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The Impact of the Covid-19 Crisis on the 21st General Election in Korea

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Abstract

Purpose: This paper estimates the impact of the epidemic crisis on election outcomes through investigating the effect of Covid-19 crisis on election results of 21st General Election held in April 15th 2020 in Korea. **Research design, data and methodology:** This study employs Ordinary Least Square (OLS) method using district-level data from Seoul and Gyeonggi province available at National election data in Korea. **Results:** Despite the current crisis in Korea, Covid-19 has had positive effects on voter turnout on average, after controlling for other factors. On the other hand, the effect of Covid-19 on the voter turnout was negative in districts with a larger aging population and higher health insurance premiums. In addition, Covid-19 negatively impacted vote shares for the incumbent party, while its rival party saw gains in their votes. **Conclusion:** The effect of Covid-19 election outcomes in Korea is distinct from other countries due to the nationwide acknowledgment of the Korean government's achievement in managing the epidemic. This implies that the crisis management ability of a government is crucial in gaining support for an incumbent party in future elections. Countries facing upcoming elections need to implement acceptable Covid-19 restriction policies as well as economic support for compensation to reap similar benefits.

Keywords: Covid-19, Vote Turnout, Vote Share, Aging Population, Health Insurance Premiums

JEL Classification Code: H12, I18, P16

1. Introduction

The Covid-19 crisis is not only a public health issue, it is also intertwined with both political and economic matters. With an unexpected sporadic surge of the virus, a government is confronted with a trade-off between containing the spread of virus and managing economic damages due to the restrictions. In the midst of political representatives deciding the restriction level, there has been some literature pointing out that ruling party may harness this crisis as an opportunity to win over elections (Pulejo & Querubin, 2020). Moreover, in the aftermath of Corona virus infections, there is a question of how the government will provide economic support to people given the fear of populism. Thus, it is significant to study people's reaction towards government responses to the Covid-19 crisis in terms of political as well as economic consequences and its implication for an incumbent government, and support for established parties and minor parties. This paper attempts to answer how government responses to an epidemic shapes people's decision to vote as well as their support for the government, given their economic and social situation. In this respect, my aim is to investigate the question of whether Covid-19 has had an impact on voting behavior using Korea's 21st General Election results. In addition, it is important to point out the following details. Firstly, if the outbreak had an impact on election results, then we must examine how that affected turnout, which can represent the participation of people in voting and democracy. Secondly, how did it influence the choice of mainstream and non-

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mainstream parties. Thirdly, how Covid-19 affects voter turnout based on age. Lastly, did the government's restrictive measures also have an effect on voting participation and support for the incumbent party.

The purpose of this paper is to find out the impact of an epidemic on the voting behavior given the variations in the average age of population and average income level. The ongoing Covid-19 crisis is a worldwide phenomenon, which is altering the voting behavior related to economic rationale. The 21st General Election in Korea experienced distinctive changes compared to previous elections. Firstly, it marked the highest voting turnout (voting participation) in 24 years, in direst opposition to other countries which faced a notable fall in the rate. Appendix 1 compares voter turnout between the 21st and 20th General Election in the Seoul region. Surprisingly, the voter turnout in this election period marked the highest level observed in28 years for Korea. Voter turnout increased in all districts in Seoul by an average of 8% points. By comparing the 20th election with the 21st election, before and after the outbreak of Covid-19, this paper posits an explanation for the increase in turnout rate for 21st General Election despite of epidemic in Korea. There is also a positive relationship between participation in voting and exposure to the virus. The positive relationship is surprising because one would expect participation in voting to raise the risk of contracting Covid-19. This is clearly illustrated in the case of a Spanish election in the Basque region, where turnout was lower in municipalities with positive cases of Covid-19 (Fernandez-Navia, Polo-Muro, & Tercero-Lucas, 2021; Vázquez Carrero, Artés, García, & Jiménez González, 2020). Second, the incumbent party (the Democratic Party) secured a majority of seats, which is an unexpected result given the history of opposition party performance in the previous elections. These notable changes are assumed to be related to the current crisis, after examining the aging population and income level in Korea.

