# Radboud University

# Behavioural Heuristics in Economic Voting among European Nations

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**Abstract**

Economic voting is a well-established mechanism in which people make their voting decisions primarily on economic conditions such as household income or a nation's economic environment. Despite the long history and the sophisticated studies of this field, there is still a lack of research in the aspect of behavioural heuristics in voting decisions. By using election data among thirty-one European nations, this research examines three main voting heuristics regarding people's perception of the economic condition, aiming to see whether these phenomena could be observed in a large-scale, general condition. The result shows that these behaviours do exist. People in the selected nations are overweighting the election-year economy when making voting decisions; punishing the government more than rewarding it by their votes, and put more emphasis on the relative economic performance in comparison to the EU economy than the economic condition of their own countries.

**Keywords: Economic voting, Myopic voting, Negative voting, Benchmark voting, Behavioural heuristics**

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# 1. Introduction

Economic voting, a phenomenon which people make their voting decisions primarily on a nation's economic condition, is a well-established subfield between Economics and Political Science. Almost all research among economic voting finds significant correlations between election outcomes and the driving economic conditions. In traditional research, these studies either focus on what economic factors best explain the election results or focus on what election result indexes response to specific economic conditions the best (Lewis-Beck &Stegmaier, 2000). However, despite the long history and vast explorations in this field, an interesting but substantial part has, until recent years, been long understudied: the psychological aspect of how people perceive and react to specific economic conditions. It is essential to study what factors drive voting decisions, since election outcomes not only affect which party takes the incumbency in a democratic nation, they also wave a consequential impact of the well-being of civilians and the longitude development of a nation (Hobolt &Tilley, 2014). As the existing research on economic voting becomes more and more sophisticated and studies of behavioural economics blooming, researchers are starting to put more emphasis on the combination of these two realms, where new and breaking through results are found.

The concept of economic voting was first brought out by Key in 1964, and in the early stage of the development of this field, Kramer, 1971, had already pointed out the existence of myopia behaviours in economic voting decisions. His study shows that in contrast to the rational and far-sighted assumptions of the human mind in traditional economic analysis, voters behave irrationally and myopically, making their economic voting decisions merely on the election-year economic conditions, not spreading out their evaluations evenly among the government's incumbent term. This phenomenon is known as the "myopic voting" behaviour. Currently, most of the scholars confirm the existence of this phenomenon and widely uses election-year economic indices as the explanatory variables to address election outcomes. Wlezien, 2015, conducted a thorough investigation to identify how much people discount the previous year's economic

conditions with a survey in the United States. The result of his research is consequential. Figure 1.1 presents a result from Wlezien's study, which clearly shows how much people weights recent economic performances. The x-axis shows the time of an election cycle in quarters, and the y-axis indicates the cumulative weights of each period. It is clear that the nearest four to eight quarters are heavily weighted, while the previous quarters are heavily discounted.
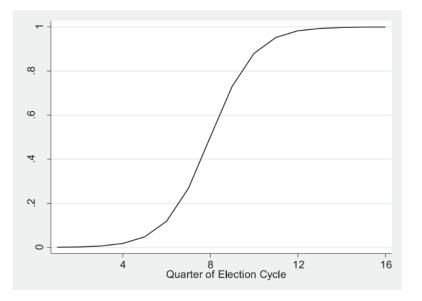


**Figure 1.1 Cumulative weights in quarters of an election cycle**

Besides the prominent myopic voting, other voting heuristics are also discovered by researchers. One of the psychological aspects of economic voting is how do people react under different economic circumstances, especially under harsh economics. Radcliff, 1994, concluded that economic adversities, such as slow economic growth or even economic crisis, decreases people's intension to vote, hence muting the effect of economic voting. In contrast, Arceneaux, 2003, stated that bad economic strengthen voter's intension to vote, increasing the chances for the incumbent party to lose the election. However, this behaviour only occurs when voters perceive the government as responsible for economic performances. Under this circumstance, voters tend to react more vigorous and vote out the current government during economic hardships. This phenomenon is known as "negative economic voting", or, "negative voting". Stemming from the psychological term "negative bias", negative voting is a phenomenon that people votes more actively during economic adversities, while not giving the same amount of attention to the government when the economy is good. The

cause of this behaviour is that when the economic environment is not satisfying, economic factors become more prominent than non-economic variables. This result leads to the third behavioural heuristic of economic voting-the nature of people to make comparisons, the benchmarking economic voting. Kayser &Peress, 2012, discovered this insight in their research among Denmark elections. In their research, the properties of the economic voting still hold, but not only to the economic condition of Denmark but also to the relative economic performance in comparison to that of Sweden. Moreover, the influence of the relative performance on economic voting is even more prominent than a nation's own economic performance.

