

Did Political Election Affect Coronavirus Disease 2019 Outcome? Evidence from the 2020 United States Presidential Election

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ABSTRACT

Party politics greatly influenced the Coronavirus Disease 2019 (COVID-19) in the United States. Democratic and Republican leaders in each state responded to different supportive policies to the Public Health Emergency of International Concern (PHEIC) that were distinctly partisan in nature from 2020 and led to different results of the pandemic. This study examines the outcome of COVID-19 in 5 states which changed the party they supported from the Republican party to the Democratic party in the 2020 United States presidential election. Using the difference in difference and linear regression, this study tests the number of new cases and new deaths in these states compared to their neighbors who did not make any party change. The conclusion is that both the red-biased and blue-biased states suffer a problematic situation with the increasing number of new cases and new deaths; blue-biased states are worse off than red-biased states, showing a large increasing number of the above indicators. These data provide strong evidence of the impact of U.S. political elections on COVID-19, providing a political dimension reference to developing policy for public health emergencies.

Keywords: Covid-19; pandemic response; political election.

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1. INTRODUCTION

The outbreak of COVID-19 at the end of 2019 has caused hundreds of millions of infections and millions of deaths around the world. According to the World Health Organization, as of October 1, 2022, there were 614,385,693 confirmed cases and 6,522,600 deaths worldwide (WHO Coronavirus (COVID-19) Dashboard, n.d.-b). During the pandemic, countries worldwide have suffered the ill effects of economic shutdowns, border closures, scarce medical resources, and political instability. The number of COVID-19 recovery cases in Malaysia affects the Stock Exchange Composite Index (Indrastuti, 2021). China government bans students from being allowed to return to school; they can only take online courses at home (Yang, 2022). As cases proliferated, governments and the public sectors in various countries began to develop and implement

a series of intervention policies to ease the burden on healthcare systems and attempt to curb the skyrocketing number of diagnoses and deaths.

According to a book from Arnold, as a federal country, the U.S.'s central government is based on the states; each state has different laws, taxation, and electoral systems (2014); similarly, policies responding to COVID-19 vary from state to state. The state of Illinois requires individuals must wear a face-covering or mask when in a public place where they cannot maintain a six-foot social distance from May 1, 2020 (COVID-19 Home, n.d., IDPH) ; the State of Utah has a strict limitation on opening time, the number of diners and social distance to bars and restaurants (Frequently Asked Questions, 2016); and the State of Arizona issued an executive order that requires individual in Arizona to stay home, except participate in essential governmental functions or essential functions or businesses (AZDHS | Epidemiology & Disease Control - Mosquito Borne, n.d.).

Moreover, a significant number of studies have indicated that partisan differences across states strongly influence the implementation of pandemic prevention policies. The governors of nine of the first ten U.S. states to issue stay-at-home-order were Democrats, while the governors of the seven states that did not issue this order were all Republicans (“Comparing Trump and Biden on COVID-19,” 2020b). The governor's party was also found to be a factor in detecting differences in the timing of the mandate for the policy requiring masks in public rooms across states, with states with Republican governors typically delaying implementation of the mandatory mask policy by 98 days (Amano et al., 2020). Therefore, this severe public health crisis has almost become a political campaign for Democrats and Republicans (Adolph et al., 2021b).

This party preference toward COVID-19 policies is also seen in the 2020 United State presidential election. Joe Biden, the Democratic nominee, promised to push for mandatory mask orders by working with governors and mayors; expand financial relief for the COVID-19 service; and said he would not push for price controls on COVID-19 vaccines (Biden, 2020c); however, for the Republican Party, represented by Donald Trump, downplayed the threat of COVID-19 during the pandemic and sent some misinformation about the coronavirus (“Comparing Trump and Biden on COVID-19,” 2020b). On December 14, 2020, Joe Biden was elected as the 46th President of the United States, which meant a change in the ruling party in the United States, with the Democrats winning over the Republicans. That is, in this paper, the impact of political elections on COVID-19 was illustrated by using the method of difference in difference to compare the pandemic situation of states that changed their parties in the election with their neighbors who did not.