This paper offers an empirical study of the effects of the Covid-19 pandemic on voter turnout and support for the incumbent party and established parties using Korea's General Election data. The Covid-19 virus is considered as an exogenous shock by which to identify the causal effects of the outbreak of the epidemic. These effects can be witnessed through the increase in anxiety in a society and garner a level of trust for an incumbent government come time for voting. To estimate the causal effect of Covid-19 on voting behavior and election outcomes for the incumbent and established parties, this paper uses a regression approach to investigate the linkage of the difference between the 21st (with Covid-19) and 20th General Election (without Covid-19) with various economic and political control variables at the voting district level.

The main results present that the turnout rate was 0.002 percentage points higher with an increase of 1% Covid-19 confirmed case on average across voting districts. This result is distinctive from recent studies in Spain related to the electoral consequences of Covid-19 (Fernandez-Navia, Polo-Muro, & Tercero-Lucas, 2021). Their research reveals that voters were less likely to participate in voting due to the risk of contracting Covid-19. In line with these results, I also added two interaction terms of Covid-19; confirmed cases with average age and health insurance premiums within the district. The results show that in regions with higher than average age or higher insurance premiums, an increase in Covid-19 cases had a negative effect on voter turnout. Thus, the difference between Spain and Korea's election is that Korea experienced comparatively less fall in overall turnout due to Covid-19.

This study can contribute valuable data to both academicals as well as practical policy applications in the following aspects. First, it can provide the political economic impact of Covid-19 on election outcomes in Korea. Second, with the information of the given impact, policy makers and politician can refer to the result for upcoming elections. Lastly, voting outcomes can lead to further studies, such as discerning the impact of economic support, such as a cash compensation, on election results.

The following section provides a brief background about the past studies of Covid-19 and elections. Subsequently, data and empirical strategy shall be examined in the later section. Lastly, the ensuing conclusion will follow a discussion of the results.

2. Literature Review

Recent economic studies related to Covid-19 widely deal with traditional fields of growth and inequality linking through various market channels as well as the effect of Covid-19 in political economy (Bloom, Bunn, Mizen, Smietanka, & Thwaites, 2020; Razin, Sadka, & Schwemmer, 2021). However, there is scant research on the relationship between Covid-19 and elections in Korea.

Thusr, my paper seeks to prove that when Covid-19 cases increase, the vote share of the incumbent party falls and that of the rival party rises. This is consistent with the findings in Gutierrez, Meriläinen, and Rubli (2020), which present a decline in governing party vote share with increase of magnitude in the local epidemic outbreak in a 2009 congressional election. Lastly, voters are more inclined towards established parties (United Future Party and Democratic Party) with positive cases of Covid-19 instead of minor parties (the rest of parties except for those two established parties). A similar result is found in Bisbee and Honig (2020), which shows an increase in support for conservative candidates in areas more exposed to Covid-19

in the Democratic primary election of 2020 in the United States of America.

This paper connects to various fields of study. Firstly, this paper confirms the consequences of epidemics on voting behavior. Before the period of Covid-19, there were several literary works studying election outcomes affected by other epidemics, such as the effects of Ebola in the United States. Beall, Hofer, and Schaller (2016) researched the effect of the Ebola virus on the 2014 U.S. Federal elections. Their study shows a negative effect of virus on voter turnout in the election. Also, Urbatsch (2017) argues that influenza prevalence diminishes democracy by reducing voter turnout due to the fear of contracting the disease by observing elections in Finland and the United States from 1995 to 2015. Recent Covid-19 studies show similar results of the impact of epidemic crisis on election. Morris and Miller (2020) present that there was a fall in voting turnout due to fewer polling places in the primary election in response toCovid-19 in the United States. Two of working papers (Vazquez-Carreo et al., 2020; Fernandez-Navia et al., 2021) elicit a negative relationship between Covid-19 and turnout in the Basqueregional election inSpain, using difference in difference method.

