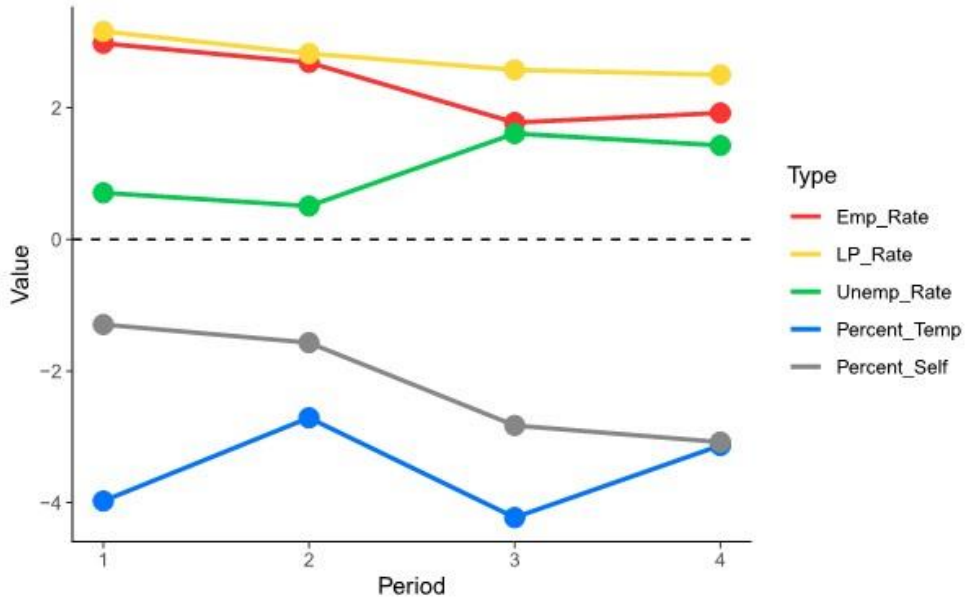

Figure 4.4.3

Regression Result of Model 3.4: Age 60+ (Baseline)

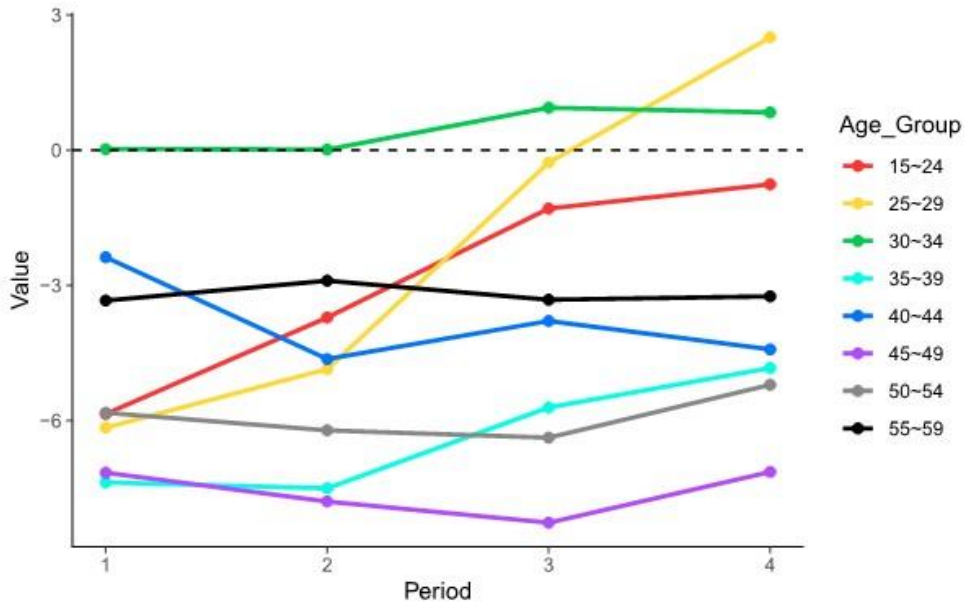

Figure 4.4.4

Regression Result of Model 3.4: Employment Rate of Age Groups

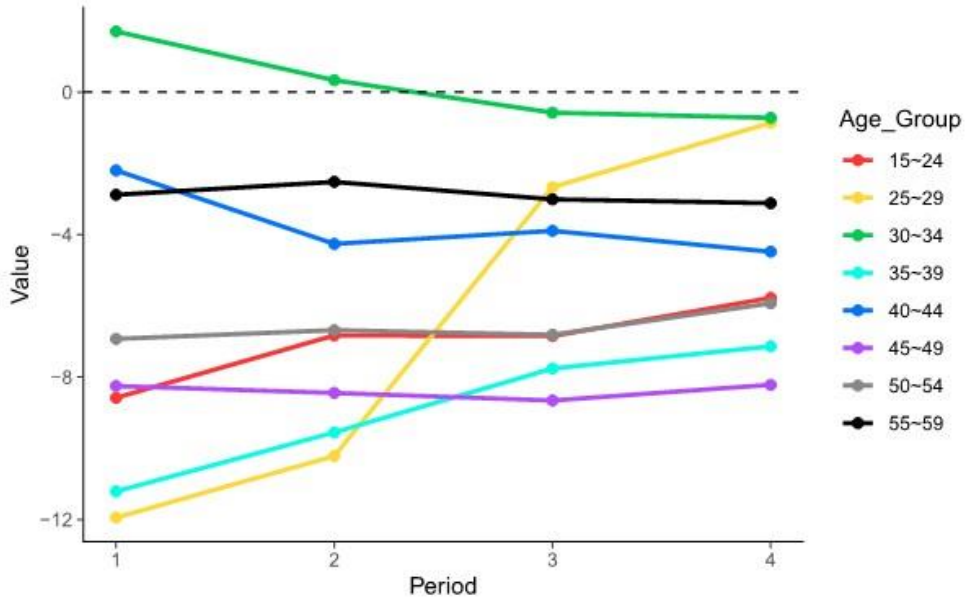

Figure 4.4.5 Regression Result of Model 3.4:

Labor Participation Rate of Age Groups

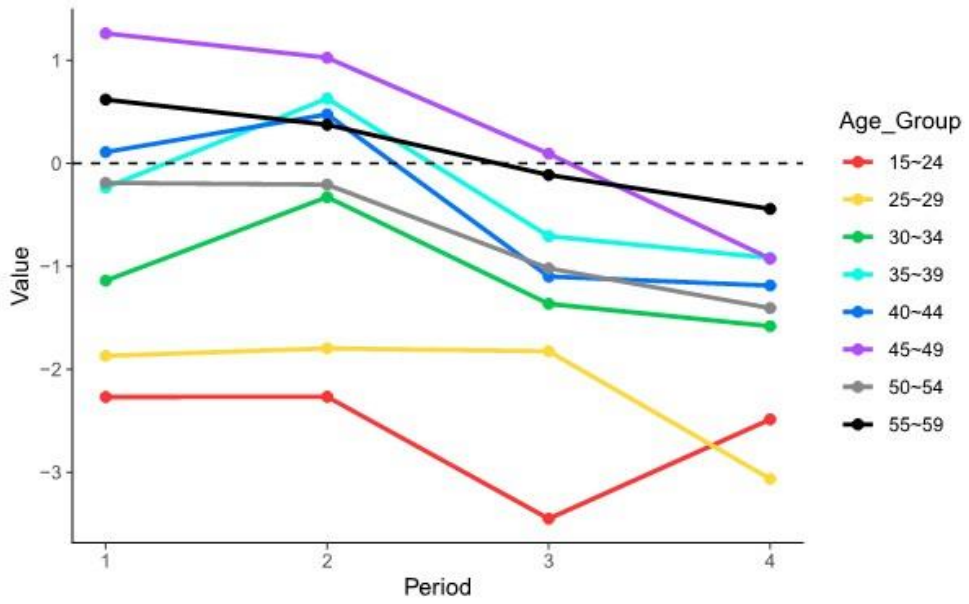

Figure 4.4.6
Regression Result of Model 3.4: Unemployment Rate of Age Groups

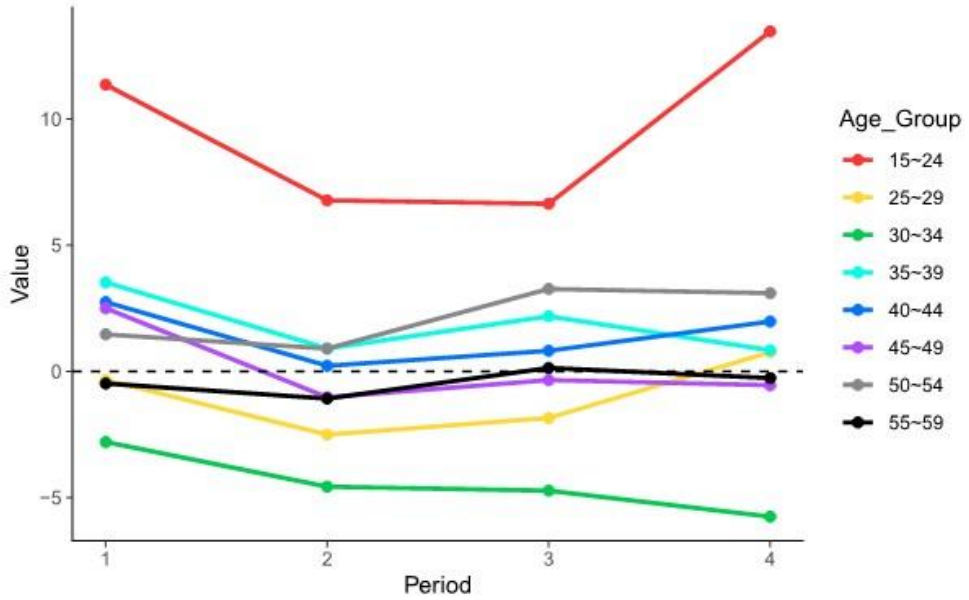

Figure 4.4.7 Regression Result of Model 3.4:
Percentage of Temporary Worker of Age Groups

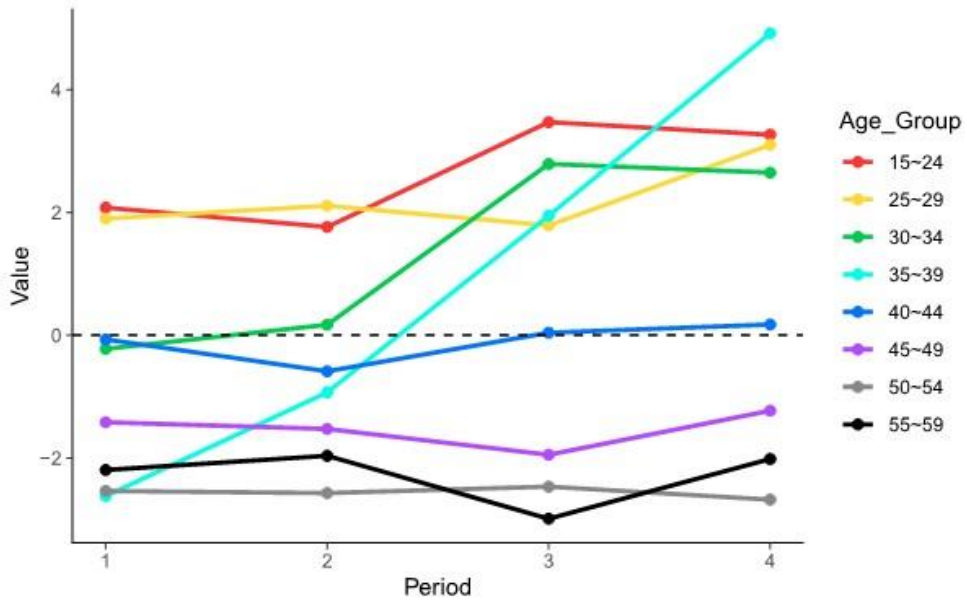

Figure 4.4.8 Regression Result of Model 3.4:

Percentage of Self-employed Worker of Age Groups

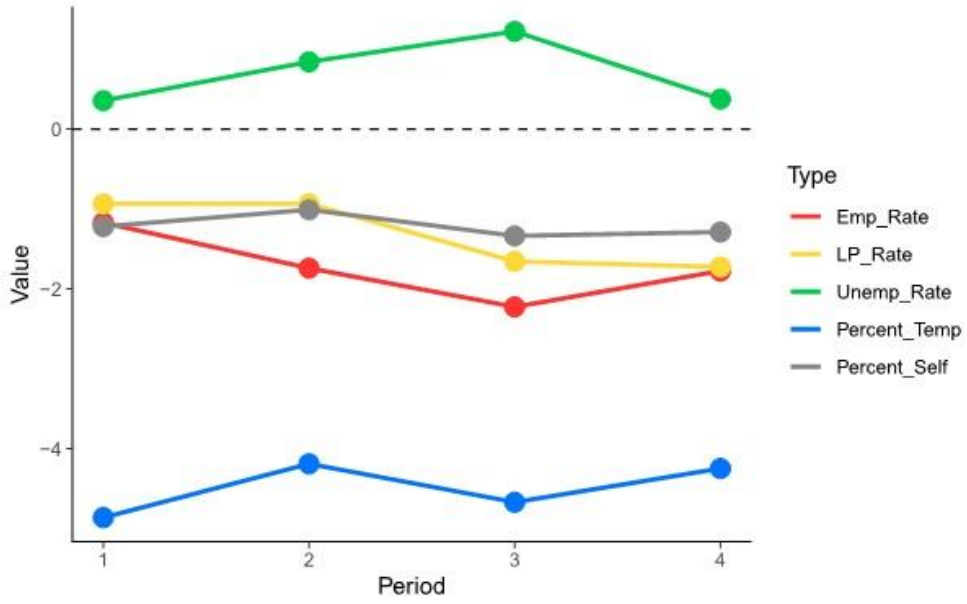

Figure 4.4.9

Regression Result of Model 3.4: High School Graduates (Baseline)

