Efficiency over Generosity? Evidence of Electoral Accountability from Typhoon Dayoff in Taiwan

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Abstract

Even though voters may irrationally blame the incumbent for a natural disaster, democratic accountability can still hold if voters also reward the government for good response afterward. However, previous studies on this response-reward linkage by analyzing the relief spending render mixed results. Relief spending might not be a good measure of the government’s response because it includes multiple political actors, a long process, and the endogeneity problem. This article approaches the response-reward question by election impact of the typhoon dayoff decisions in Taiwan. County mayor is responsible for deciding a typhoon dayoff for the next day based on weather forecast, so voters can easily and immediately observe the quality of mayor’s decision and fully attribute the outcome to him. Consistent with the optimistic response-reward assumption, the result using 2005-2014 datasets shows that a correct dayoff, which a dayoff was announced and the storm next day is harmfully strong, can significantly increase the incumbent’s vote share in the reelection. The effect is larger when the correct dayoffs were made in the election year. Meanwhile, Taiwanese voters also slightly reward the incumbent for a bonus dayoff, which a dayoff was announced but the storm is weak. As a result, evidence shows that county mayors exploit the incumbent advantage by announcing more correct and bonus dayoffs in the election year. Its implication to democratic accountability and rationality of the voters are finally discussed.

Keywords. Retrospective Voting, Accountability, Taiwan Politics, Natural Disaster

Word Count. 4,590
Introduction

Democracy cannot properly function if the voters failed to hold the incumbent accountable. However, are voters capable of doing so? Starting from Achen and Bartels (2016), numerous studies shows that people may irrationally blame the incumbent (by reducing the chance of being reelected) for severe natural events which are beyond the incumbent’s control, such as shark attack, drought, and flood (e.g. Healy, 2008; Bodet, Thomas and Tessier, 2016). If voters arbitrarily attribute the random event to the incumbent, politicians should lower their motivation in pursuit of good governance in such uncertain political context, which may endanger the stability of democracy.

The pessimistic viewpoint of irrational voters was soon re-investigated by the new studies focusing on how the government responded to the disaster. If the government was punished by the disaster but was rewarded for good responses, the mechanism of democratic accountability can still be held to some extent. However, the effect of disaster relief on the fate of the incumbent are mixed. In this article, I argue that the problem may come from how the government’s response is defined. Most of the new studies use the relief spending as the measure of responsiveness(e.g. Healy and Malhotra, 2009; Cole, Healy and Werker, 2012; Fuchs and Rodriguez-Chamussy, 2014), but the measure suffers from two limitations. First, it is hard for voters as well as researchers to build a causal story between relief spending and a specific politician or institution. In the U.S., the local governor requested for the federal assistance, and the president decided for approval, and the victim’s application was reviewed through the local officials(Gasper and Reeves, 2011; Chen and Healy, 2015).

Second, the quality of the government’s response matters, but how the voters perceive and reason the quality is questionable. On the one hand, the effect of some preventative or relief spending can last longer than the reelection, and it requests a very high level of cognitive ability for voters to attribute the contribution. For example, drainage and water
conservancy facilities can function for hundred of years, and they can illustrate its usage only if the area encountered another once-in-ten-year disaster. On the other hand, the relief spending or related policy usually come long after the disaster because of the burdensome legal process. After the victims noticed that government eventually did something, its linkage to the disaster may be largely discounted. It also indicates the problem of endogeneity - the place which is susceptible to the disaster should have better prepared for the next one. This problem blurs how people perceive the government’s decision.

Do voters really reward the incumbent for the good response and punish for the bad one? To deal with the two empirical weaknesses mentioned above, this article investigates this question through a special case in Taiwan: the typhoon dayoff. In every year, about three or four typhoons hit Taiwan in Summer and Fall. When the typhoon arrived, county mayor can announce a dayoff for the next day before the midnight, based on the forecasting report from the Taiwan Central Weather Bureau. If the dayoff was announced and the storm is strong as expected, this correct decision can prevent the loss of life and leave time for people to prepare and recover.