In a microscopic perspective, there are studies showing how epidemics change the support for the incumbent and its rival parties. Adam-Troian, Bonetto, Varet, Arciszewski, and Guiller, (2020) carried out a study on the effect of a pathogen threat to conservative values using French election data. They find the increase of Covid-19 threats raised conservative votes by 0.25%. De Vries, Bakker, Hobolt, and Arceneaux (2020) studies how the lockdown measures affected the support level for an incumbent party in European countries. They find that incumbent party support had increased with the increase of the level of lockdown.

In more broad terms of political economy and Covid-19, issue can be found in other recent literature. Aksoy, Eichengreen, and Saka (2020) used individual survey data to test the relationship between past epidemics since the 1970s and political trust level. They find a long-term negative effect of epidemics on the trust of political leaders and institution. This explains the phenomenon of Western governments, which thought to be advanced in institution and democracy, blundering on Covid-19 crisis. Johnson, Pollock, and Rauhaus (2020) pointed out that the political shifts for upcoming presidential elections could be considerable due to high fatality rates, especially for the elderly, from Covid-19. In line with this demographic issue of Covid-19, this paper extends the risk of voting for the elderly in the general election in Korea.

This paper complements this literature on the effects of the epidemic on election by showing appropriate government response during the crisis had a positive effect on not only the incumbent party but also established parties. This paper analyzes Covid-19's influence on voting behavior. According to Bisbee and Honig (2020), the impact of anxiety arisen from the epidemic works to the benefit of establishment candidates backing the finance theory - "flight to safety". Similarly, this paper finds established parties gained in support due to the Covid-19 crisis.

3. Research Methods and Materials

3.1. Data

I collected data from several sources to measure outcome variable, explanatory variable and controls. All data is limited to the Seoul capital area (Seoul and Gyeonggi province) where the population share is over 40% of the county's total. This is to avoid the influence of strong regionalism (normally Gyeongsang-do leans conservative and Jeolla-leans more liberal) in voting behavior in Korea. Also the increase of voting turnout between the 21st and 20th General Election is similar in scale throughout different regions. This is shown graphically in the appendix. Therefore, there is not a large bias when considering just the capital region. The definitions and statistical summary is provided in the table 1. Data is gathered through several sources such as National Election commission for voting data, Center for Disease Control Headquarters for Covid-19 data and Statistics Korea for other economic control variables. Subsequently, data was merged together in terms of voting at the district level.

The main explanatory variable is district level Covid-19 infection data for Seoul and Gyeonggi province. The detailed and daily reported Covid-19 confirmed cases' data for each district before the General election (15th of April, 2020) is gained from several sources; the KCDC, the Ministry of Health and Welfare, Seoul city and Gyeonggi province homepages. We can observe that there is comparable larger variation in the Gyeonggi region than Seoul in previous figures in Covid-19 confirmed cases graphs. In particular, while there are several regions in Gyeonggi where there were no Covid-19 cases until April, the cities of Bucheon, Seongnam, and Yongin area show over 50 to 100 confirmed cases. This seems to be a regional characteristic since Gyeonggi area is more spacious and less densely populated than Seoul.

In this paper, outcome variable is the difference in the election results of district-level turnout rate between the previous and current General Elections (held in 2016 and 2020) measured in percentage point terms. Similarly, I have

collected data for vote share gained in the elections for each party. The vote share is measured from proportional representation result data of each districts in Seoul and Gyeonggi province. This is because voter's party preference is more likely to be revealed through choice of proportional representation rather than choosing a candidate and tracing back to the affiliated party of the candidate. The election data is obtained from statistics from the National Election Commission of Korea.