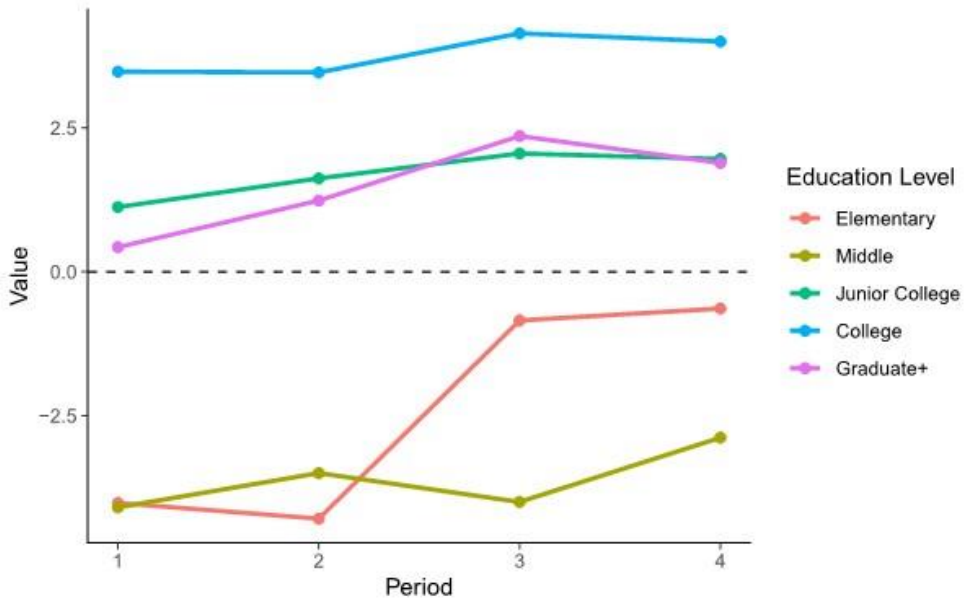

Figure 4.4.10 Regression Result of Model 3.4:
Employment Rate of Education Levels

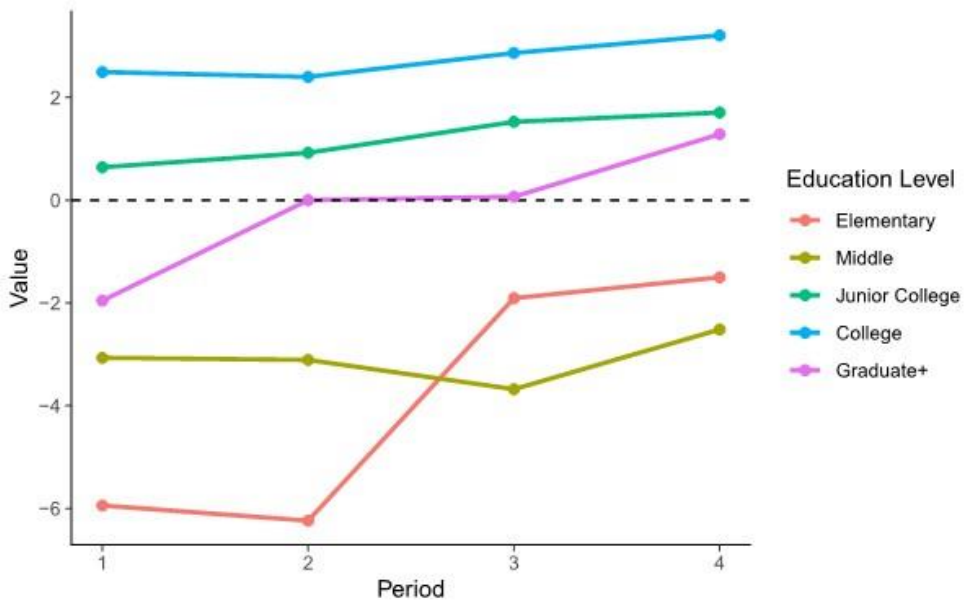

Figure 4.4.11 Regression Result of Model 3.4:
Labor Participation Rate of Education Levels

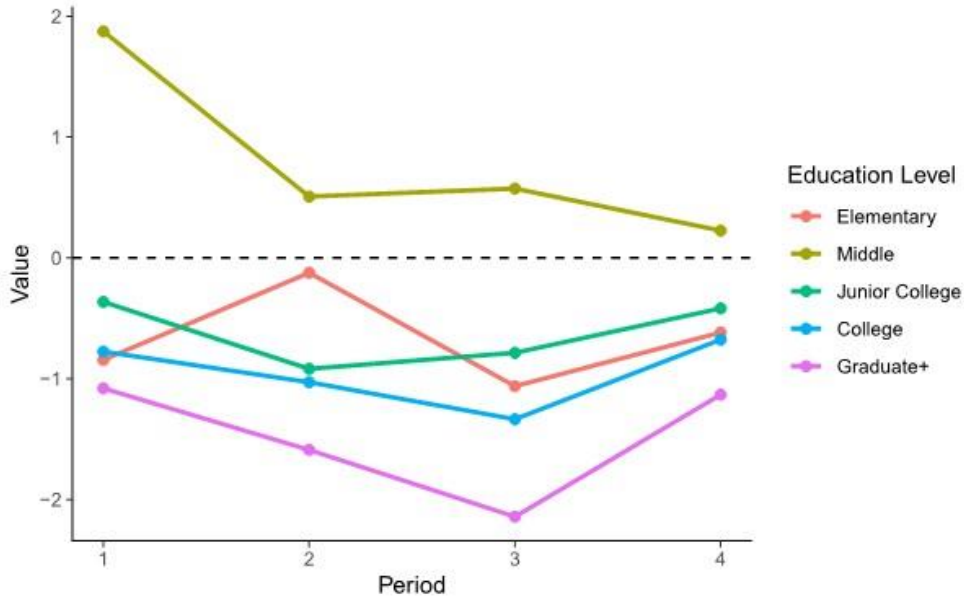

Figure 4.4.12 Regression Result of Model 3.4:
Unemployment Rate of Education Levels

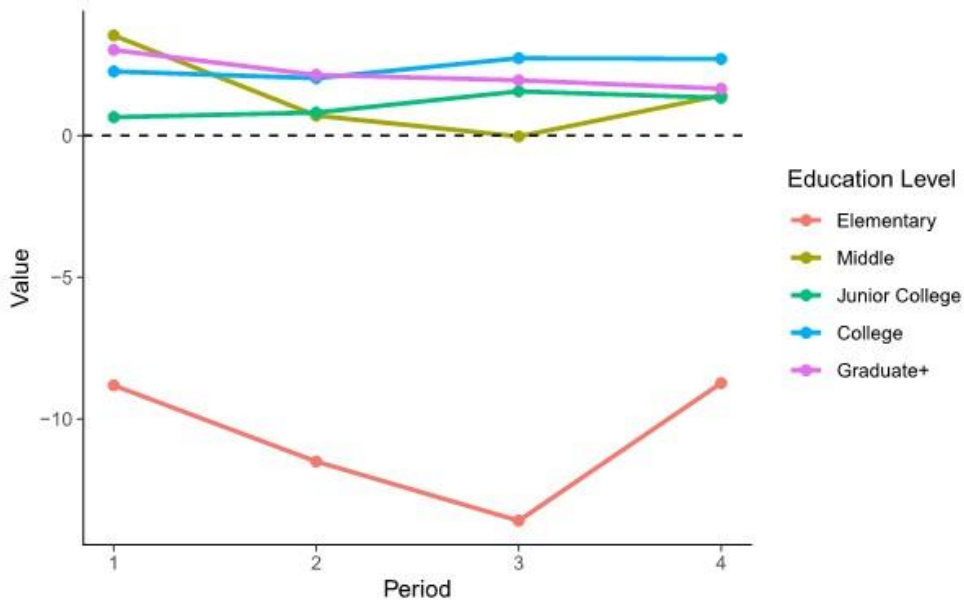

Figure 4.4.13 Regression Result of Model 3.4:
Percentage of Temporary Worker of Education Levels

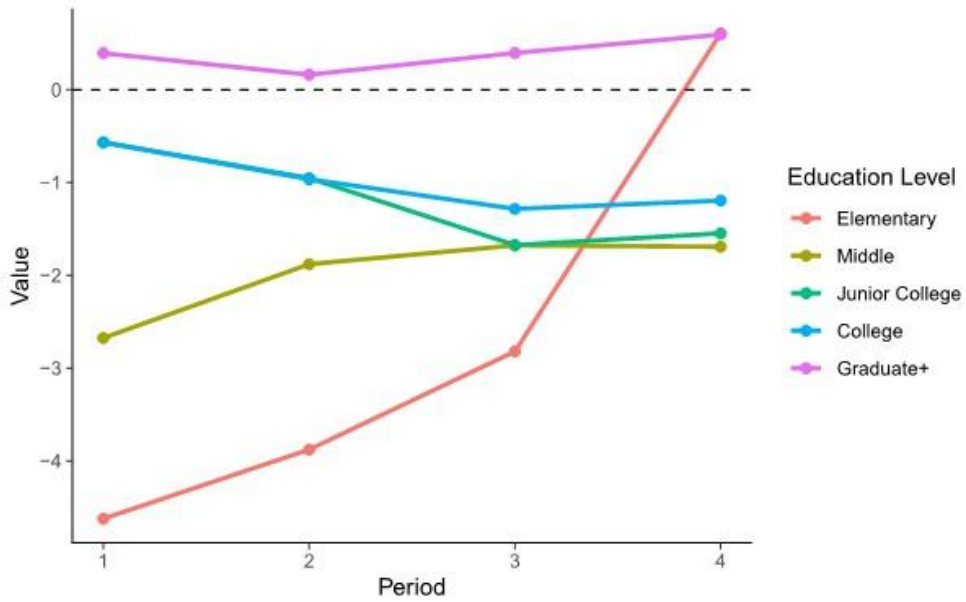

Figure 4.4.14 Regression Result of Model 3.4:
Percentage of Self-employed Worker of Education Levels

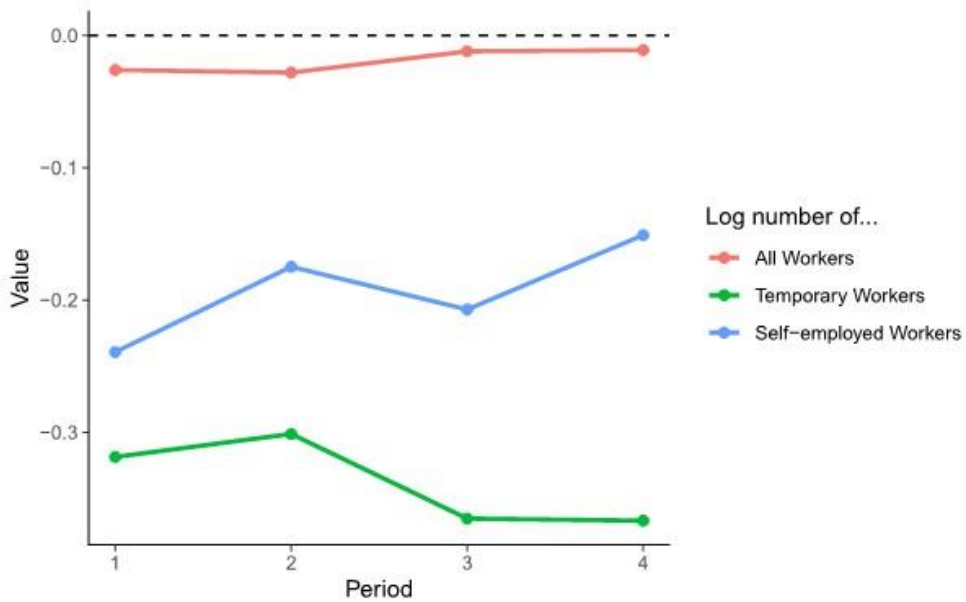

Figure 4.5.1

Regression Result of Model 3.5: Manufacturing (Baseline)

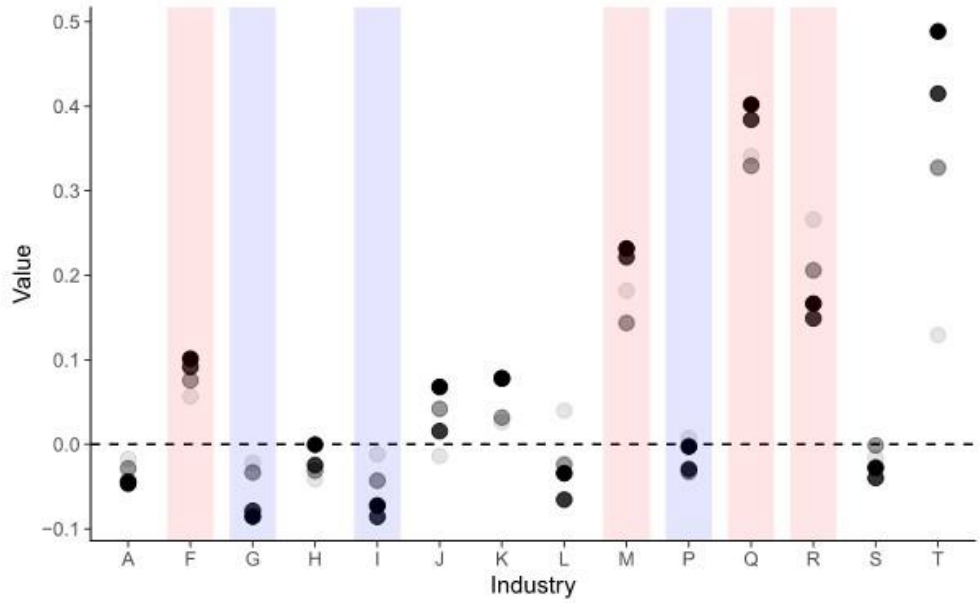

Figure 4.5.2 Regression Result of Model 3.5:
Summarized Result, the Log Number of Workers