2. DATA DESCRIPTION

Data related to election results and COVID-19 outcomes before and after the US elections

on November 3, 2020, were used to perform analysis. The election result data came from the state elections office (“Election and Voting Information,” n.d.-b). It summarized the results of presidential elections every four years from 1984 to 2020 (see Table 1), also consisted of the names and parties of participants; the number and percentage of votes received from each state; election winners and parties for every election year; and electoral vote distribution and presidential popular vote differential. Arizona, Georgia, Wisconsin, Pennsylvania, and Michigan are five states which changed their supporting party from the Republican party to the Democratic party. There is a clear trend to the political parties shown in Chart 1 that Arizona and Georgia are preferable to the Republican party (often referred to as red states), while Wisconsin, Pennsylvania, and Michigan prefer the Democratic party (often considered as blue states). I define these five states as two groups by simply counting the times they supported the Democratic party or the Republican party, although they are generally perceived as swing states in the public mind in recent years. Arizona and Georgia are classified as “red-biased state”, Wisconsin, Pennsylvania and Michigan are classified as “blue-biased state” (see Table 2).

Table1 Political Election Outcome During 1984-2020

	1984	1988	1992	1996	2000	2004	2008	2012	2016	2020
Arizona	R	R	R	D	R	R	R	R	R	D
Georgia	R	R	D	R	R	R	R	R	R	D
Wisconsin	R	D	D	D	D	D	D	D	R	D
Pennsylvania	R	R	D	D	D	D	D	D	R	D
Michigan	R	R	D	D	D	D	D	D	R	D

Where "R" represents Republican Party and "D" represents Democratic Party

Chart 1 Political Election Outcome During 1984-2020

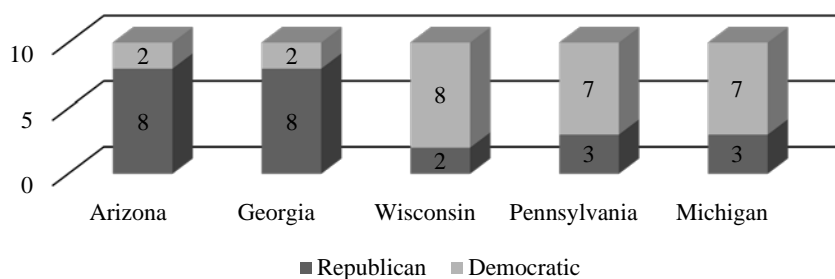


Table 2 Party Preference of Five States

Preference	States
Red-biased state	Arizona
	Georgia
	Wisconsin
Blue-biased state	Pennsylvania
	Michigan

The COVID-19 outcome data came from reports issued by the CDC (United States COVID-19 Cases and Deaths by State Over Time | Data | Centers for Disease Control and Prevention, 2022b). It consists of daily records of numbers of COVID-19 cases and deaths, including date of counts, jurisdiction, total number of cases, total confirmed cases, total probable cases, number of new cases, number of new deaths, total number of new probable cases, total number of deaths, total number of confirmed deaths, total number of new probable deaths, data and time record was created, etc. The data contains records for 907 days, from Jan 22, 2020 to Jul 17, 2022. The description including 54480 observations and 15 variables of this data shows in Table 3, and I choose the indicators as number of new death and number of new cases for each five states to the linear regression.

3. METHODS DESCRIPTION

This study relied on a difference-in-differences (DID) framework to analyze the data. Difference-in-differences methodologies have been used in various contexts related to economics and public health. Card and Krueger (2000) analyze the important effect of how the minimum wage affects employment by using difference-in-differences method. Stuart et al. examine the effects of the AQC on mental health care spending through a standard DID design experiment (2014). And Goodman-Bacon & Marcus also use difference-in-differences (DID) study design to estimate the causal effects of COVID measures across jurisdictions and over time (2020). DID is a quasi-experimental design typically used to analyze the effect of intervention or treatment by comparing the change in outcomes over time between two populations; one is the treatment group, and another is the control group (Gertler et al., 2018).

In this paper, the five changed states, Arizona, Georgia, Wisconsin, Pennsylvania, and Michigan; and their neighbors who remain the same party, are chosen to use in the DID design framework.