Control variables can be combined into three larger groups – social, economic and political, measured in the latest data. Social variables are average age and the number of voters at each district. These capture the social difference of each district. Since there is a huge gap between the size of a population and the number of Covid-19 confirmed cases, I have log-linearized the number of voters. Economic control variables include the average number of car ownership of a household and the average amount of health insurance premiums paid by each household. Health insurance payment in Korea is strictly related to people's income. This is the reason that I use the average amount of health insurance premiums as a proxy for average income for each district. These are to measure how voter's level of financial wellbeing changes their participation in voting and preference for a particular political stance. The source of this data is Statistics Korea. Lastly, political control variables are the number of candidates and the increment trend of voter turnout from the 19th to 20th General Election.

Table 1: Statistical Summary and Definitions of Data

Variables	Definition	Mean	St. Dev.	Min	Max	Source
Voter turnout	Voter turnout rate in 21st General election (%)	0.66	0.04	0.59	0.77	NECS
Δvoter turnout (t-1)	Δ voter turnout between 21st & 20th of General election (% point)	0.08	0.02	0.05	0.13	NECS
Δvoter turnout (t-2)	Δ voter turnout between 20th & 19th of General election (% point)	0.04	0.01	0.00	0.07	NECS
Δ vote share for UFP	Δ vote share for UFP between 21st & 20th of General election (% point)	0.00	0.03	-0.06	0.09	NECS
Δ vote share for DP	Δ vote share for DP between 21st & 20th of General election (% point)	0.08	0.02	0.00	0.11	NECS
Covid	The number of Covid-19 confirmed cases	23.14	21.86	0.00	126.00	KCDC
Candidate	The number of candidates in each district	8.68	4.66	3.00	20.00	NECS
Population	Total population of each district (in million)	0.36	0.22	0.04	0.96	KOSIS
Average age	Average age of each district (years)	41.65	2.05	37.20	48.30	KOSIS
Car ownership	The average number of cars owned in a household	0.95	0.23	0.50	1.37	KOSIS
Health insurance payment	Average health insurance payment in a household (in million Korean Won)	0.12	0.02	0.08	0.20	KOSIS
Total observations	56					

Note: UFP is United Future Party (Opposition party in Korea) and DP is Democratic Party (Incumbent party).

3.2. Empirical Model

This paper is interested in identifying the causal effect of exposure to the Covid-19 on voter decisions in the 21st General Election in Korea. While the outbreak of Covid-19 was an *(Don't use exogenous twice in such similar

sentences!) shock to voters, there are three important aspects to consider in determining voting decision in Korea. Firstly, there is deeply rooted regional division in stance of party preference in Korea. It is well known that the West side (Kyeong-buk province) of Korea supports conservative parties while the East side (Jeolla province) tends to favor liberal. In order to control for this strong regionalism in voting, I exclusively used data for Seoul and Gyeonggi province (the capital area regions in which political stance is a more balanced combination of both conservative and liberal) which are considered to be comparably neutral in political position.

Second, I expect to discover that older voters were more discouraged to appear at voting stations due to an increase in the risk of exposure toCovid-19. However, in previous voting results from General Elections held in Korea show that turnout rates are higher for elderly people. It is interesting to see how the two conflicting forces worked in favor of voter turnout during the pandemic.

Third, as we have seen the previous election results, there

is an increasing trend of voting turnout since the 18th General Election in Korea. Thus, it is crucial to control the trend effect to identify the effect of Covid-19 crisis on voting outcomes successfully. I designed an innovative way to isolate the trend effect. Firstly, I added a control variable (the difference between 19th and 20th general election turnout rate measured in percentage point) in regression specification to capture the previous increasing trend of turnout. Subsequently, I have changed dependent variables to the difference between the 20th and 21st voting outcomes.