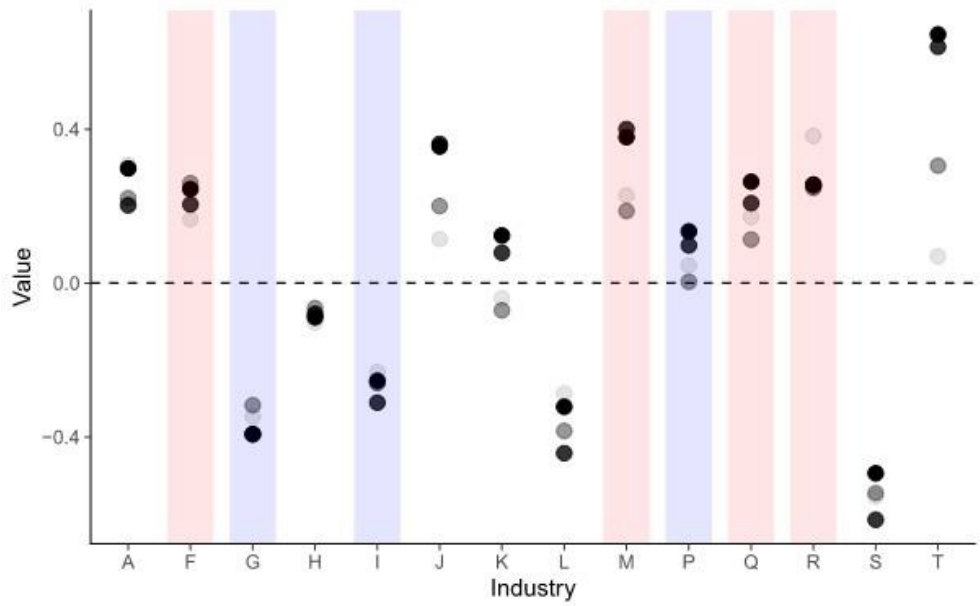

Figure 4.5.3 Regression Result of Model 3.5:
Summarized Result, the Log Number of Temporary Workers

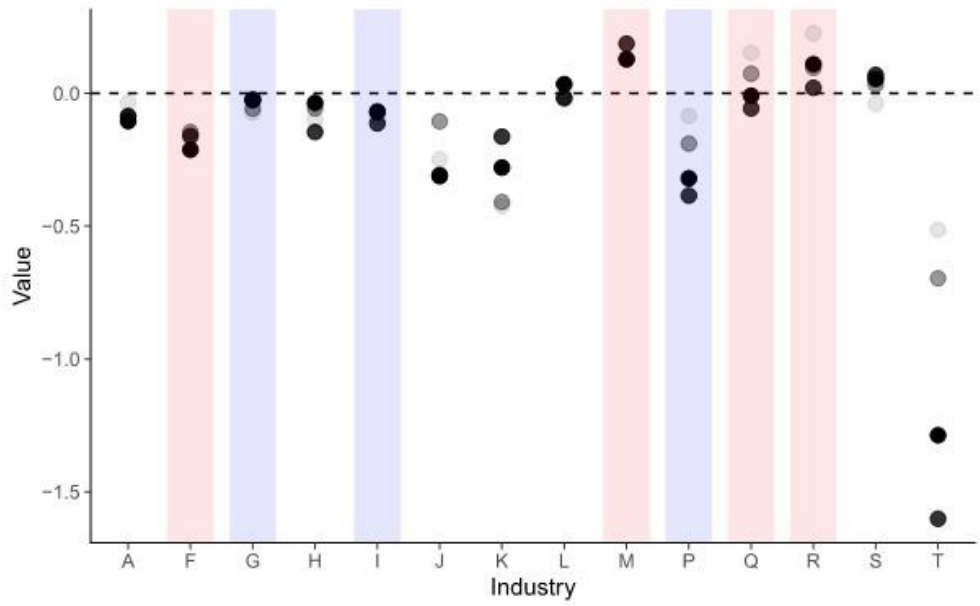

Figure 4.5.4 Regression Result of Model 3.5:
Summarized Result, the Log Number of Self-employed Workers

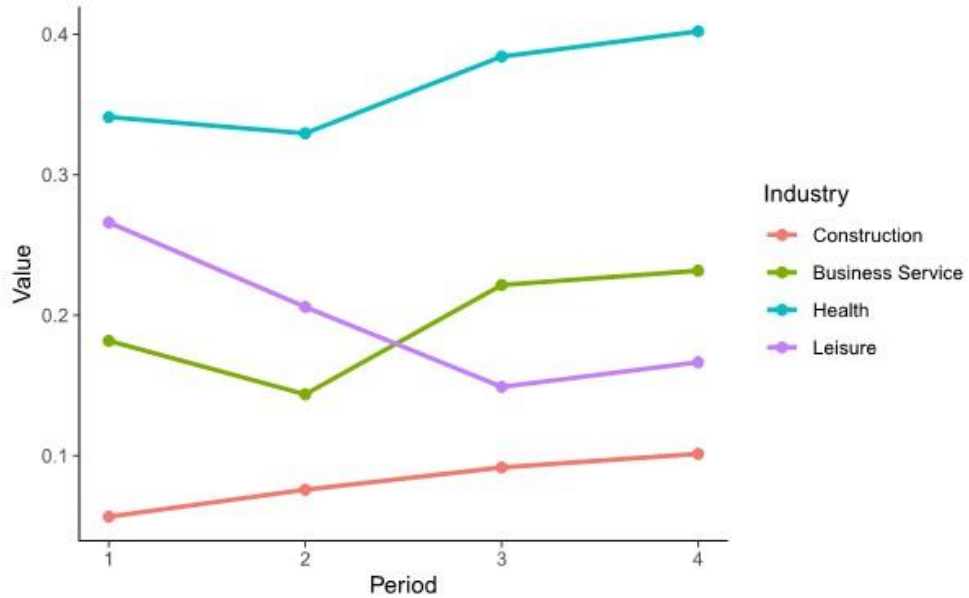

Figure 4.5.5 Regression Result of Model 3.5:
The Log Number of Workers, Part 1

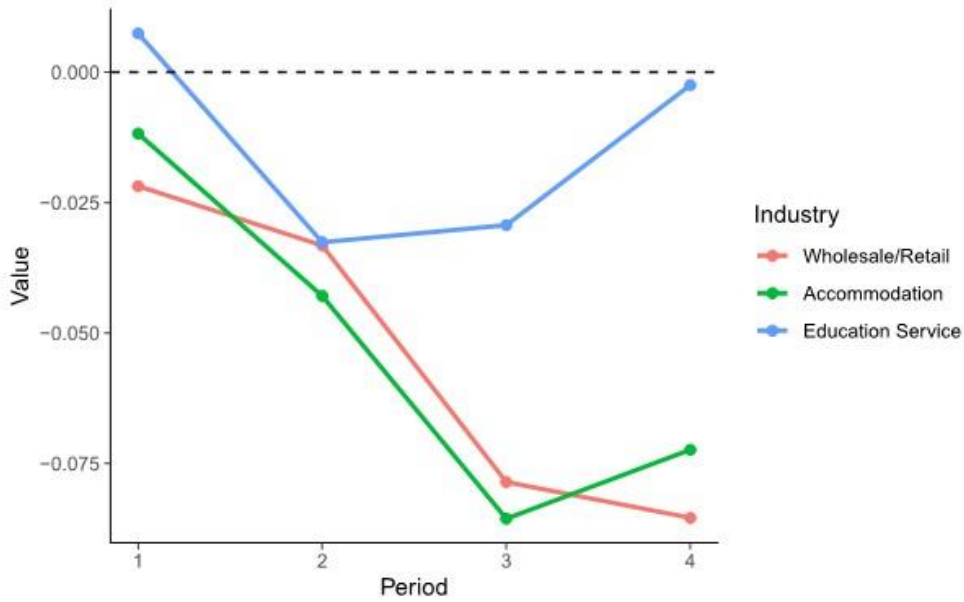

Figure 4.5.6 Regression Result of Model 3.5:
The Log Number of Workers, Part 2

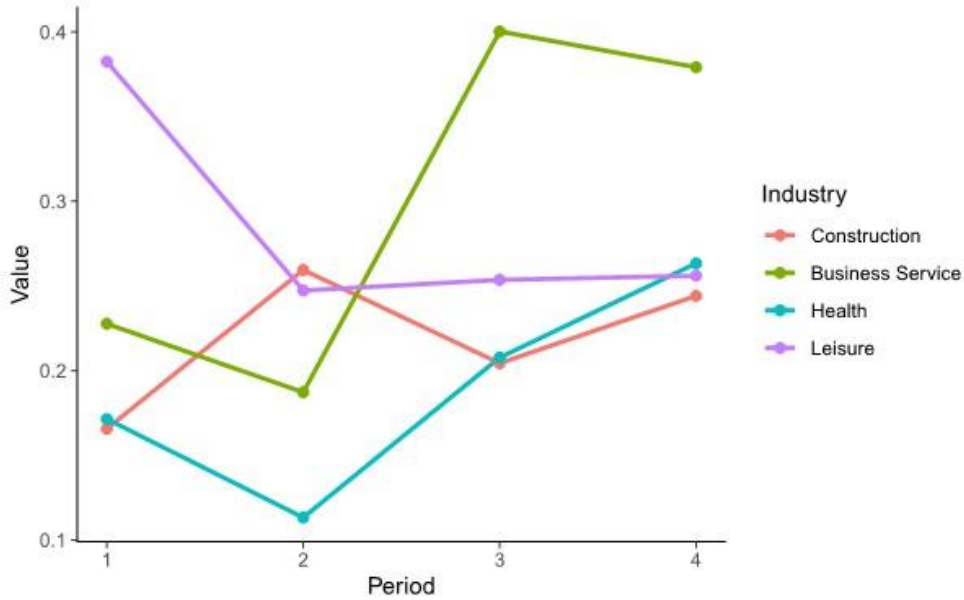

Figure 4.5.7 Regression Result of Model 3.5:
The Log Number of Temporary Workers, Part 1

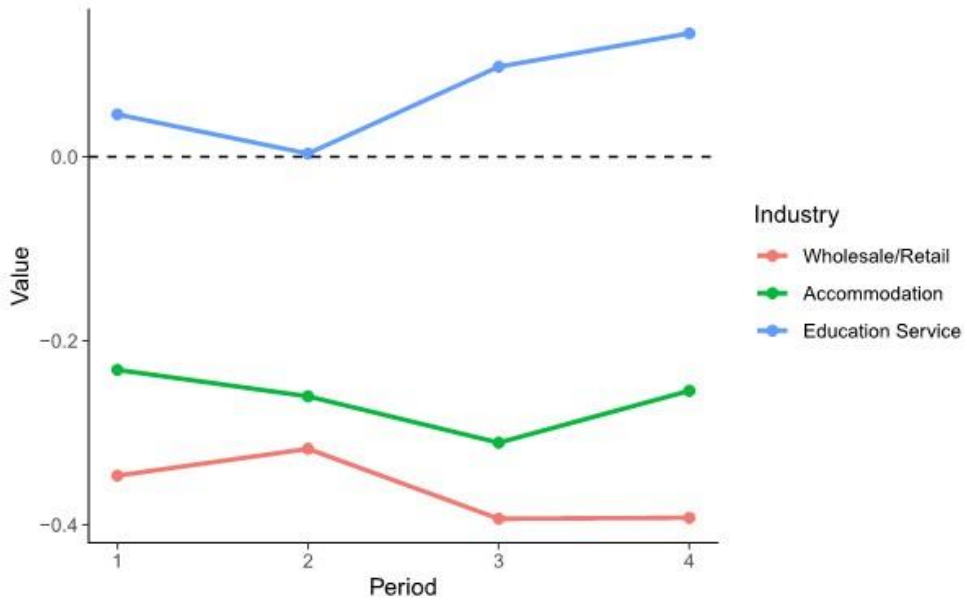

Figure 4.5.8 Regression Result of Model 3.5:
The Log Number of Temporary Workers, Part 2

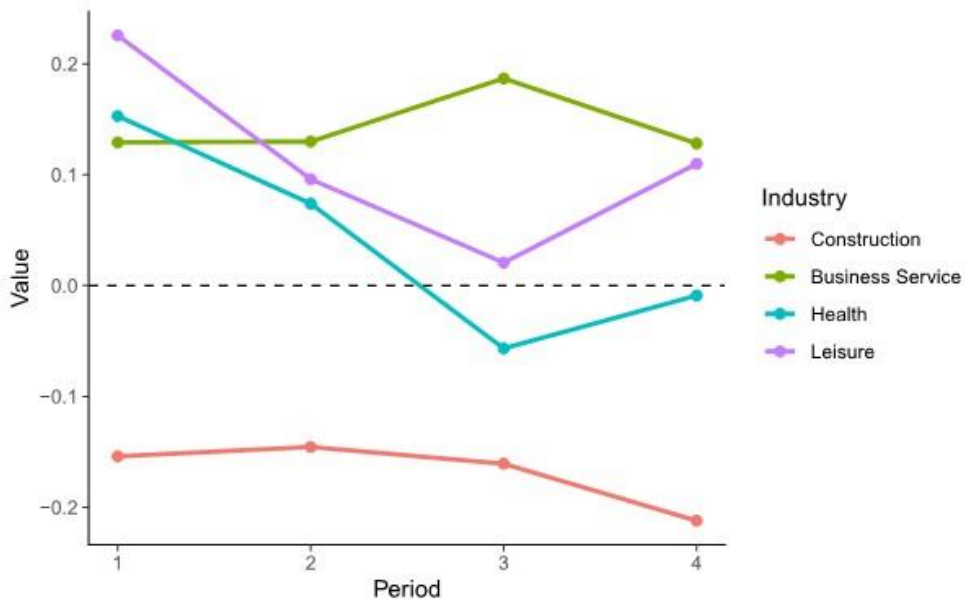

Figure 4.5.9 Regression Result of Model 3.5:
The Log Number of Self-employed Workers, Part 1