Therefore, the mayor’s decision may be influenced by the other two motivations. On the one hand, the paid dayoff may rise the cost of companies and be harmful to the economy, so the mayor would stand along with the bourgeoisie and denounce the typhoon dayoff in the expense of the safety of the employees. On the other hand, the mayor may generously announce the dayoff even the typhoon was expected not strong enough so as to appease the proletariats. This extra dayoff would undoubtedly make many people happy - the movie theater and shopping mall are full of people when the storm was not strong in the typhoon dayoff.

There are three major advantages of using the county mayor’s typhoon dayoff decision to measure the government’s response to the natural disaster. First, the typhoon dayoff is fully decided by the mayor, so he or she is fully responsible for the result of the decision. Second,
the impact of the decision will be observed within twelve hours, so all voters in the district can directly and easily evaluate the decision mayor just made. Third, the dayoff decision can be objectively categorized into three groups: the Correct decision (strong storm and dayoff), the Wrong decision (strong storm and no dayoff), and Inefficient decision (weak storm but dayoff). By estimating how different decisions may impact on the election outcome, it is able to explore whether voters demand a responsive government or not.

(Ir)rational Voter and (Ir)responsive Government

How much do voters reward the government’s response to the natural disaster? Healy and Malhotra (2009) firstly provide a comprehensive study by estimating the impact of the preventive and relief spending on the vote share of the incumbents in presidential elections from 1988 to 2004. By combining the funding data from Federal Emergency Management Administration (FEMA hereafter) with the election results, they found out that only the direct individual payment of the relief spending will positively influence the incumbent’s vote share. In contrast, the preventive spending and the collective relief spending had no impact. They further evidenced that $1 spent on preparedness (within three years before the next election) is worth about $15 in terms of the future damage it mitigates, which implies that voters prefer the post-disaster but wasteful spending. Two recent studies focusing on India and Mexico local election also reveals the positive but small impact on relief expenditure on the vote share of the incumbent (Fuchs and Rodriguez-Chamussy, 2014; Bodet, Thomas and Tessier, 2016).

The response-reward linkage is complicated by the investigation of the actors in the procedure and their motivations. The relief spending usually came from the federal government, but it needs the request from the governor and then being approved by the president. By using county-level data from 1970 to 2006, Gasper and Reeves (2011) find that governor may
gain votes by requesting the relief, while the president will be punished if he rejected the request. Moreover, Sylves and Búzás (2007) find out that presidents from the Democratic party are much likely to issue a disaster declaration, while Chen (2008) analyzes a 2004 dataset and reveals that FEMA aids are much likely to target core Republican voters. This complex process makes it harder for voters to evaluate the response and its attribution.

The response-reward linkage is further complicated if the quality of the response is taken into consideration. Chen and Healy (2015) combined the FEDA relief to vote turnout record in Miami and the demographic data on hurricane severity. This combination enables to two researchers to estimate whether each applicant deserved the relief or not. They find out that voters will use the result of the relief application to evaluate the quality of the government’s decision: if the applicant suffered severely from the disaster, he or she will reward the government for the relief funding through the vote and punished if being rejected. However, if the applicant did not suffer a lot, successfully receiving the relief did not make the incumbent much attractive. Another study in Columbia (Gallego, 2012) shows that voters would reward the incumbent party if they received food supplies after the flood, but the post-disaster spending on infrastructure has no effect.

To sum up, using the disaster relief to examine the democratic accountability theory may suffer from two weaknesses. First, it is not easy for voters to attribute the response to any institution or politician. Should I reward my governor who requested the federal support? Should I reward the president who issues the disaster declaration? Should I thank the investigator who actually came to my damaged house? After I received the money six months after the disaster, did I still remember whom I should thank for?