The purpose of this research is to examine the three aforementioned economic voting behaviours, which are myopic voting, negative economic voting, and benchmarking economic voting. It aims to see whether people act differently according to economic conditions, and in contrast to most economic voting research which intensively focuses on the US presidential elections, this study uses data from thirty-one European nations, focusing on a larger scale of human behaviour in another socio structure. This selection of data provides a significant advantage in election studies since it provides a larger sample size, where elections are rare events which only happens every four to six years. Another unique part of this research is that is it uses data which ranges from 1990 to 2019, while other prominent studies use data which range from the 1960s to the 1990s. Hence, this data is also expected to reflect more contemporary behaviour, in comparison to previous studies.

The structure of this paper follows: section one is this introduction, section two provides the development, theories, and empirical findings in economic voting and its behavioural insights, section three explains the data and methodology, section four interpreters the result, sections five and six provide two robustness checks and some discussions; section seven states the conclusion, followed by the last two sections of acknowledgement and references.

# 2. Theory and Hypotheses

Before diving into the subject, a short review of the development of economic voting will be discussed to clarify how does this research embed itself in the massive researching structure. Firstly, traditional studies on economic voting focus mainly on which economic factors affect voting decisions the most, and what other non-economic conditions might alter the results (Lewis-Beck &Stegmaier, 2000). In this field, economic voting is divided mainly into two aspects: Sociotropic versus pocketbook voting; and retrospective versus prospective voting. Sociotropic and pocketbook voting can be explained as macroeconomic status versus personal financial conditions, such as GDP or inflation rate versus disposable income or Early research conducted by Kiewiet, 1983, concluded that personal perception of their economic status has a substantial impact on voting decision. On the other hand, later research which was conducted on the US, Europe and other nations mostly confirmed that though both factors matters, sociotropic, meaning that the macroeconomic conditions, usually has a more significant effect on the decision of economic voting than the pocketbook voting. However, the effect of pocketbook voting is still significant and can not be ignored as well (see Lau &Sears, 1975; Lewis-Beck, 1985; Markus, 1988; and Jordahl, 2006).

The studies above are mainly retrospective studies, where voters assess past events in making their voting judgments. This is also the most widely applied aspect of this field. On the other hand, prospective voting states that voters base their voting decision on their prospect of future economic performances. MacKuen, Erikson, &Stimson, in their 1992 paper, stated that when prospective variables, such as aggregate consumer expectations, are considered inside traditional economic voting models, prospective factors out preforms all retrospective variables, becoming the best indicators to predict election outcomes. However, later studies mostly agree that both retrospective and prospective indicators matter, while retrospective factors are more consequential (see Lanoue, 1994; Clarke &Stewart, 1994; Lewis-Beck &Tien, 1996). In the revisit of MacKuen et al.'s 1992 by the same authors, it is also stated that though prospective variables matters, however, people build their prospect on past and

current information, meaning that retrospective factor must also be considered as well (Erikson, Mackuen, &Stimson, 2000).

This research, same as other research in behavioural aspects in economic voting, is embedded under the structure of sociotropic and retrospective voting, using empirical economic data to explain the variation in election outcomes. The development of the study of the three voting heuristics will be introduced in the next part of this section, along with the three hypotheses which will be tested. The specific model of each hypothesis will be stated in the following sections.