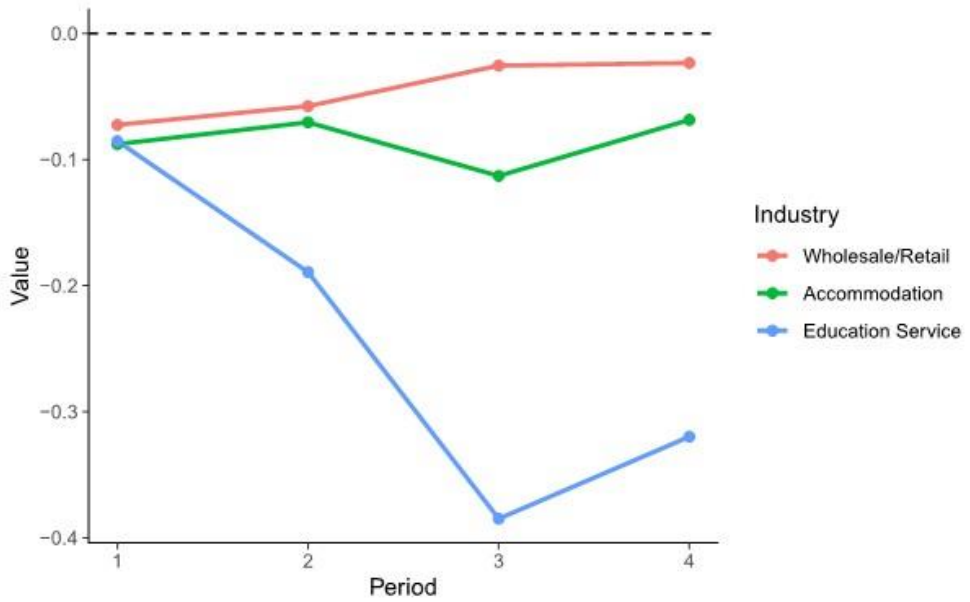

Figure 4.5.10 Regression Result of Model 3.5:
The Log Number of Self-employed Workers, Part 2

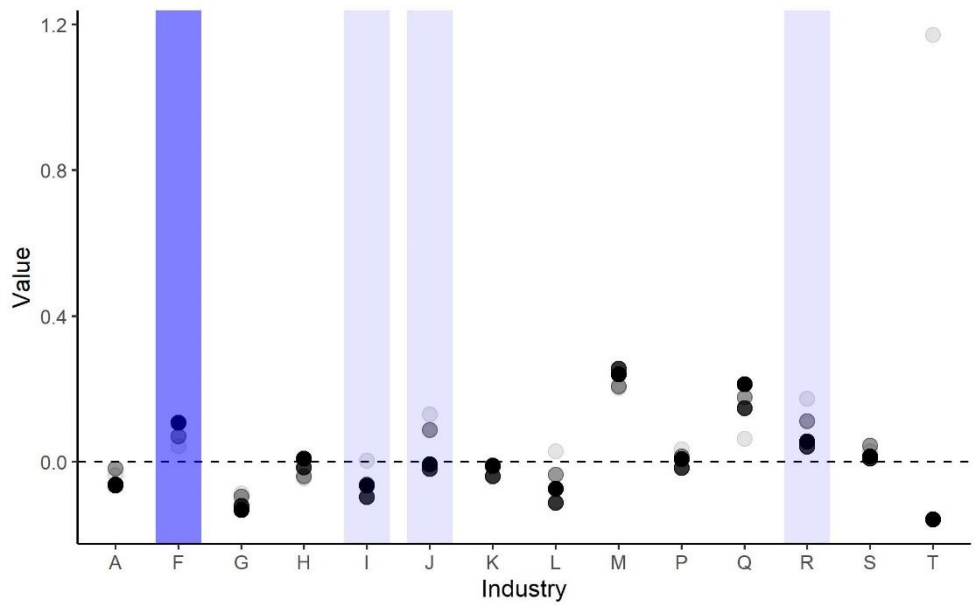

Figure 4.5.11 Regression Result of Model 3.5:
Summarized Result, the Log Number of Workers, Male (Baseline)

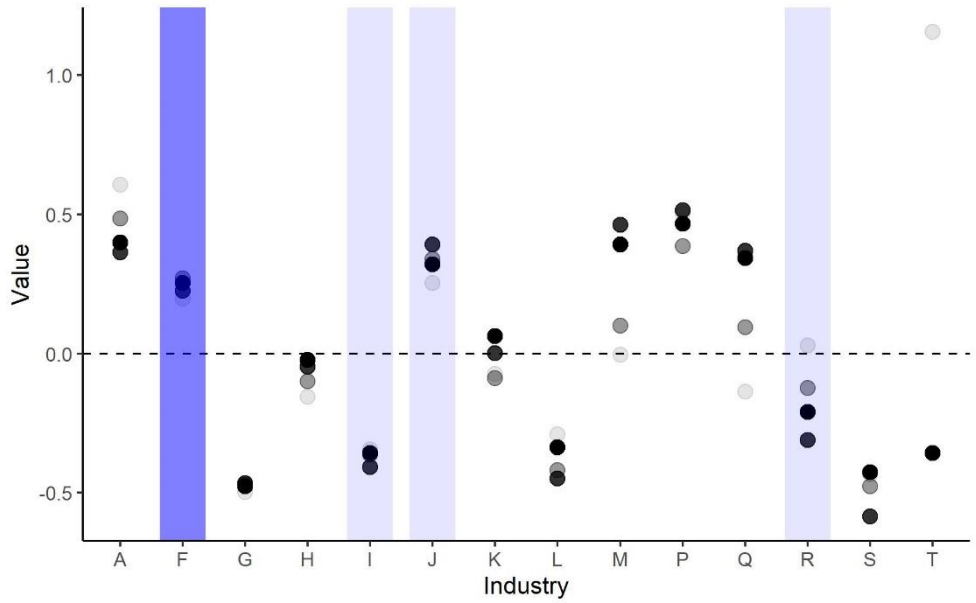

Figure 4.5.12 Regression Result of Model 3.5: Summarized Result, the Log Number of Temporary Workers, Male (Baseline)

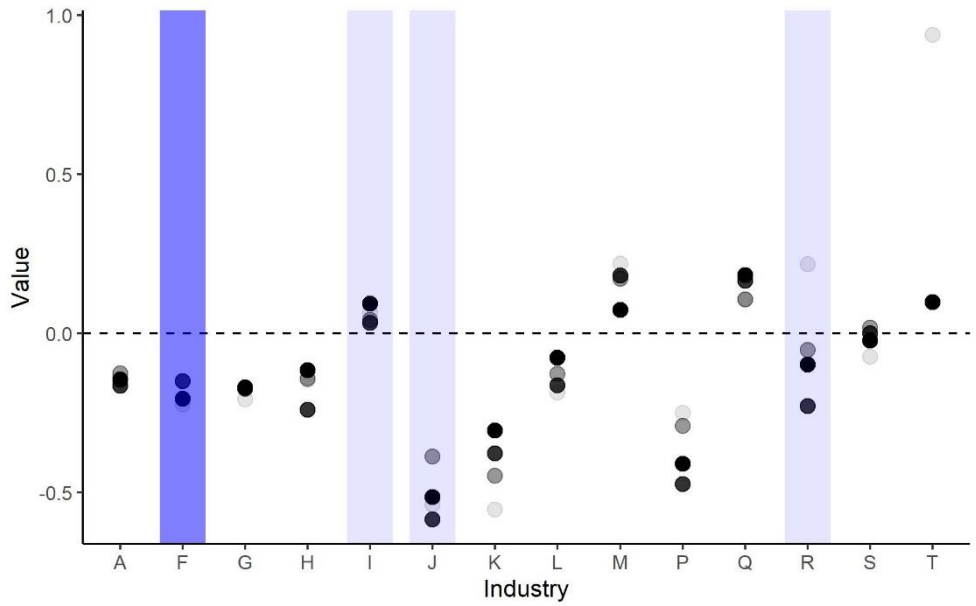

Figure 4.5.13 Regression Result of Model 3.5: Summarized Result, the Log Number of Self-employed Workers, Male (Baseline)

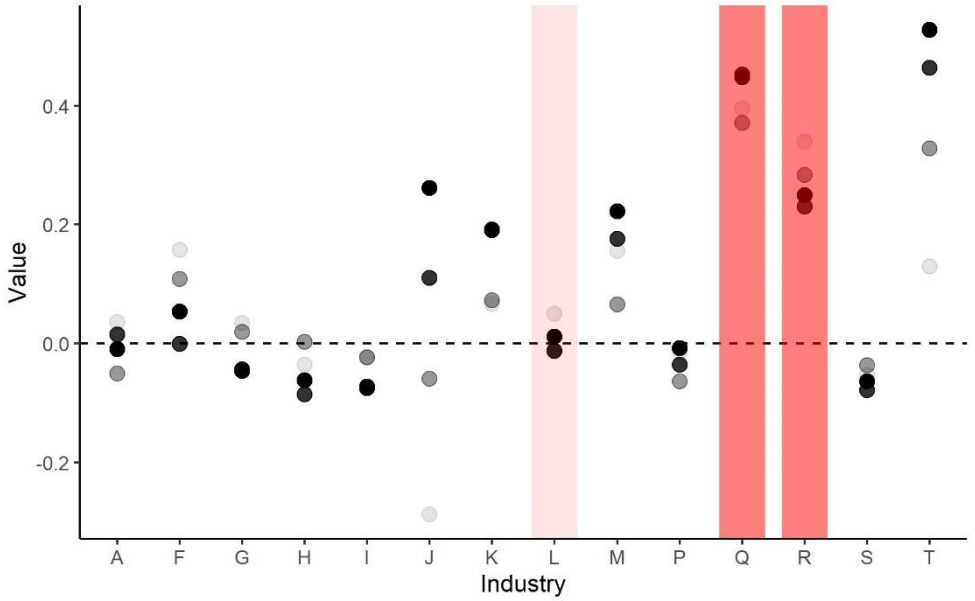

Figure 4.5.14 Regression Result of Model 3.5: Summarized Result, the Log Number of Workers, Female

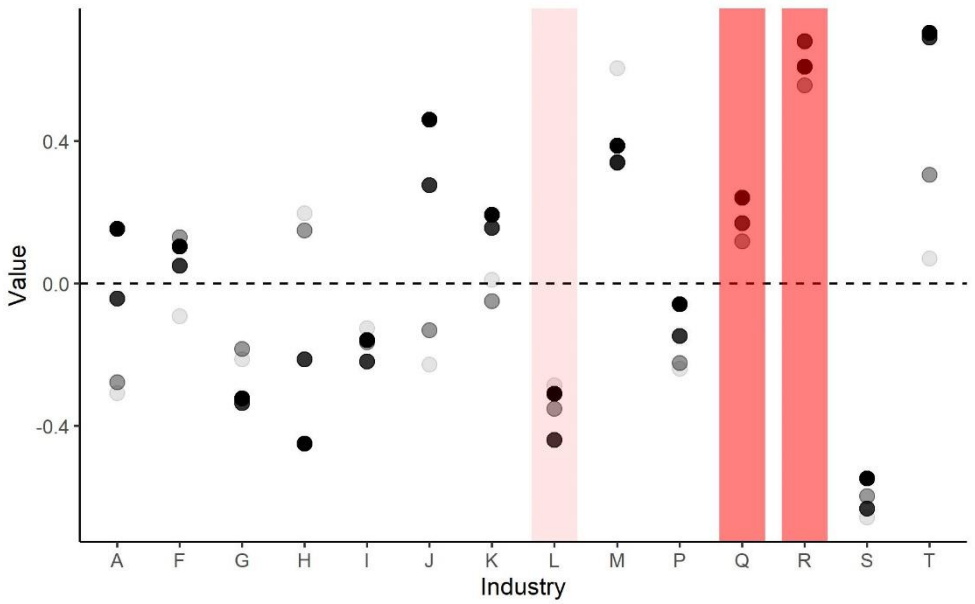

Figure 4.5.15 Regression Result of Model 3.5: Summarized Result, the Log Number of Temporary Workers, Female

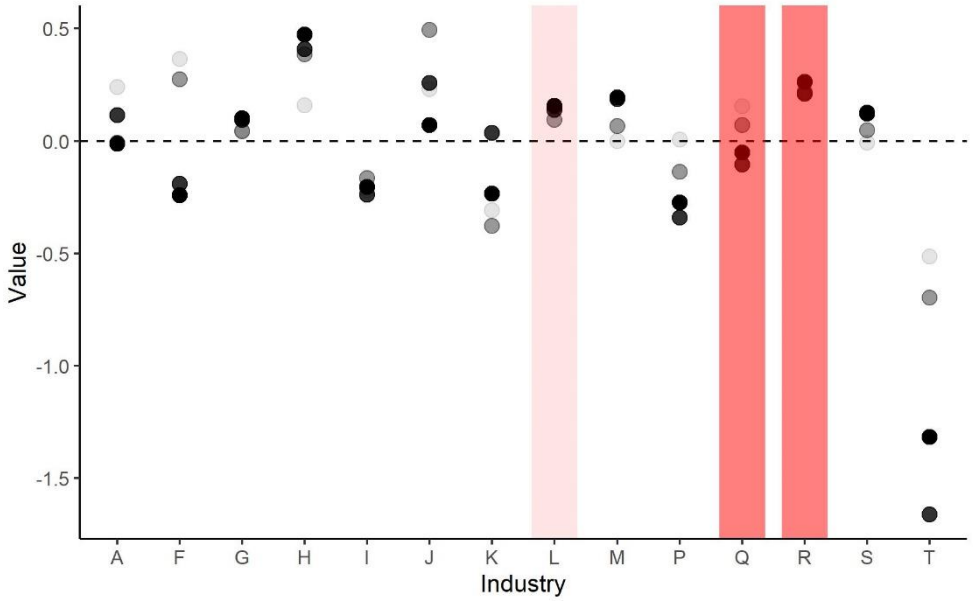

Figure 4.5.16 Regression Result of Model 3.5: Summarized Result, the Log Number of Self-employed Workers, Female