Second, it is not easy for voters to evaluate whether the officials’ decisions is correct or efficient. If the government built up a new drainage system to prevent the flood which only happens once in every ten years, how did I know it can properly function before the next Election Day? Even though Healy and Malhotra (2009) sum up the preventive spending for
the previous three years, it is likely that the voters had no chance to evaluate its effectiveness if another disaster did not arrive during this period.

In aspects of the democratic accountability, it is indeed problematic if the voters cannot evaluate the performance of the government in the long run. However, estimating the voters’ rationality by the impact of the relief spending may also be insufficient as is discussed above. Therefore, this article tends to use the case of typhoon dayoff in Taiwan trying to re-investigate this fundamental question in the democratic theory.

**Typhoon Dayoff in Taiwan and its implication**

The typhoon was one of the most powerful natural disasters in Taiwan. The first record of typhoon attacking Taiwan can trace back to 1721\(^1\). During the Japanese colonial period, the colonial government established five weather observatories in 1896 aiming at ”recording and predicting typhoons.” Typhoon usually hits Taiwan in Summer or Fall, and the number of arrivals each year is three or four.

In 1972, Taiwanese government legalized the Typhoon dayoff for the public officials possibly because of the super typhoons Rita and Betty. In the 1972 version, all county mayor can decide to announce a typhoon dayoff for public officials based on the forecasting report of the Taiwan Central Weather Bureau except for the Taipei mayor, which was decided by the central government. The officials need to announce the dayoff for the next day before 11 p.m.

Who will benefit from the typhoon dayoff? Since the civil servants are paid monthly, the typhoon dayoff is a paid dayoff them. For the workers in Taiwan, the Executive Yuan announced in 1994 that the workers could choose not to work during the typhoon period, while the employer can also decide not to pay. Since the stock market closed following the

\(^1\)http://gushi.tw/typhoon-in-taiwan/ Access: March 24, 2017
typhoon dayoff, most of the businesses will also follow the decision of the local government. In 2009, the Executive Yuan further restricted the employers from punishing the employees if they refused to work or cannot work in the typhoon day. For employees who are paid monthly, the typhoon dayoff is also paid; for those who are paid hourly, even though they also enjoy an extra dayoff without punishment.

Who will lose from the typhoon dayoff? The General Chamber of Commerce of the Republic of China and Chinese National Federation of Industries publicly opposed the typhoon dayoff for several times. These two associations are composed of business leaders and employers in Taiwan. They argued that the typhoon dayoff will stop the business activities and increase the cost. Since the campaign spending limit was abandoned in Taiwan since 2007, mayors have a strong incentive to stand along with the business leaders.

The Executive Yuan also announced general suggestive criteria for the mayors to decide the typhoon dayoff in 2000, which enables researchers to distinguish between the correct and wrong decision. In the Operation Regulations on the Suspension of Offices and Classes because of Natural Disasters, county mayor may announce a dayoff for the next day if the predicted average wind speed will exceed level 7, or if the predicted max wind speed will exceed level 10. Besides, a dayoff can also be announced if the predicted accumulated rainfall will go beyond a dangerous level calculated by the geographical distribution of the county.

**Hypothesis and Research Design**

The special setting of the typhoon dayoff in Taiwan makes it possible to explore the linkage between the government’s response to the disaster and the voters’ evaluation of the government’s response. Voters can easily observe the quality of the government’s decision by simply waking up and opening the window tomorrow. Since the decision was made by

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the mayor only, the voters knew clearly whom should they blame or reward for.

Moreover, Taiwanese voters can easily categorize the mayor’s typhoon dayoff decisions into three categories: (1) The Correct decision; the dayoff was announced and the storm indeed exceeds the suggested criteria. The correct decision can protect the majority of voters, and the business leaders can hardly argue about its legitimacy. (2) The Wrong decision; the dayoff was not announced, but the storm exceeds the safety level. In this scenario, people still need to go to work when the wind can blow over the motorcycle, children still need to go to school in the torrential rains, but the stock market and firms will also keep its activities. (3) The Bonus decision. The mayor announced the dayoff, but the typhoon turned out not as strong as expected and did not surpass the suggested criteria. The majority of the voters win an additional dayoff, and some of them will be paid. However, voters can also perceive that the mayor’s decision quality is not high enough by making such a mistake.