Table 3 Description of COVID-19 outcome data

	n	mean	sd	median	mad	min	max
Date of counts	54480	454.50	262.12	454.5	336.55	1	908
Jurisdiction	54480	30.50	17.32	30.5	22.24	1	60
Total number of cases	54480	563678.92	1020983.88	179428.0	265943.60	0	10420473
Total confirmed cases	30506	569190.58	940833.75	251534.0	361659.51	0	9677827
Total probable cases	30434	88971.05	134557.12	23368.5	34646.14	0	742646
Number of new cases	54480	1629.99	5188.92	361.0	535.22	-10199	319809
Number of new probable cases	50867	265.22	2035.18	2.0	2.97	-219448	222753
Total number of deaths	54480	8528.88	13579.22	2852.0	4228.38	0	92185
Total number of confirmed deaths	29931	8452.84	10112.68	4709.0	6603.50	0	71408
Total number of probable deaths	29931	988.20	1434.58	278.0	412.16	0	7322
Number of new deaths	54480	18.40	45.12	3.0	4.45	-352	1178
Number of new probable deaths	50899	1.91	25.79	0.0	0.00	-2594	2919
Date and time record was created	54480	979.25	599.25	942.0	785.78	1	2030
consent_cases	54480	2.50	0.92	2.0	0.00	1	4
consent_deaths	54480	2.51	0.97	2.0	0.00	1	4

Notes: consent_cases means if agree, then confirmed and probable cases are included, if not agree, then only total cases are included;
 consent_deaths means if agree, then confirmed and probable deaths are included, if not agree, then only total deaths are included.

These five states are the population of the treatment group, which the “intervention” is to change the political party they supported; and their neighbors are the population of a control group without any shift of political choice. I focus on how the indicators, the number of new case and new death in these five states, changed over the election time (before and after November 3, 2020).

The effect of changing the political party to the pandemic could be identified by running the following regression with every five states and their neighbors.

$$state\ change = \alpha + \beta_1 * days + \beta_2 * after\ election + \varepsilon$$

In the simple model, where α is the intercept; β_1 and β_2 are regression coefficients, β_1 represents the time trend in control group (the neighbor states), *days* is the date from the beginning of COVID-19 outcome data set (Jan 22, 2020); β_2 represents the effect of election, which means how the number of new case and new death changed in these five states compared to their neighbors. Saying that a significant positive value means a huge increasing number of new case and new death after election, a small negative number of means decrease of two indicators above conversely. And *after election* is the indicator variable equal to 1 after the accomplishment of election. The *state change* represents the difference between a state’s cases and one of its neighbor’s cases; it is the result of number changing in new case when using the data of new case, and new death when using the data of new death.

Moreover, distinct patterns and conclusions could be seen about the differences in pandemic outcomes between red-biased and blue-biased states by examining the Red State (see Table 2) separately from the Blue State. Also, the DID design has an obvious advantage: multiple control. Each state in treatment groups has at least three more neighbors which can compare to identify the results of how the indicators change. The conclusion should be more convincing and careful; it’s safer to have many control groups.

4. RESULT

The following results are found by performing the regression: there are 35% significant results of new cases and 40% significant results of new deaths that political election does affect COVID-19 outcome.

As explained before, “after election” is the coefficient that can represent the change in new case and new death in one state(compared to its neighbors); therefore, “after election_[AZNM]” which equals 1737.57, as well as the fourth largest number in all significant results indicates that the pandemic in Arizona (when it compared to New Mexico) have been worse after the 2020 presidential election, the result could be interpreted that there is a sharp increase of the number of new cases. Arizona has 2 of

4 significant results in new cases and 4 of 4 significant results in new deaths; “after election” equals 1534.82 when Arizona compared to Nevada in new cases, 27.98 to New Mexico in new deaths, 32.84 to Utah, and 25.33 to Nevada (see Table 4). However, there is a negative number which “after election” equals -135.59 when Arizona compared to California, saying that the number of new deaths in Arizona decreased; all other positive numbers indicate that Arizona goes through an increasing number of new cases and new deaths after the presidential election, and show the negative influence of political election to Arizona.

The same result appears in Pennsylvania (see Table 5) and Georgia (see table 4); they also suffer an increasing number of new cases or new deaths. Pennsylvania has 80% significant results in new cases and 40% significant results in new deaths; the numerical value of its coefficients “after election” are extremely high among all regression results; 3673.10 is the highest value when Pennsylvania compared to Delaware. That means Pennsylvania undergoes a horrible situation after the 2020 presidential election. The other results in Table 5 also show both the increasing number of new cases and new deaths in Pennsylvania. And Georgia has a growing number of new deaths compared to South Carolina.