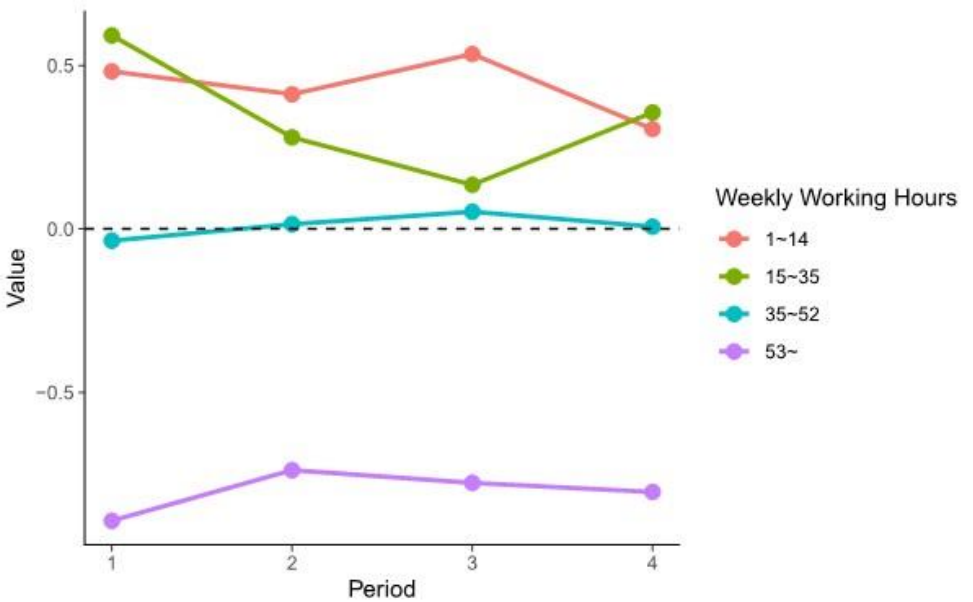

Figure 4.5.17 Regression Result of Model 3.5: Manufacturing (Baseline), Weekly Working Hours

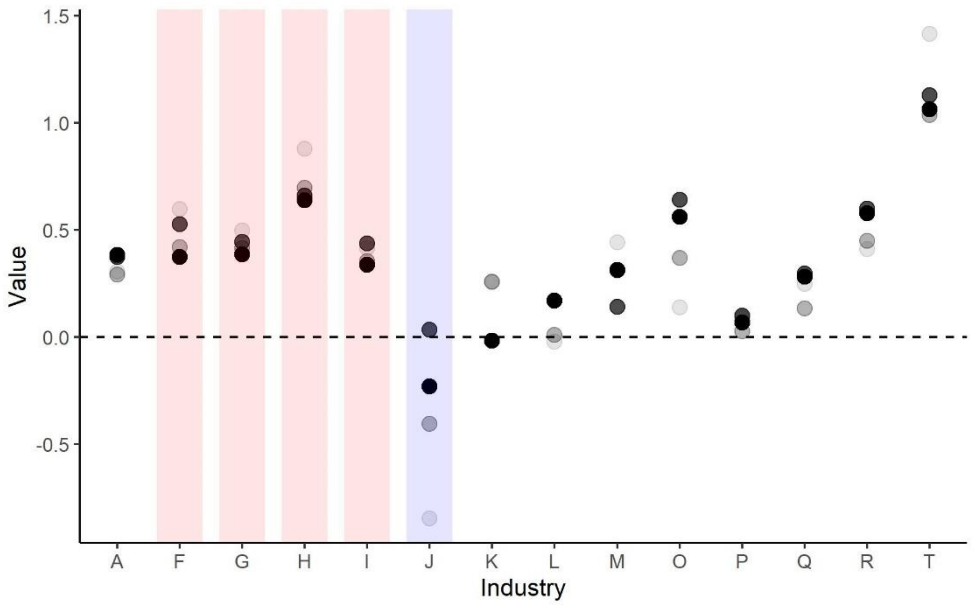

Figure 4.5.18 Regression Result of Model 3.5:
Summarized Result, 1~14 Hours per Week

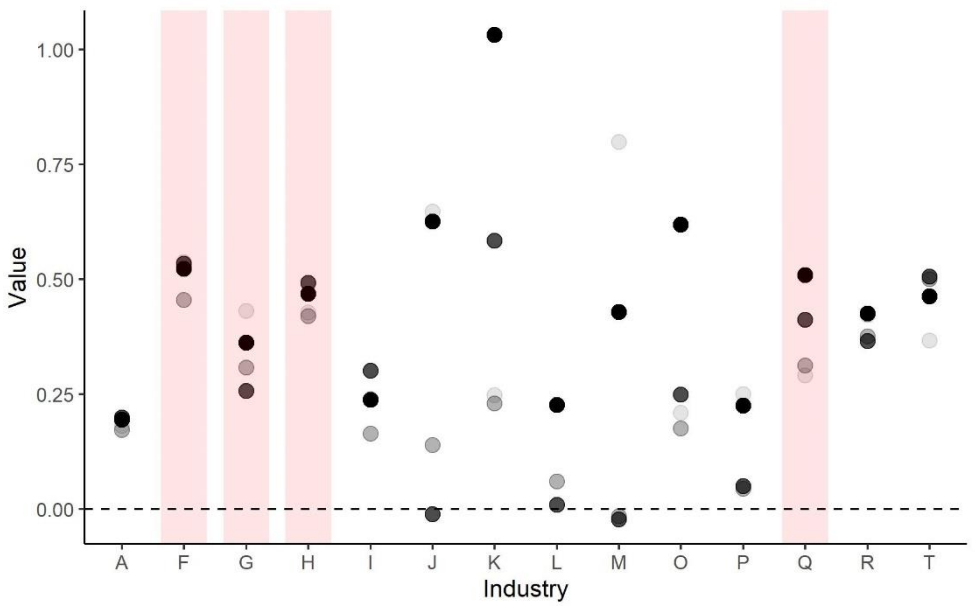

Figure 4.5.19 Regression Result of Model 3.5:
Summarized Result, 15~35 Hours per Week

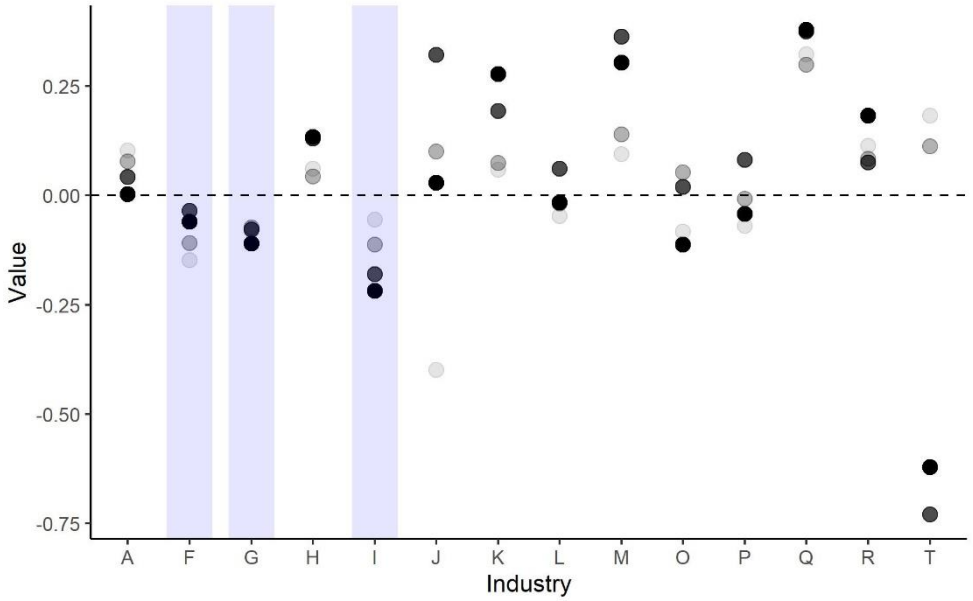

Figure 4.5.20 Regression Result of Model 3.5:
Summarized Result, 36~52 Hours per Week

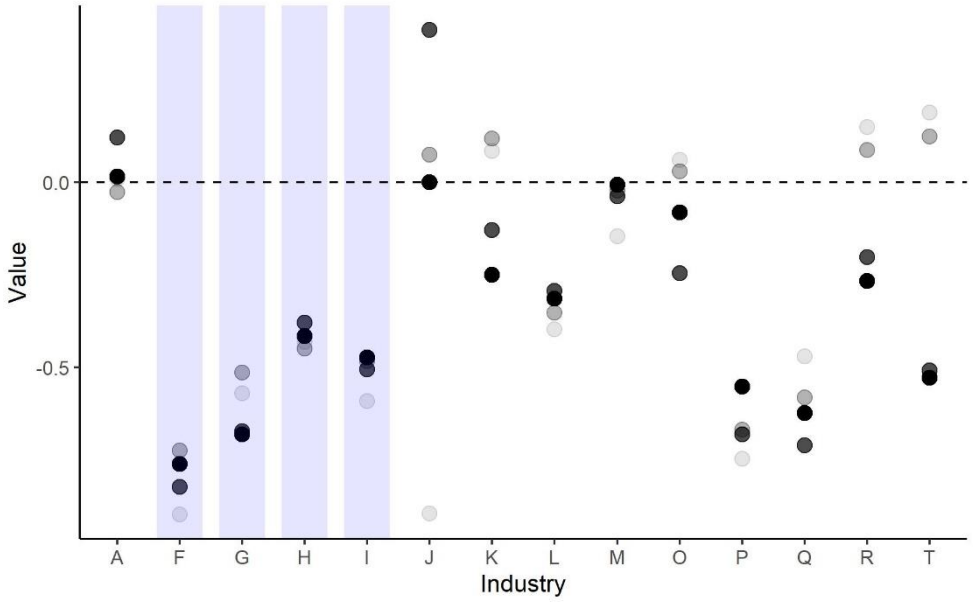

Figure 4.5.21 Regression Result of Model 3.5:
Summarized Result, 53 or Longer Hours per Week