## 2.1   Myopic Voting

As mentioned in the introduction, the phenomenon of myopic voting, which voters make their voting decision myopically on the latest economic status, has been discovered in the earliest stage of economic voting research. However, early studies could only confirm the existence of this anomaly yet could not give a thorough explanation of the cause of it. Not until recently, scholars start diving deep into the cause of this unique behaviour. Lenz, 2014 stated that the myopic voting is caused by the "end bias" of human nature, where a bias appears in people's memory, making them misjudge past economic performances and highly overweight the importance latest events. On the other hand, Healy &Lenz, 2014, conducted another thorough study, finding that people not only memorize past event correctly, they also tend to spread the evaluation evenly within the incumbent party's term. Hence, myopic voting is a behavioural bias of the intention-behaviour gap, where people act irrationally even they have the right knowledge. Either study supports the use of election-year economic condition as variables to assess election outcomes. These new findings provide a more robust theoretical base of using the election-year economic conditions and motivated the research of seeing whether this behavioural bias exists in a general condition. Since behavioural economics focuses on systematic anomalies among people, this study tends to use a large set of data to make examinations. The first hypothesis is thus stated as:

*Hypothesis I: The economic condition of the election year has the highest impact on the election results.*

## 2.2 Negative Economic Voting

Also known as the "negative economic voting", negative voting was discovered in the early stages of the research in economic voting and is also a well-known phenomenon in economic voting and Political science. This term originates from the traditional punish-reward voting system, plus the psychological anomaly "negative bias". It states that people tend to react stronger on negative information, wherein voting and election studies, this means people tend to vote out the incumbent party (give punishment) during economic adversities but refuse to show the same enthusiasm in keeping the government in the seat (give reward) when the economy is doing well. Lau, 1982, 1985, provided two theories to explain this behaviour. The first aspect is the "cost-orientated" aspect, which is similar to "loss aversion", a term often seen in current behavioural studies. This hypothesis states that people tend to avoid the loss or higher costs, which occur when the unfavored economic situation becomes a reality; hence they vote more strongly against unfavored situations. The second theory is called the figure-ground hypothesis, which states that negative information is more prominent than positives ones; hence people simply give more response to the information which draws more attention. Fiorina &Shepsle, 1989, used the 1982 and 1986 US presidential election to show that people not only vote negatively, the influence is even further strengthened due to the high popularity of the incumbent party in the last election, meaning that relativity, which will be tested in the third hypothesis, also matters. This phenomenon can be observed on the government side. Empirical studies show that politicians are motivated by the desire to avoid blame for unpopular actions rather than by seeking to claim credit for popular ones (Weaver, 1986). The second hypothesis is hence stated as:

*Hypothesis II: The effect of economic voting during economic adversity is more consequential than that of during good economics.*

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## 2.3　Benchmark Economic Voting

Unlike the two hypotheses above, benchmark voting, or "benchmarking economic voting", did not receive much attention during the development of this academic field, hence is still an under-investigated subject. The study of comparison in psychology had exited even before economic voting first came out in the academic realm. The most relevant subfield to Political science is perhaps the subjective-well-being (SWB), a measurement of the satisfaction and happiness of people that frequently applied in the studies of happiness economics. The reason why it is relevant is that the well-being of a person is measured by the relative condition of a person compared to others (Kahneman &Krueger, 2006). For example, people compare their income, achievements, and many other properties to their friends and colleges, in order to sew how well their life is. This can be an analogy to the aggregate condition. In all economic adversities or growth, there is always nations with a worse condition or a better performance. If a nation is undergoing an economic recession while its condition is relatively better than most of the other nations, will it still experience the same efficiency in economic voting? One of the most prominent studies is the one conducted by Hansen et al., 2015. The authors investigated the power of comparison in a larger scale on Denmark elections and found that Denmark citizens substitute the economic condition of their own country by the relative economic performance, in comparison to their neighbour country, Sweden, confirming that such behaviour exists. Another study established by Park in 2019 provided a theoretical base that voters compare their nation's economic condition to other nations which are similar, familiar, and connected. In this sense, nations in Europe, especially those inside the European Union, are ideal subjects, since they are geometrically, economically and politically bonded, and they also share similar cultures. The final hypothesis is thus stated as:

*Hypothesis III: The relative economic performance has an impact more substantial than that of a nation on election outcomes.*