Wisconsin and Michigan are the two states with negative “after election” coefficients, -2404.49 when Michigan compared to Ohio in new cases and -31.87 when Wisconsin compared to Illinois in new deaths.

Recalling the definition of red-biased and blue-biased state (see Table 2) in the data description part, a clear difference could be seen through the even study plots for these results (see Figure 1 and Figure 2). The vertical abline represents the election date of November 3, 2020, which shows 0 on the x-axis; -50 and -100 correspond to the 50 and 100 days before the election day, and 50 and 100 are the 50 and 100 days after the election day. The difference in new cases or new deaths show on the y-axis. Therefore, the plots below could be observed as a noticeable gap. Arizona, which is one state from a red-biased state, has a smaller difference in new cases compared to New Mexico than the result of Pennsylvania (when compared to Maryland). Notice that Pennsylvania is a blue-biased state. And the same gap occurs in the difference in new deaths; Arizona's difference is a small number, while a significant jump appears in the result of Pennsylvania. Similarly, it can be observed from table 4 and table 5 that almost all red-biased states are better off than blue-biased states, with a smaller increasing number of new cases and new deaths. These are all strong evidence to prove that the result of red-biased states is better off than blue-biased states, which indicates the significant influence of political elections on COVID-19 outcomes.

Table 4 Regression Results in Red-biased State

		Arizona		Georgia		
		(1) Arizona and New Mexico	(2) Arizona and Nevada			
New Cases	list of days	-0.47 (-0.67)	-0.07 (-0.65)			
	after election	1737.57*** (-378.65)	1534.82*** (-368.67)			
	R-squared	0.05	0.05			
	p-value	0.00	0.00			
		(1)Arizona and Utah	(2)Arizona and New Mexico	(3)Arizona and Nevada	(4)Arizona and California	(1)Georgia and South Carolina
New Deaths	list of days	-0.04*** (0.01)	-0.04 (0.01)	-0.03 (0.01)	0.21*** (0.03)	-0.02 (0.01)
	after election	32.84*** (6.51)	27.98*** (6.37)	25.31*** (6.11)	-135.59*** (14.48)	19.56*** (4.96)
	R-squared	0.03	0.02	0.02	0.09	0.02
	p-value	0.00	0.00	0.00	< 2.2e-16	0.00

Table 5 Regression Results in Blue-biased State

		Wisconsin	Pennsylvania			Michigan	
			(1) Pennsylvania and Delaware	(2) Pennsylvania and Maryland	(3) Pennsylvania and New Jersey	(4) Pennsylvania and New York	(1) Michigan and Ohio
New Cases	list of days		-0.59	-1.47	-1.94***	1.79***	3.31
			(0.80)	(0.56)	(0.48)	(0.49)	(1.28)
	after elections		3673.10***	3300.41***	1819.49***	915.19***	-2404.49***
			(450.16)	(317.91)	(272.69)	(274.10)	(719.30)
	R-squared		0.15	0.18	0.05	0.01	0.01
	p-value		< 2.2e-16	< 2.2e-16	0.00	0.00	0.00

		(1) Wisconsin and Illinois	(1) Pennsylvania and Delaware	(2) Pennsylvania and Maryland
New Deaths	list of days	0.08***	-0.10***	-0.08***
		(0.01)	(0.01)	(0.01)
	after elections	-31.87***	73.41***	61.08***
		(5.02)	(8.51)	(7.79)
	R-squared	0.07	0.07	0.06
	p-value	0.00	0.00	0.00