Therefore, if voters critically evaluate the performance of the government, we should expect that these attentive voters will reward the mayor through votes for the Correct dayoff, and punish the mayor for the Wrong and Bonus ones. However, if the voters are self-interest maximizer, they may still reward the Correct and punish the Wrong, but they would also reward the Bonus dayoff. In the end, if the voters are inattentive, mayor’s typhoon dayoff decision should not influence the election result.

\[H_1: \text{Correct dayoff increases the vote share of the incumbent in the next mayor election.}\]

\[H_2: \text{Wrong dayoff decreases the vote share of the incumbent in the next mayor election.}\]

\[H_3: \text{Bonus dayoff decreases the vote share of the incumbent in the next mayor election.}\]

Moreover, if the decision of typhoon dayoff is influential, we can expect that the county mayor may strategically use dayoff to benefit him- or herself. Especially, previous studies on
retrospective voting show that voters are much susceptible to the events near the Election Day (Healy and Malhotra, 2009; Achen and Bartels, 2016). Therefore, the mayors’ decision pattern may be different in the election year compared to the ordinary time.

\[ H_4: \text{Mayors are much likely to announce the dayoff which benefits the vote share in the election year.} \]

Data

The key independent variables, the data of the three typhoon dayoffs, was generously provided by the United News.\(^4\). The dataset includes the information of all typhoons which hit Taiwan from 2006 to 2015. During the period that the typhoon is closer to Taiwan, the dataset includes the daily wind speed and rainfall records in the counties with at least one weather observatory. The dataset also includes whether each county mayor announced the typhoon dayoff or not during the period of typhoon. This dataset enables us to calculate the number of *Correct*, *Wrong*, and *Bonus* dayoffs in each year.

Since the Taiwan county mayor election was held in 2009/2010 and 2014, the *Correct*, *Wrong*, and *Bonus* is defined as the summation of all defined dayoffs across the four years before the Election. Following Healy and Malhotra (2009); Achen and Bartels (2016), I also calculate the number of dayoffs at the election year, which are labeled as *Correct\(_{1yr}\)*, *Wrong\(_{1yr}\)*, and *Bonus\(_{1yr}\)*. The baseline group for comparison is the number of days which typhoon was close to Taiwan. This number of days is the same across all counties. Owing to the data limitation, the unit of analysis in this article will be the county with weather observatory in the election year, which the number of sample in this study is mere 36.\(^5\)


\(^5\)I dropped the 2009 Hualien mayor election because it is unable to define who is the incumbent. The KMT incumbent and the major opposition party DPP both supported a former-KMT non-partisan candidate,
The key dependent variable, $\Delta IncVote$, is the change of vote share of the incumbent. The mayor election result comes from the Central Election Committee website.\(^6\) For each county, I calculate the change in the vote share for the incumbent or the candidates from the same party from 2005 to 2009/2010 and from 2010 to 2014. The descriptive analysis shows that $\Delta IncVote$ ranges from -28.6 to 15.3 with the mean value -3.0. Therefore, I will only use simple regression to estimate the impact of the independent variables. To account for the possible contextual difference between the two mayor elections, a year dummy $ElectionDummy$ is also added into the model.

To account for the possible demographic change within each county and also other performance of the incumbents, three variables are added for control: $\Delta Young$ is the change in the percentage of the people who are below 40 between the two elections; $\Delta Unemp$ is the change of the county-level unemployment rate between the two mayor elections; and $\Delta Crime$ is the change in the crime rate between the two elections in each county. These annual county-level data can be found on the website of the Ministry of the Interior.\(^7\) By controlling for these performance variables, I aim at isolating the effect of the typhoon dayoff decision. Unfortunately, I cannot put too many control variables owing to the small sample size.