My specification takes as the form:

$$Y_{jt} = \beta_0 + \beta_1 COVID_{jt} + \beta_2 age_{jt} + \beta_3 age_{jt} * COVID_{jt} + \beta_4\ health\ insurance\ payment_{jt} + \beta_5 ihealth\ insurance\ payment_{jt} * COVID_{jt} + \beta_6 Economic\ control_{jt} + \beta_7 Political\ control_{jt} + \beta_8 \Delta Y_{j(t-1)} + \varepsilon_{jt} \quad (1)$$

Where outcome variable Y_{jt} refers voter turnout in 21st general election for current incumbent (Democratic party) and rival party (UFP) with t = 2020 and j standing for electoral district in Seoul and Gyeonggi province. The main coefficients of interest are β_1, β_3 and β_4 which measure the impact of Covid-19 exposure and average age and income of the region on election outcome. $Economic\ control_{jt}$ and $Political\ control_{jt}$ are the vector of election district-level controls summarized above, and ε_{jt} is error term. In order to isolate the causal effect of Covid-19 in Korea, I have included the trend control term which is the difference between 19th and 20th general election turnout rate which is shown in $\Delta Y_{j(t-1)}$.

$$\Delta Y_{j(t-1)} = \beta_0 + \beta_1 COVID_{jt} + \beta_2 age_{jt} + \beta_3 age_{jt} * COVID_{jt} + \beta_4 income_{jt} + \beta_5 income_{jt} * COVID_{jt} + \beta_6 Economic\ control_{jt} + \beta_7 Political\ control_{jt} + \beta_8 \Delta Y_{j(t-1)} + \varepsilon_{jt} \quad (2)$$

This specification deals with changes in vote share gained by two major parties, UFP and DP. The outcome variable $\Delta Y_{j(t-1)}$ refers to the difference in vote share between the 20th and 21st General Election for current incumbent (Democratic Party) and rival party (UFP) with j standing in for the electoral district Seoul and Gyeonggi province

4. Results and Discussion

4.1. Main Results

Table 2 presents the results of OLS estimation of previous equations of (1). Each column reports a different regression results from the first and the second equation and the rows specify different outcome variables. All columns present results using the dependent variable voter turnout of the 21st General Election in districts of Seoul and Gyeonggi province.

The model (1) presents regression results explaining voter turnout in terms of socioeconomic variables without Covid-19 related terms. There are three main control groups; political, economic and demographic characteristics. First, political controls include the number of candidates, the size of the population (measurement for number of voters), and the turnout difference between the 20th and 19th General Election for each district. Subsequently, the number of cars owned by a household and the amount of national health insurance paid by each person are considered as economic variables. Lastly, the average age of the population in each region and the size of population are accounted for demographic features to control. Model (1) highlights the significance of demographic structure; represented by average age of each district, and a proxy variable for income status; the average payment of health insurance of each district. Both variables show a positive relationship with voter turnout with statistical significance. Thus, with higher average age and income leads to higher level of participation in voting compared to lower districts. With this result, in subsequent regression I implemented interaction terms of both age and health insurance with a Covid-19 variable. Other control variables show no statistical significance.

In model (4), I added variables of Covid-19 confirmed cases and its interaction with age and health insurance variables, which are proposed to measure the health shock and economic shock of Covid-19 crisis respectively. With comparison of model (1), here it sheds lights on the impact of Covid-19 on voter turnout in terms of both health and economic significance by including Covid-19 variables and interaction terms. The coefficient of Average age * Covid is negative and statistically significant. The increase of Covid-19 cases have a positive effect on voting turnout at the mean of average age and health insurance ($\beta_1 + \beta_2 * \overline{age} + \beta_4 * \overline{insurance} = 0.01582 - 0.00031(41.65) - 0.02383(0.117) = 0.0019$. Therefore, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to an increase in voting turnout of 0.04 at the mean value of the average age (41.65) and health insurance (0.117) of each districts.

Similarly, in order to see the marginal effect of Covid-19 on voter turnout, I calculated 1SD change in Covid-19 cases on voting turnout at mean value of average age and health insurance of each district. Figure 1 illustrates the quantitative effect of an increase in the Covid-19 cases on voter turnout. The 1SD above mean of Covid-19 cases increases voter turnout by 0.08 and the difference in each 1 SD of Covid-19 is 0.04 (0.08-0.04). This shows the

pandemic's positive effect is significant on deciding choice of voting during the General Election in Korea.