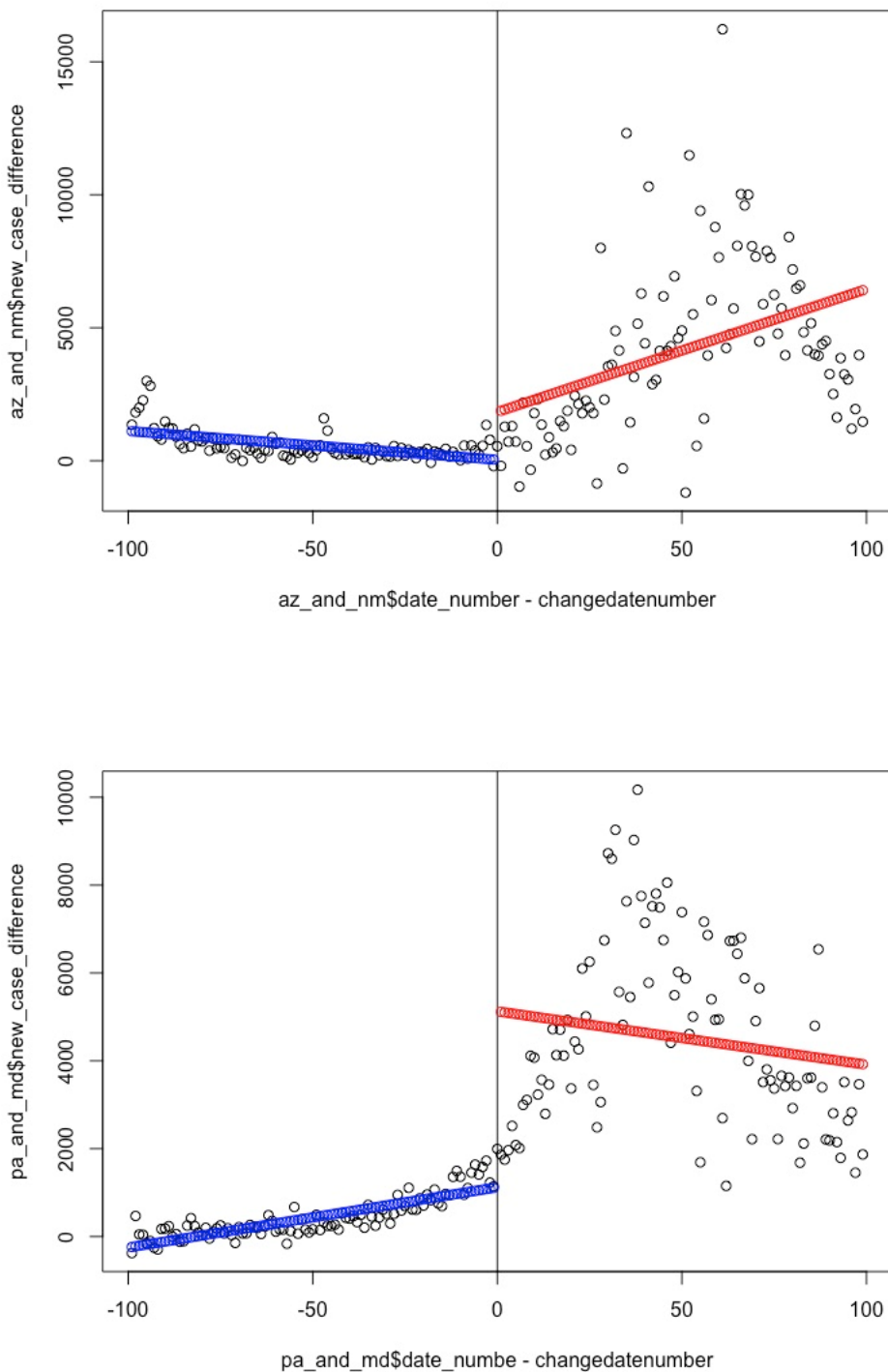


Figure 1 The Difference in New Cases Between AZNM and PAMD

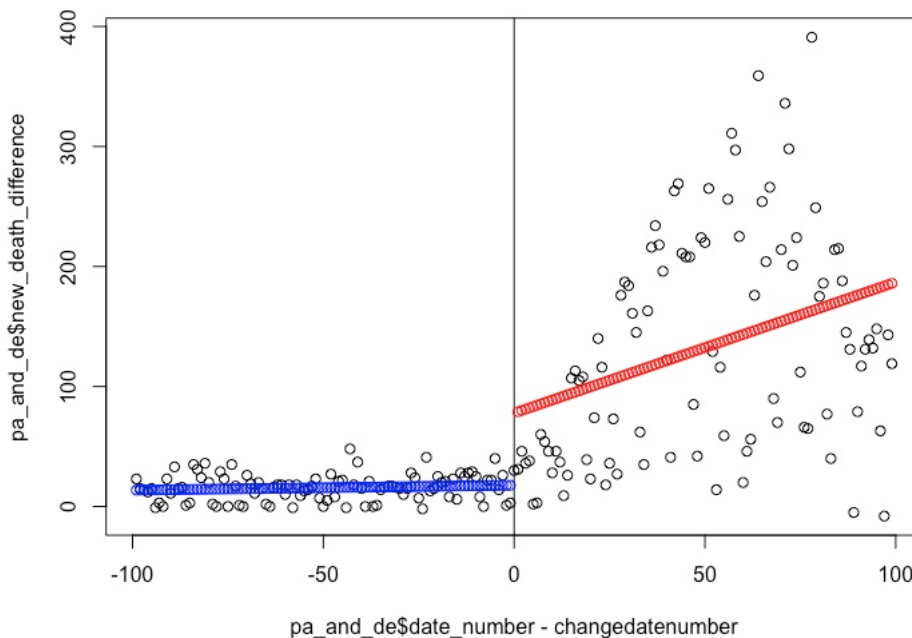
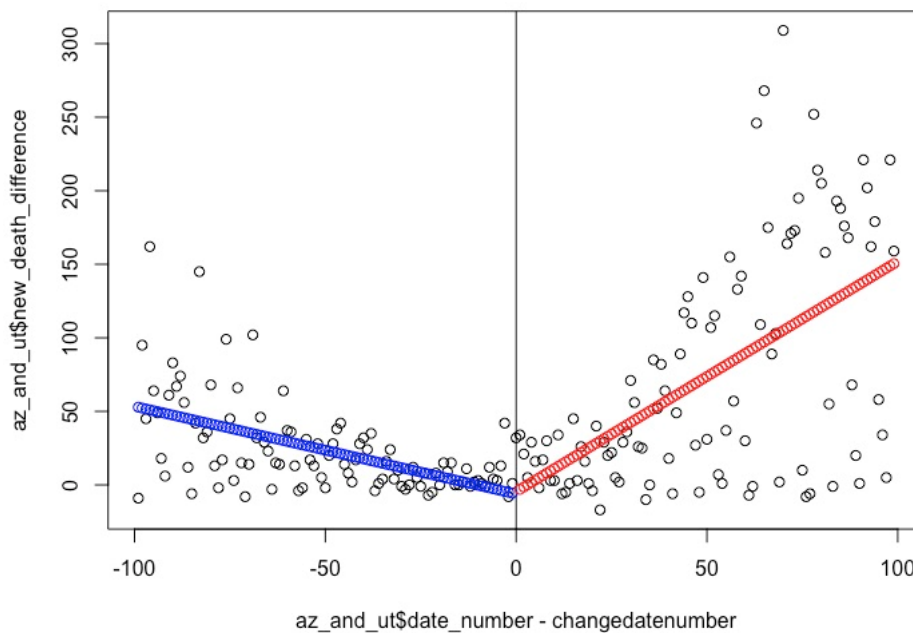


Figure 2 The Difference in New Deaths Between AZUT and PADE

5. DISCUSSION

There is no denying that the attitude and policy to COVID-19 of the Republican party and the Democratic party is one of the most critical factors that voters consider. Democratic people promise to implement a bundle of strict policies that benefit the pandemic, while the republicans do not. It is empirically inferred that the results of blue-biased states should be better than red-biased states; however, the conclusion is that political elections did negatively impact this public health emergency, and red-biased states are better off than blue-biased states. Considering other factors such as the execution of local people, health insurance, and average physical condition, some possibilities exist to explain this problem.

Measurement error: One possibility is that Democratic people count more carefully than Republican people. The Democratic party always holds a severe attitude toward COVID-19, reflecting their strict interventions and policies. Therefore, they are more careful with COVID-19 data than in the period when the Democrats were in charge.

Political considerations: Political elections make it necessary for candidates to pay the price to secure their support, which makes them think very carefully when implementing some policies if these policies could harm the interests of other parties that support them.

The chaos of transition: The change of ruling party brings much confusion, and the change of executive positions makes the government less efficient.

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