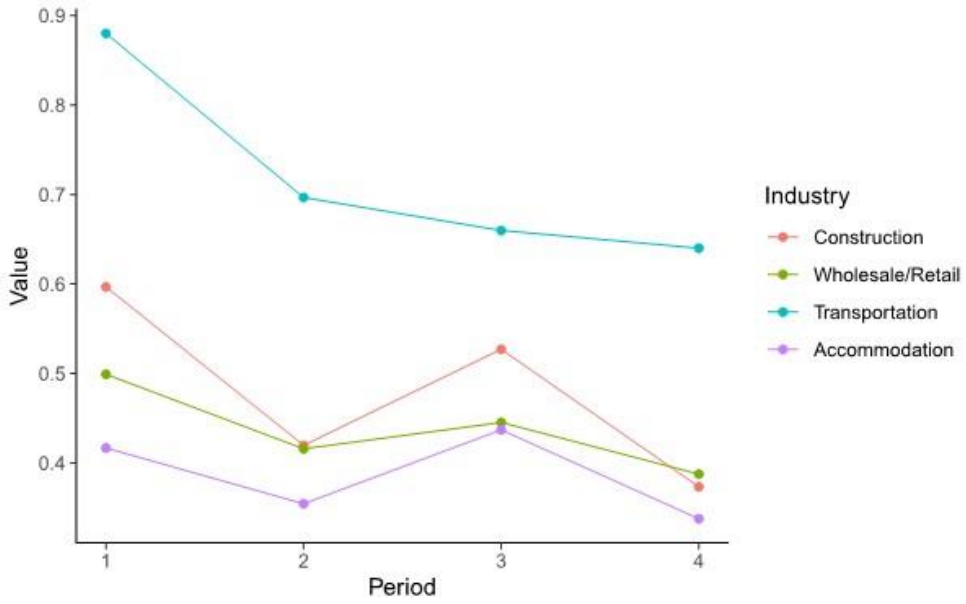

Figure 4.5.22
Regression Result of Model 3.5: 1~14 Hours per Week, Part 1

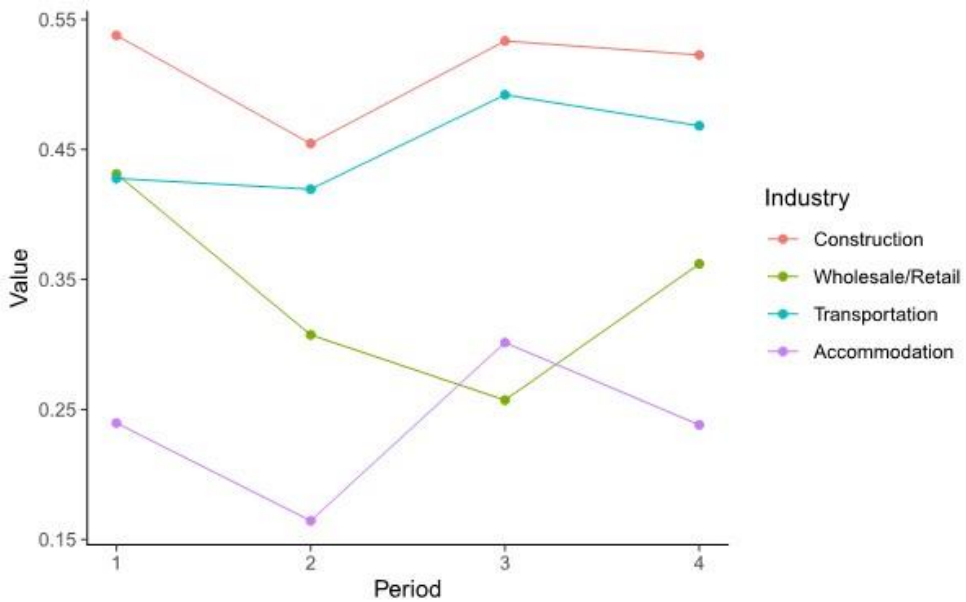

Figure 4.5.23
Regression Result of Model 3.5: 15~35 Hours per Week, Part 1

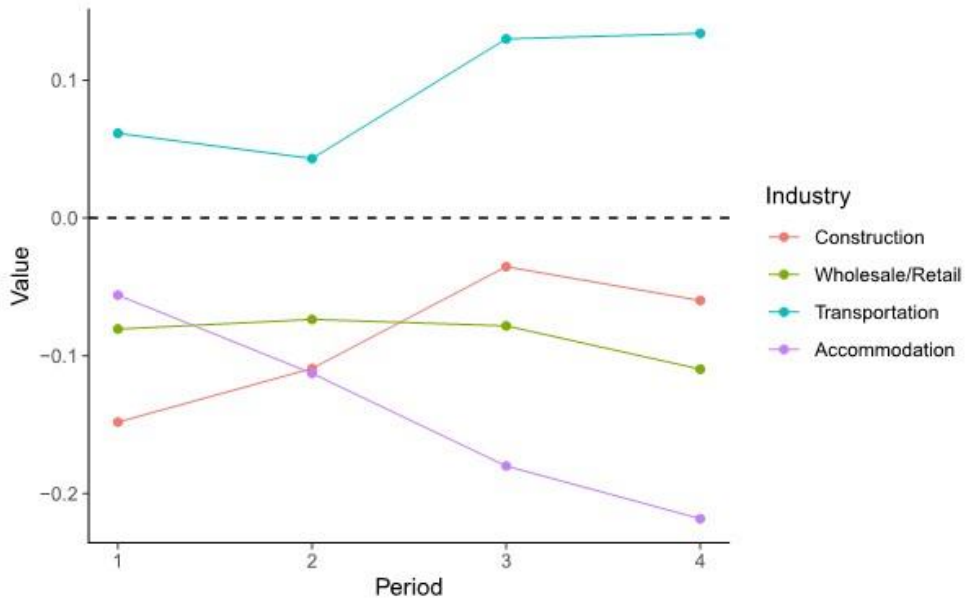

Figure 4.5.24
Regression Result of Model 3.5: 36~52 Hours per Week, Part 1

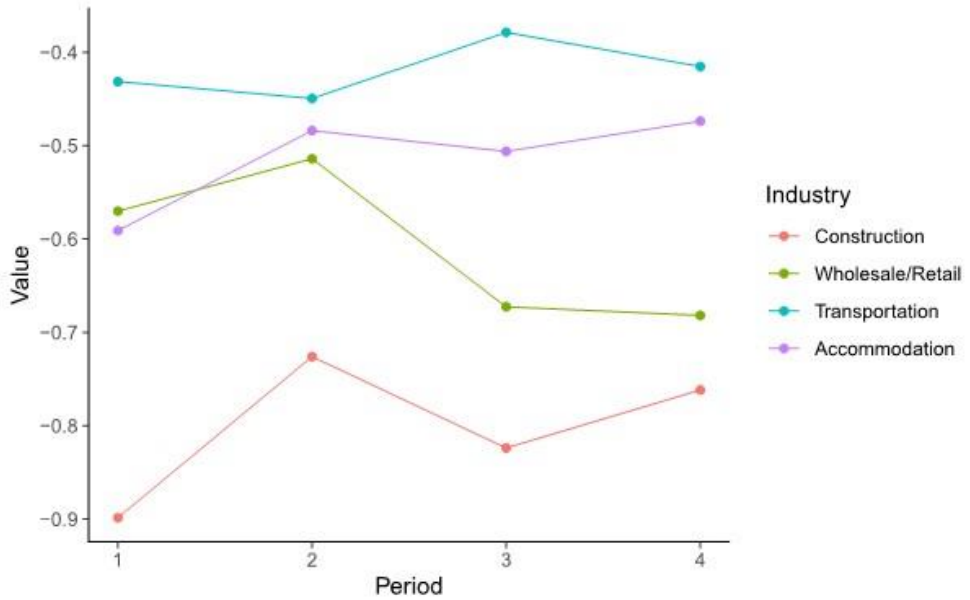

Figure 4.5.25 Regression Result of Model 3.5:
53 or Longer Hours per Week, Part 1

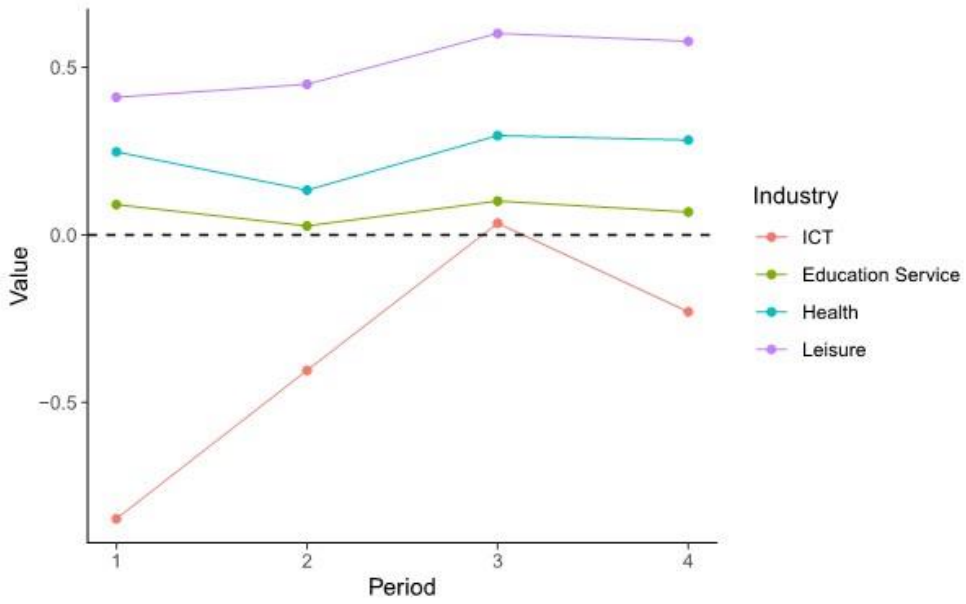

Figure 4.5.26
Regression Result of Model 3.5: 1~14 Hours per Week, Part 2

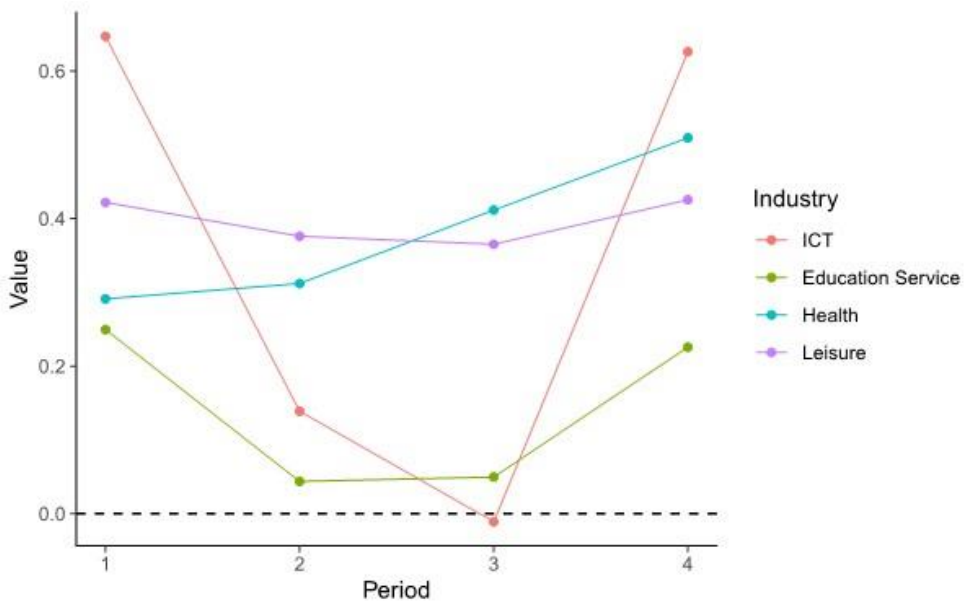

Figure 4.5.27
Regression Result of Model 3.5: 15~35 Hours per Week, Part 2

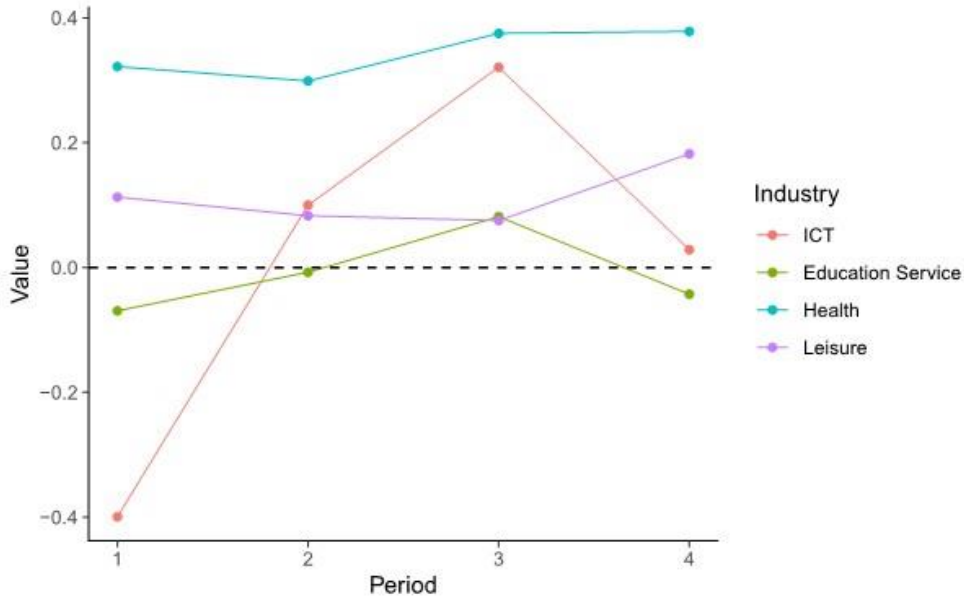

Figure 4.5.28
Regression Result of Model 3.5: 36~52 Hours per Week, Part 2

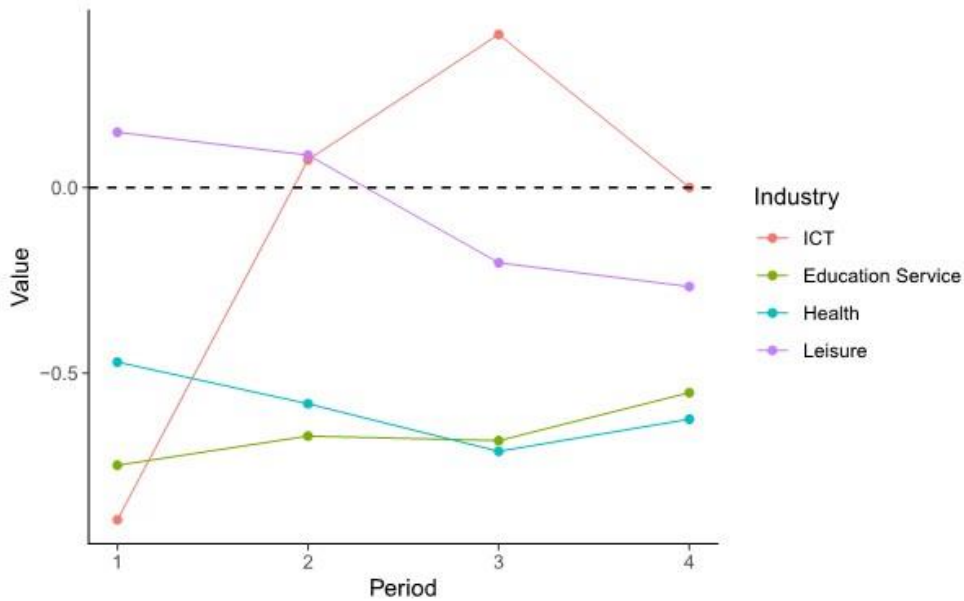

Figure 4.5.29 Regression Result of Model 3.5:
53 or Longer Hours per Week, Part 2