Subsequently, we will see the marginal effect of Covid-19 with variations in average age and health insurance. First, the variation in average age by 1 SD with the marginal effect of Covid-19 at the mean value of health insurance is shown under the figure 3. An increase of Covid-19 cases had a negative effect on voting turnout with an increase of average age by 1 SD at the mean value of health insurance $\{\beta_1 + \beta_2 * (+1SD\ \ age) + \beta_4 * \overline{insurance}\} * 1SD\ \ Covid = \{0.01582 - 0.00031(43.7) - 0.02383(0.117)\} * 21.86 = -1.36$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to a decrease in the voter turnout of -1.36 with the increase in the average age by 1 SD (43.7) at the mean value of health insurance (0.117) of each districts.

Here I calculate the marginal effect of Covid-19 in variation with health insurance at the mean value of average age. A variation in health insurance by 1 SD with the marginal effect of Covid-19 at the mean value of average age is shown under the figure 3. An increase of Covid-19 cases have a negative effect on voting turnout with an increase of health insurance by 1 SD at the mean value of average age $\{\beta_1 + \beta_2 * \overline{age} + \beta_4 * (+1SD\ \ insurance)\} * 1SD\ \ Covid = \{0.01582 - 0.00031(41.65) - 0.02383(0.144)\} * 21.86 = -1.37$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to a decrease in the voter turnout of -1.37 with the increase in the health insurance by 1 SD (0.144) at the mean value of average age (41.56) of each district.

The next set of models present regression results for vote share for the incumbent party (Democratic Party) and its rival party (United Future Party). All Models use dependent variable as the difference in vote shares between the 21st and 20th General Election. Model (1) and (2) depict results for the vote shares of incumbent party and model (3) and (4) show the vote shares of its rival party. Model (1) and (3) show regression results without any interaction terms. Model (2) and (4) shows results with interaction terms

Model (2) reports the estimates of vote shares for the incumbent party influenced by Covid-19 with interaction terms of average (age?) and health insurance. The coefficient of Covid-19 is negative and statistically significant. An increase of Covid-19 cases have a negative effect on vote shares for the incumbent party with the mean value of average age and health insurance $(\beta_1 + \beta_2 * \overline{age} + \beta_4 * \overline{insurance} = -0.0091 + 0.00019(41.65) + 0.00825(0.117) = -0.93$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to a decrease in vote share for the Democratic Party of 0.93 at the mean value of the average age (41.65) and health insurance (0.117) of each districts.

Model (4) reports the estimates of vote shares for the rival party influenced by Covid-19 with interaction terms of average and health insurance. The marginal effect of Covid-19 at mean values of average age and health insurance can be seen in figure 5. The coefficient of Covid is positive and statistically significant. An increase of Covid-19 cases have a positive effect on vote shares for the rival party with the mean value of average age and health insurance $(\beta_1 + \beta_2 * \overline{age} + \beta_4 * \overline{insurance} = 0.01163 - 0.00025(41.65) - 0.01031(0.117) = 0.07$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to an increase in vote share for the United Future Party of 0.07 at the mean value of the average age (41.65) and health insurance (0.117) of each districts.

Subsequently, we will see the marginal effect of Covid-19 with variations in average age and health insurance for vote shares of the incumbent and its rival party. The coefficients of Average age, * Covid-19, and Insurance * are positive and statistically significant. First, the variation in average age by 1 SD with the marginal effect of Covid-19 at the mean value of health insurance is shown under the figure 3. An increase of Covid-19 cases have a positive effect on vote share for Democratic Party with an increase of average age by 1 SD at the mean value of health insurance $\{\beta_1 + \beta_2 * (+1SD\ \ age) + \beta_4 * \overline{insurance}\} * 1SD\ \ Covid = -0.0091 + 0.00019(43.7) + 0.00825(0.117) = 0.4$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to an increase in the vote share for the Democratic Party of 0.4 with the increase in the average age by 1 SD (43.7) at the mean value of health insurance (0.117) of each district.