**Result**

**Attentive Voters, or Self-interest Voters?**

Table 1 shows the results of four OLS regression models. In the first and the second model, three typhoon dayoff decisions are used to explain the change of the incumbent’s

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vote share, while the decisions of typhoon dayoff in the election year are put in the third and the fourth model. The second and the fourth models also include the control variables capturing other performance of the mayor in the county-level.

Table 1:

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>ΔIncVote</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Correct Dayoff</td>
<td>1.693*</td>
</tr>
<tr>
<td></td>
<td>(0.933)</td>
</tr>
<tr>
<td>Bonus Dayoff</td>
<td>0.889</td>
</tr>
<tr>
<td></td>
<td>(0.737)</td>
</tr>
<tr>
<td>Wrong decision</td>
<td>0.590</td>
</tr>
<tr>
<td></td>
<td>(1.164)</td>
</tr>
<tr>
<td>Correct Dayoff 1yr</td>
<td>6.724***</td>
</tr>
<tr>
<td></td>
<td>(2.391)</td>
</tr>
<tr>
<td>Bonus Dayoff 1yr</td>
<td>5.061*</td>
</tr>
<tr>
<td></td>
<td>(2.706)</td>
</tr>
<tr>
<td>Wrong decision 1yr</td>
<td>1.600</td>
</tr>
<tr>
<td></td>
<td>(2.367)</td>
</tr>
<tr>
<td>Controlling ΔYoung,</td>
<td>YES</td>
</tr>
<tr>
<td>ΔCrime, ΔUnemp</td>
<td></td>
</tr>
</tbody>
</table>

| Election Dummy      | YES      | YES      | YES      | YES      |
| Observations        | 36       | 36       | 36       | 36       |
| R²                  | 0.182    | 0.245    | 0.215    | 0.292    |
| Adjusted R²         | 0.077    | 0.056    | 0.114    | 0.116    |
| Residual Std. Error | 10.997   | 11.121   | 10.735   | 10.723   |
|                     | (df = 31)| (df = 28)| (df = 31)| (df = 28)|
| F Statistic         | 1.728    | 1.295    | 2.122    | 1.653    |
|                     | (df = 4; 31)| (df = 7; 28)| (df = 4; 31)| (df = 7; 28)|
| VIFₘₐₓ              | 2.526    | 1.169    | 2.571    | 1.978    |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Across the four models, *Correct* decision significantly increases the incumbent’s vote share. The result provides empirical support to $H_1$. In the first two models, every correct decision in the four years can, in average, increases the incumbent’s vote share by about
2%. The effect is much stronger in the election year: a correct decision in the election can increase the vote share by about 7%! The result holds even when the control variables are put into the models. When voters can easily evaluate the mayor’s decision, they will reward the incumbent with more votes. Figure 1 below shows the scatterplot for the number of Correct typhoon dayoff and change of vote share in the dataset.

![Correct Typhoon Dayoff and Reelection 2005-2014](image)

Figure 1: Correct typhoon dayoff and change of the incumbent’s vote share in Taiwan county mayor election, 2005-2014

However, an opposite effect did not appear in the Wrong decision, which fails to support \( H_2 \). When the storm is strong but the mayor did not announce a dayoff, Taiwanese people will not blame him or her for the wrong decision. It can be possible that the mayor would attribute the mistake to the imprecise forecasting report from the weather observatory. For example, the Central Weather Bureau was impeached in 2009 for underestimating the rainfall. Nevertheless, this result is still inconsistent with both the attentive voter or self-interest maximizer assumption. By using survey data, Healy (2008) finds that religious voters are much likely to blame the politicians for disaster. I try to follow the intuition by adding the interaction term between the number of temples in each county and the Wrong decision, but it did not help explain the change of vote share.