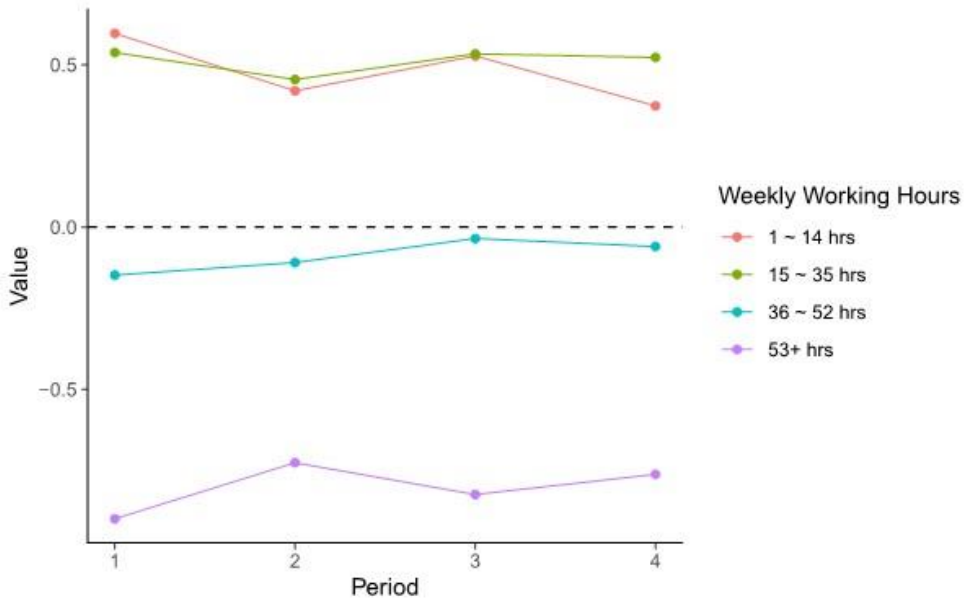

Figure 4.5.30
Regression Result of Model 3.5: Construction

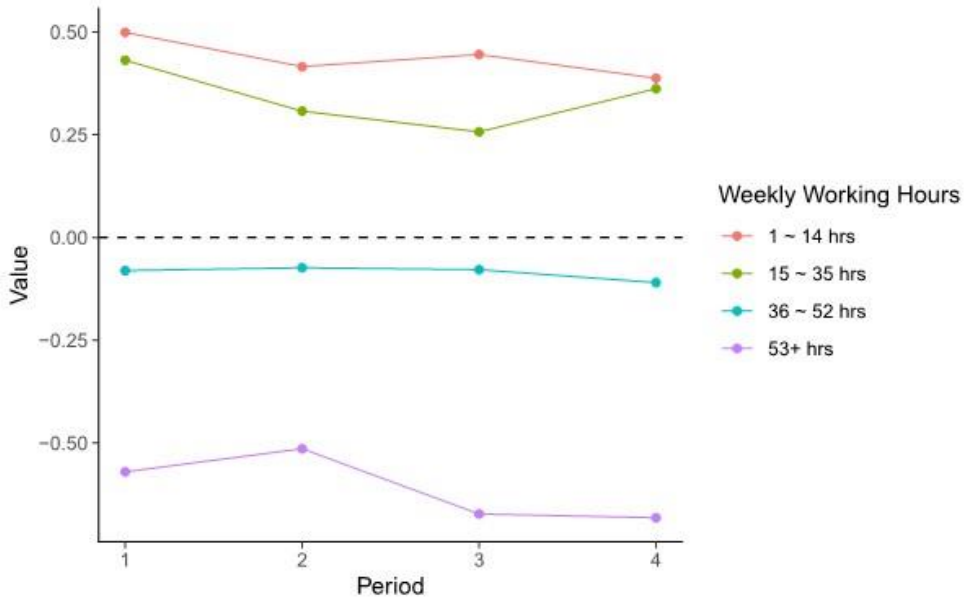

Figure 4.5.31
Regression Result of Model 3.5: Wholesale & Retail

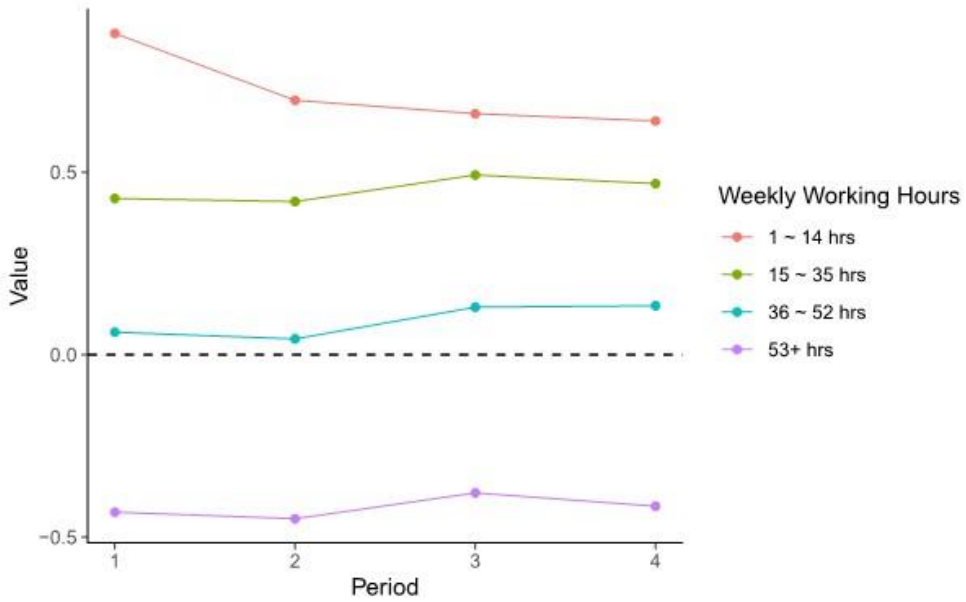

Figure 4.5.32
Regression Result of Model 3.5: Transportation

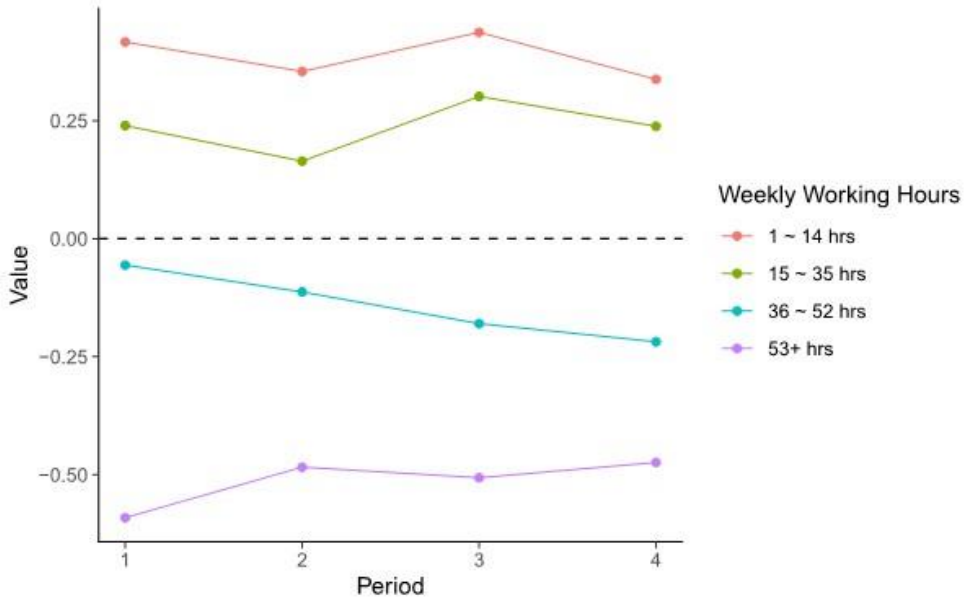

Figure 4.5.33
Regression Result of Model 3.5: Accommodation

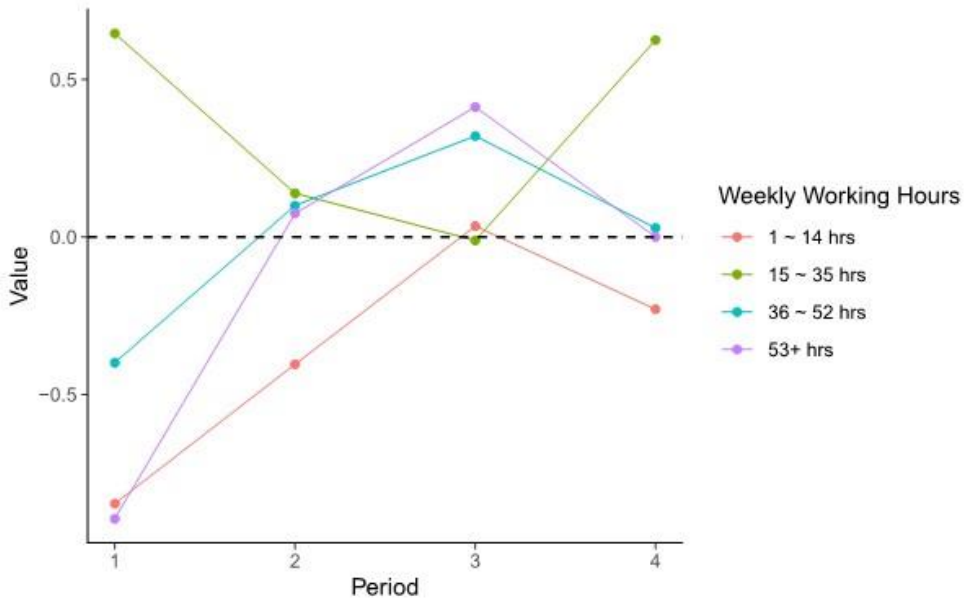

Figure 4.5.34
Regression Result of Model 3.5: ICT

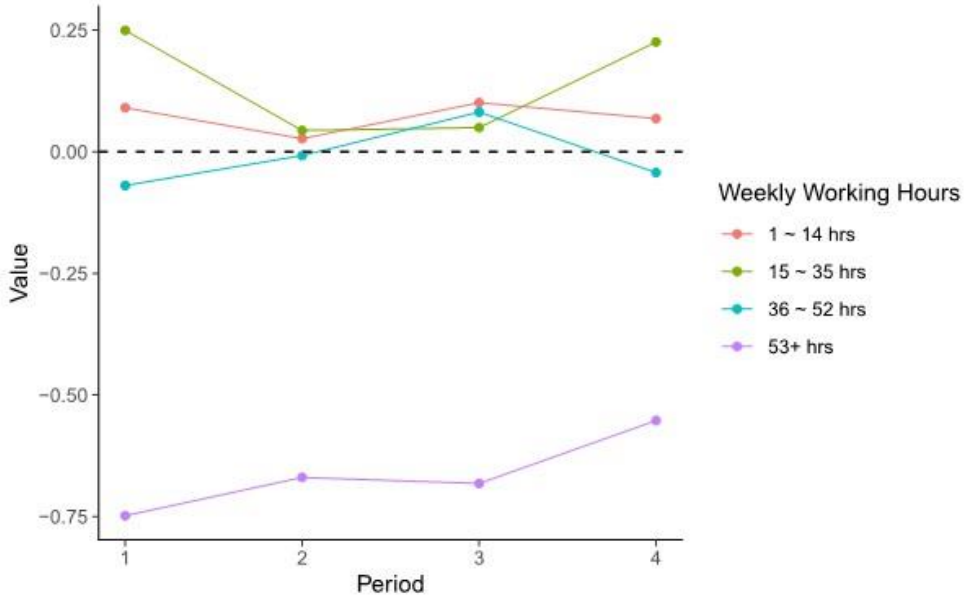

Figure 4.5.35
Regression Result of Model 3.5: Education Service

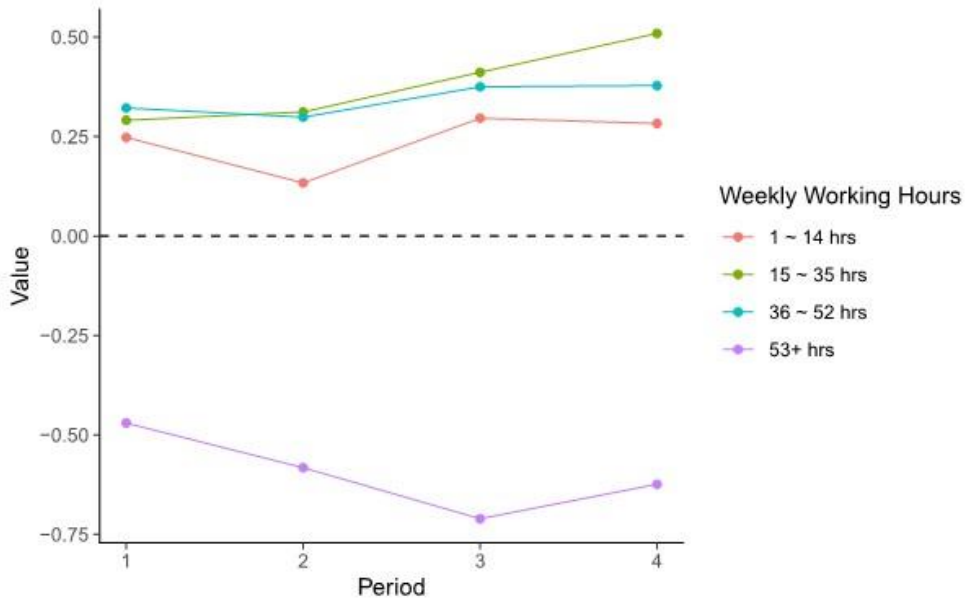

Figure 4.5.36
Regression Result of Model 3.5: Health

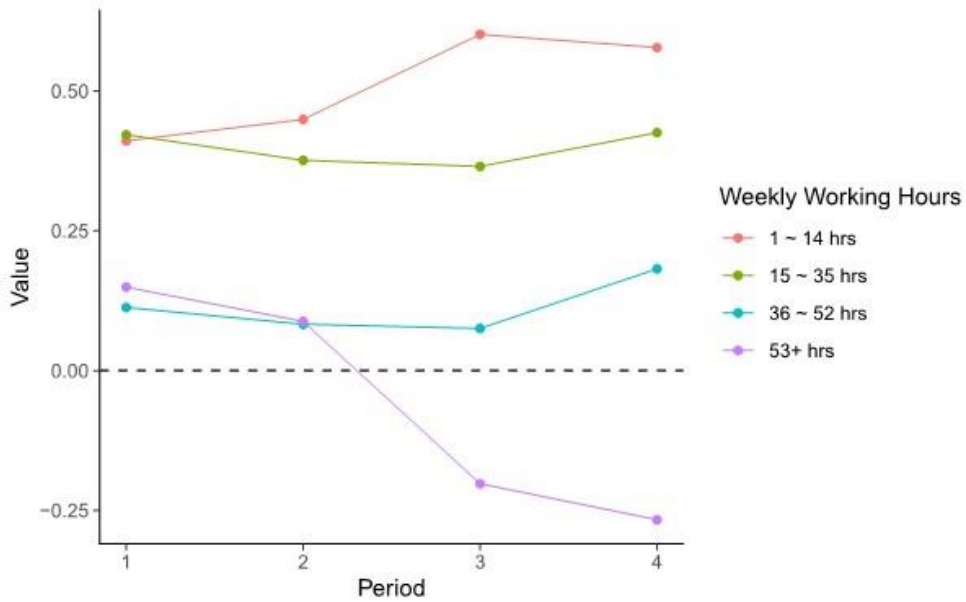

Figure 4.5.37
Regression Result of Model 3.5: Leisure

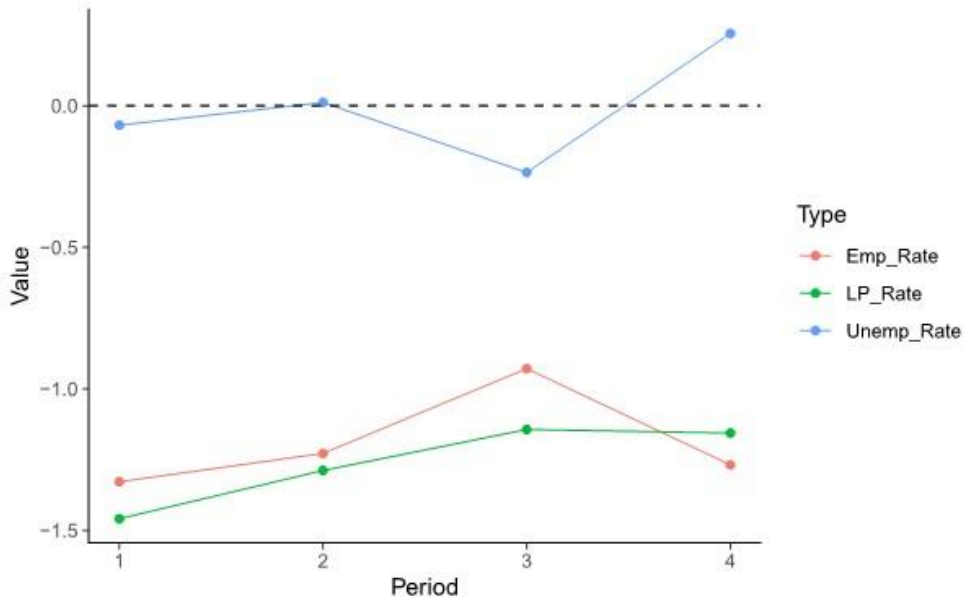

Figure 4.6.1
Regression Result of Model 3.6: Seoul (2017~, Baseline)