Second, the variation in average age by 1 SD with the marginal effect of Covid-19 at the mean value of health insurance is shown under the figure 3. An increase of Covid-19 cases have a negative effect on vote share for the United Future Party with an increase of average age by 1 SD at the mean value of health insurance $\{\beta_1 + \beta_2 * (+1SD\ \ age) + \beta_4 * \overline{insurance}\} * 1SD\ \ Covid = 0.01163 - 0.00025(43.7) - 0.01031(0.117) = -1.09$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to a decrease in the vote share for the United Future Party of 1.09 with the increase in the average age by 1 SD (43.7) at the mean value of health insurance (0.117) of each district.

Third, the variation in health insurance by 1 SD with the marginal effect of Covid-19 at the mean value of average age is shown under the figure 3. An increase of Covid-19 cases have a positive effect on vote share for the Democratic Party with an increase of health insurance by 1 SD at the mean value of average age $\{\beta_1 + \beta_2 * \overline{age} + \beta_4 * (+1SD\ \ insurance)\} * 1SD\ \ Covid = -0.0091 + 0.00019(41.65) + 0.00825(0.144) = 0.04$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to an increase in the vote share for DP of 0.4 with

the increase in the average age by 1 SD (0.144) at the mean value of health insurance (41.65) of each district.

Lastly, the variation in health insurance by 1 SD with the marginal effect of Covid-19 at the mean value of average age is shown under the figure 3. An increase in Covid-19 cases had a negative effect on vote share for the United Future Party with an increase of health insurance by 1 SD at the mean value of average age $\{\beta_1 + \beta_2 * \overline{age} + \beta_4 * (+1SD\ \ insurance)\} * 1SD\ \ Covid = 0.01163 - 0.00025(41.65) - 0.01031(0.144) = -0.57$. Hence, a one-standard-deviation (1SD) increase in Covid-19 cases (21.86) would lead to a decrease in the vote share for the United Future Party of 0.57 with the increase in the health insurance by 1 SD (0.144) at the mean value of average age (41.65) of each district.

Table 2: Regression Results

	Voter Turnout				Δ Vote share DP		Δ vote share for UFP	
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Covid		0.0128* (0.0066)	0.0028*** (0.0009)	0.0158*** (0.0057)		-0.0091* (0.0038)		0.0116*** (0.0036)
Average age	-0.0001 (0.0029)	0.0038 (0.0033)	0.0044 (0.0028)	0.0075** (0.0030)	0.0025 (0.0017)	0.0006 (0.0020)	-0.0036** (0.0018)	0.0086 (0.0019)
Average age * Covid		-0.0003* (0.0002)		-0.0003** (0.0001)		0.0002* (0.0001)		-0.0003*** (0.0001)
Insurance	0.0840*** (0.1629)	0.08613*** (0.1754)	1.8448*** (0.2835)	1.7661*** (0.2739)	-0.5488*** (0.0948)	-0.7997*** (0.1789)	0.8394*** (0.0973)	1.2149*** (0.1714)
Insurance * Covid			-0.0239*** (0.0062)	-0.0238*** (0.0060)		0.0082* (0.0039)		-0.0103*** (0.0037)
Car ownership	-0.0673*** (0.0177)	-0.0777*** (0.0180)	-0.0516*** (0.0160)	-0.0629*** (0.0161)	-0.0166 (0.0102)	-0.0144 (0.0106)	-0.0544*** (0.0105)	-0.0568*** (0.0101)
ln(population)	-0.0186 (0.01177)	-0.0118 (0.0118)	-0.0102 (0.0107)	-0.0080 (0.0103)	0.01607** (0.0068)	0.0139* (0.0067)	-0.0030 (0.0069)	0.0026 (0.0064)
No. of Candidate	0.0008 (0.0015)	0.0005 (0.0015)	0.0016 (0.0013)	0.0006 (0.0013)	-0.0012 (0.0008)	-0.0006 (0.0009)	0.0016 (0.0009)	-0.0002 (0.0008)
Voter turnout (t-1)	0.2688 (0.3193)	0.3539 (0.3133)	0.0865 (0.2828)	0.2024 (0.2757)				
Constant	0.8483*** (0.2431)	0.6109** (0.2534)	0.4314 (0.2368)	0.2916 (0.2351)	-0.1372 (0.1418)	0.0445 (0.1546)	0.1364 (0.1456)	-0.1590 (0.1481)
Obs	56	56	56	56	56	56	56	56
R^2	0.4961	0.5531	0.6303	0.6676	0.5043	0.5843	0.7572	0.8227