Interestingly, Table 1 also reveals a positive correlation between Bonus decision and
change of incumbent’s vote share. When the mayor made such a mistake but may benefit the majority of voters, especially during the election year, they still reward the incumbent even though they have observed the error. This result is inconsistent with the attentive voter assumption that voters will oversee the quality of the incumbent and did not support $H_3$. Instead, this result seems to support the self-interest maximizer assumption partially.

**Strategic Incumbent**

If the *Correct* and *Bonus* dayoff can benefit the incumbent in the reelection, we should expect that the mayors will be much likely to generously announce the dayoff when the typhoon is approaching in the election year. Since the number of typhoon days is not the same over the years (for example, county mayors have 11 days in 2009 to make the decision, while they have 55 days between 2005 to 2009.), I calculate the percentage of different decisions in four years and the election years. I will then use paired two-group t-test to examine the difference of mayor’s decision between the average year and the election year.

Interestingly, the empirical analysis seems to support the $H_4$ that incumbents will make the best use of the dayoff as is suggested by Table 1. The average rate of the *Correct* decision is 9.1%, but in the election year it increases to 12.8%; paired t-test shows the difference is significant ($p = 0.018$). Similarly, the average rate of the *Bonus* decision is 13.5%, but in the election year it increases to 16.8%; paired t-test also reveals a significant difference ($p = 0.027$) given the small sample size. Meanwhile, there is no major change on the *Wrong* decision (from 2.8% to 3.6%, $p = 0.391$).

If the *Correct* decision is purely influenced by chance and imprecise forecasting report, it is impossible for the mayor to increase the *Correct* during the election year. Therefore, the increase implies that the incumbent may decrease the number of dayoff in normal time, or just chose to announce more dayoff during the election year regardless of the report. Since the voters may reward both *Correct* and *Bonus* typhoon dayoff in the election year, the
mayor enjoyed the incumbent advantage by generously announcing the dayoff.

**Conclusion**

The four regression models in Table 1 reject the assumption that voters are inattentive. When they can easily observe and evaluate the incumbent’s decision within a few hours in the case of Taiwan typhoon dayoff, voters significantly reward the incumbent for making the right decision which protects voter’s life and safety. However, voter’s reward is asymmetric in this case - they did not punish the government when it made a wrong decision and forced people to go to work in the torrential rains and dangerous wind. Meanwhile, voters are also opportunist; they to some extent reward the incumbent when it made an inefficient but beneficial decision to appease the voters. When the voters reflect their preference in the election, the incumbents are also much likely to make the best of it by generously announcing dayoff before the typhoon arrived.

Compared with previous studies estimating the response-reward linkage through relief spending, this article provides a somewhat optimistic evidence on the competence of citizens. Indeed, the decision of typhoon dayoff is also related to good luck and bad luck; Taiwanese people who experienced four typhoons every year must know well about its risk and uncertainty. Nevertheless, Taiwanese voters are still willing to reward the incumbent if he or she made the right decision to protect the life and safety of the people.

Meanwhile, the positive impact of *Bonus* decision is partially inconsistent with Chen and Healy (2015)’s study on waterful government spending. In their study, voters whose house did not deserve the relief spending are not be influenced if they really received the fund. The authors argue that voters can observe the quality of the government through the process. However, the estimated correlation in their samples is also not negative; it is even slightly positive in their Table 4. Even though voters perceived that the government was wasting
money, they did not punish the incumbent.

In the end, this article suffered from several limitations. First of all, the sample size in this article is small and the context is special. Thus, it might not be easy to generalize the finding to other contexts, even though I believe that a similar effect can be found given different direct measures. Second, the mechanism and motivation behind the *Wrong* decision are not clear. I have no direct evidence that the mayor chose not to announce the dayoff at the expense of people’s safety is to appease the business leaders.
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