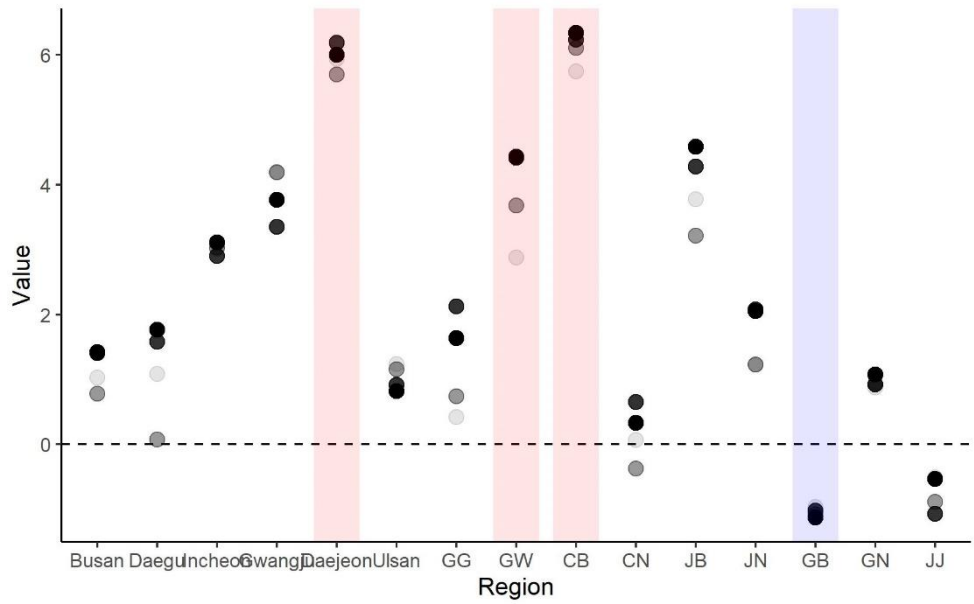

Figure 4.6.2 Regression Result of Model 3.6:
Summarized Result, Employment Rate

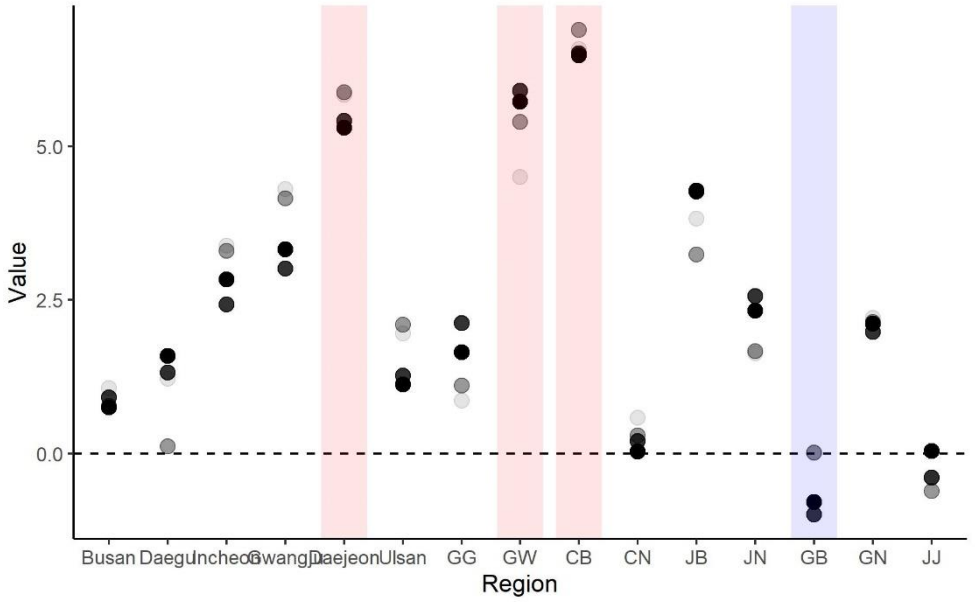

Figure 4.6.3 Regression Result of Model 3.6: Summarized Result, Labor Participation Rate

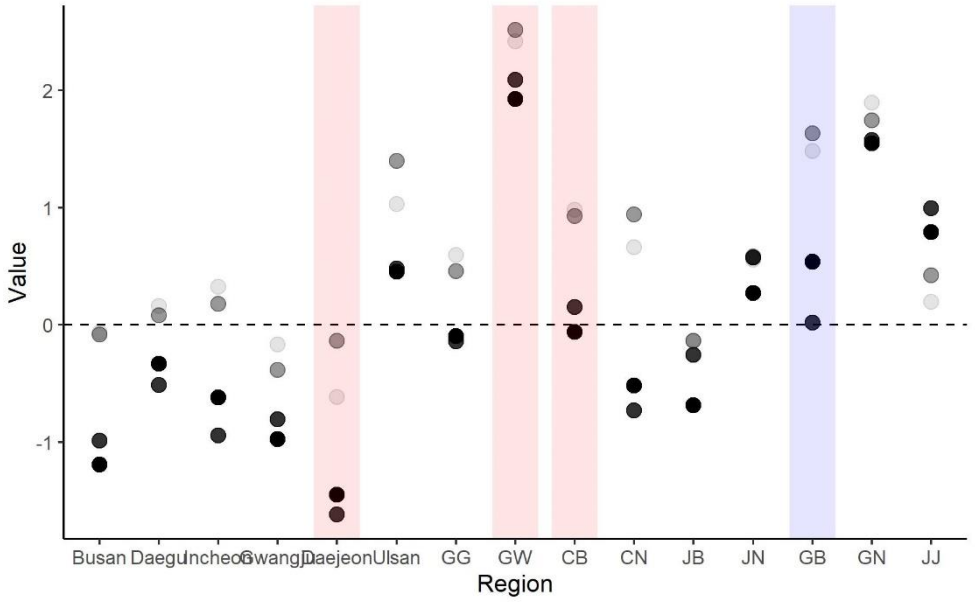

Figure 4.6.4 Regression Result of Model 3.6: Summarized Result, Unemployment Rate

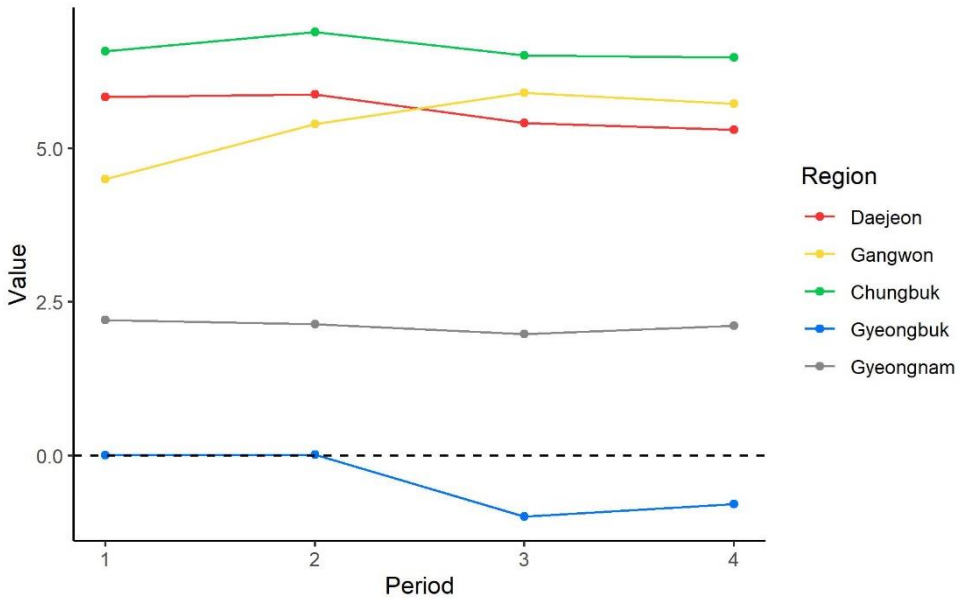

Figure 4.6.5 Regression Result of Model 3.6:
Summarized Result of Selected Regions, Employment Rate

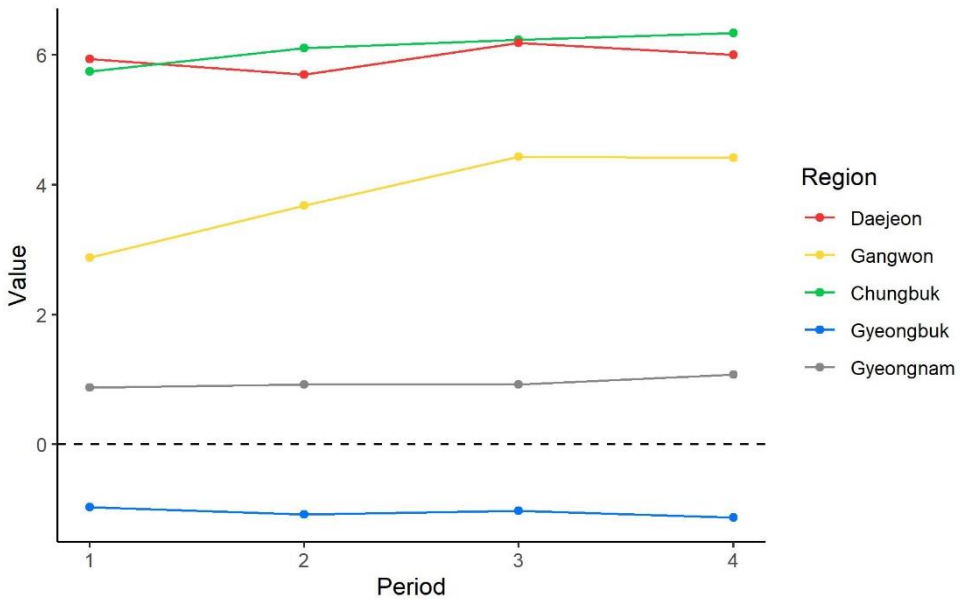

Figure 4.6.6 Regression Result of Model 3.6:
Summarized Result of Selected Regions, Labor Participation Rate

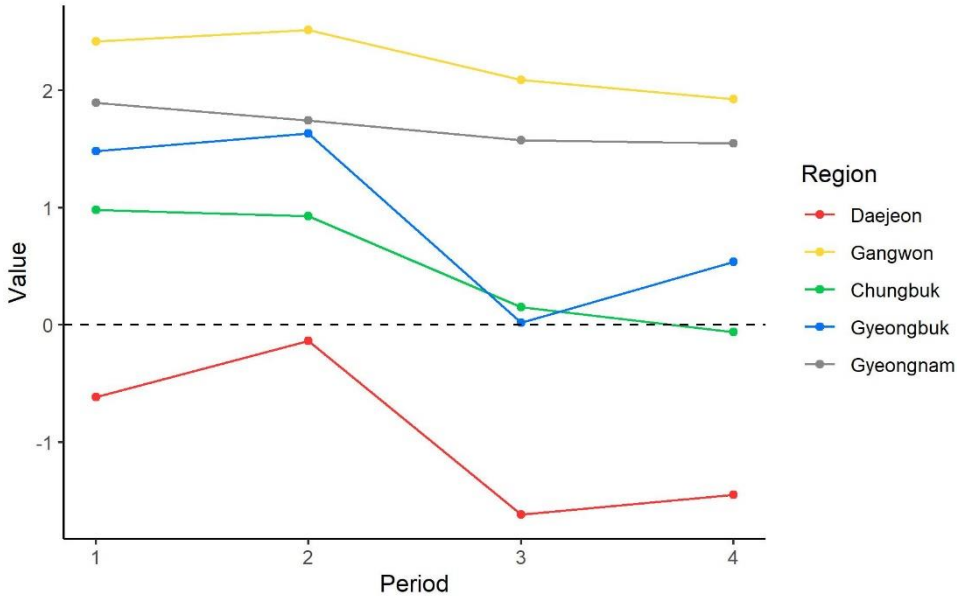

Figure 4.6.7 Regression Result of Model 3.6:
Summarized Result of Selected Regions, Unemployment Rate

Abstract

본고는 지난 2년간 코로나19에 따른 고용시장 변화의 이질성에 대해 다양한 측면에서 살펴보고, 2008년 금융위기 당시와 최근 해외의 현상과 비교했다. 분석 방법론은 Nam and Lee (2021)의 회귀모형을 주로 이용하여 패널 데이터의 기간을 점점 확대하여 분석했다. 코로나19의 부정적 영향은 주로 임시직과 자영업자에 집중되었고, 여성, 고령자, 저학력자에게 그 외 집단보다 더 크게 나타났다. 그리고 사회 필수 업종이거나 대면 업무 위주 산업에서 코로나19의 영향으로 근로자 수가 격감했다. 또한, 코로나19의 충격이 남녀 간 상이하게 나타난 업종도 존재하였고, 단시간 근로자는 증가한 반면 장시간 근로자는 크게 감소한 것으로 나타났다. 하지만 코로나19 영향의 지역간 격차의 유무와 확진자 추이가 고용 시장에 준 영향은 불분명하다.

주요어 : 코로나19, 고용시장, 사회적 거리두기, 재난지원금, 이질성, 회귀분석
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