Note: *p<0.1; **p<0.05; ***p<0.010

4.2. Interpretation and Further Discussion

So far, we have seen technical results of regression among voting turnout and Covid-19 with a significance in population age and health insurance. The main interpretation for the results are discussed as following. First, the election held in Korea experienced a surprising

increase in voting turnout despite of Covid-19 crisis. This can be contributed to the government's rigorous effort to contain the virus as Korea only saw a mild increase in confirmed Covid-19 cases in March 2020 and the cases reduced significantly in the following month when the election was held. Subsequently, by looking at social and economic factors together which are measured through average age of the population in each district and average health insurance premiums, where regions with higher than average age and higher health insurance experienced a decrease in voting turnout. This implies older and wealthier people tend to be more fearful of contracting Covid-19 to such a degree that their participation in voting was low. Lastly, the voting shares for incumbent and rival parties have shown interesting results. A region with an increase in Covid-19 cases experienced a fall in voting shares for an incumbent party whereas the rival party gained the voting share. This implies voters judged the performance of the government's measures against Covid-19 through their voting behavior.

With the results, one can extrapolate the consequences of a government's measures against a crisis and their future electoral success. It is crucial for a government to contain a crisis in a skillful way in order to maintain support from the people. Also it is important to see how a government will provide support for the damages incurred throughout the crisis.

5. Conclusions

The Covid-19 epidemic is an unprecedented health crisis. Many countries faced a serious economic downturn with growing distrust for their respective governments. Managing the crisis is not just an issue of health and economics, but also political dimensions. Since the pandemic seems to endure longer than expected, the role of the government to mitigate negative shock is more important than ever.

This paper studies empirical aspects of the relationship between the Covid-19 on voting behavior. To do so, I harnessed recent Korean General Election data held on the 15th of April, 2020 and exploit the variation in exposure to Covid-19 cases across voting districts. The main results indicate that turnout was 0.02 percentage points higher in those districts where there was a positive number of Covid-19 cases while controlling for socioeconomic factors. Moreover, voter turnouts in the regions with higher than average income or health insurance premiums with aging populations were negatively influenced by Covid-19. This is crucial to understand the recent increasing trend of voter turnout as well as how the social structure of different regions were affected by Covid-19. In addition, the incumbent party vote share has been decreased and that of the rival party's increased with more exposure to Covid-19. This result is useful to analyze upcoming elections for different countries around the world.

The empirical result of this study provide academic as well as policy implications for countries which are experiencing the Covid-19 crisis while facing elections. It suggests what the incumbent government should do for mitigation of Covid-19 to gain voting and party support. First, they should endeavor to mitigate Covid-19 cases while the restrictions on economic activity should be minimized. One way to achieve this is to provide financial relief to those who are mostly limited in the face of the restriction. Second, the social and economic structure of a society matters in elections, especially during an epidemic. As the results show that regions with older and wealthier populations experience a decrease in voting participation and party support for an incumbent party when the Covid-19 situation worsened. Thus, countries with advanced economies and an aging population are advised to implement well-organized and sound mitigation policies for Covid-19 in order to maintain political support.

Despite thepolitical economic insights provided in this paper, there are some limitations. Empirically, we have seen the relationship between the Covid-19 crisis and voting choices. However, it would have been more informative if this paper could include the factors behind the voting choices in the empirical test with expanded data set. Futurestudies can be expanded to the recent Covid-19 relief fund in order to conduct analyses on the relationships between the fund and voting choices.

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