# 3. Data, Methodology, and Models

## 3.1 Data

This research focuses on the twenty-seven European Union nations plus four other European nations, a total of 31 nations, covering most of the territory of Europe, and including more than 70% of the total population. The wide selection of subjects aligns with the purpose of this study, which to see whether a systematic anomaly voting behaviour can be observed in a general condition. The four addition nations outside of the Europe Union are Iceland, Norway, Switzerland, and the United Kingdom. The United Kingdom is included in the data set is because it was still in the EU before 2019, and it is also one of the major economies in Europe. The other three nations are included in the study since they are substantial economic entities within Europe, and they also share similar cultures with European nations. This selection method was also applied by Hernández & Kriesi, 2016. The period of investigation ranges from 1990 to 2019, a thirty-year period with a total of 256 elections. The reason for this selection is because first, some post-communist countries such as Slovakia or the Chez Republic started their democracy around 1990. Though the data from other nations can be traced back to even a century ago, however, excluding those data will cause a possible selection bias while analyzing the period before 1990. Furthermore, in Fidrmuc, 2000 and in Anderson, 2000, the authors also observed economic voting behaviour in post-communist countries, meaning that new democracies also explicit the desired behaviour. Second, most of the prominent research focuses on the period of the 1960s to 1990s. Analyzing more contemporary data gives us a better look at what is the situation now. In short, this data set represents the voting behaviour of the European nations, and it also contains a large portion of the population in Europe. In comparison to other research regarding economic voting, this data not only has a relatively large sample size but also uses more contemporary data in contrast to current research.

The type of election analyzed in this study is a parliamentary election, wherein federal nations such as Austria, it is called the federal election, and in republic nations, it is called the legislative election. The reason why parliamentary is

selected it because that first, though the majority of research focus on presidential elections such as that of the US, not all countries in Europe have presidential elections. If only presidential elections are studied, more than half of the observations will be excluded, violating the purpose of this study in observing these insights as general behaviour. The sources of election results are mainly from the European Election Database (EED), and from each government's database.

## 3.2    Variables

The dependent variable in this research is a binary variable – re_election. This variable is set to one when the party which gets the most popular vote in the current election is the same party as the last election. Winning an election is defined as getting the largest portion of the popular vote. For example, The incumbent party (the party with the highest vote from the last election) of Austria during 2008-2013 is the Social Democratic Party of Austria (SPÖ), and during the 2013 election SPÖ won again, so re_election of Austria in 2013 equals to 1. In contrast, during the 2017 election, their competitor Austrian's People Party got the highest vote, so re_election in 2017 equals to 0. Another example is the 2014 Belgium federal election. Though having merely 20.26% of the popular vote, the party "Nieuw-Vlaamse Alliantie (N-VA)" still has the highest vote among all participants, since there were 13 parties taking seats in the federal parliament. Thus, the N-VA was the winner of the 2014 election. There is another problem about using election results as the dependent variable, that in some countries, such as France, parties often form alignments (or coalitions). For instance, though France has a multi-party political system with a number of parties pursuing a variety of political goals, yet parties align with one another, and forms two main divisions of left-winged and right-winged. In this case, the whole alignment is recognized as a single party. If the party which won the last election joins the alignment which wins the next election, then the dependent variable is set to one. Sometimes, alignment disintegrates. If the winning party of the next election also belongs to the winning alignment of the last election, it is also counted as successful re-election. The last election results before 1990 are

also recorded, so all election which occurs after 1990 can be included in the analysis.

In economic voting research, the election result is a less applied variable. The reason is that it is less sensitive to the changes in the explanatory variables since it is a discrete variable with only two values. In contrast, the other two most applied indicators, the change of the incumbent party's voting share, and the result of polls are both continuous variables which respond to changes more sensitively. However, in a research crossing so many nations, the two variables are likely to be affected by none-observable fixed effects, and adjusting those effects makes the model unnecessarily complicated; theses adjustments are also irrelevant to the purpose of this research. For instance, the change in vote share is not only affected by the economic, but also the amount of how many parties are participating in the election. The more party runs for an election; the fewer votes are distributed to each party. However, the results of the vote share are also affected by whether parties form coalitions, which might change people's voting strategy. Polls, affected by the reason mentioned above, is also affected by the institutions, the informative governments and the manipulation of media. Hence, the pure election result is less biased by excessive factors, and the use of this variable reveals the final collective decision of a nation directly and intuitively.

The independent variables are divided into two parts, those regarding economic factors, and those regarding non-economic factors. For the main economic variables, the GDP growth rate per capita is chosen. Though there are four most commonly used variables, gross domestic product, unemployment rate, inflation rate and disposable income, in economic voting (see Lewis-Beck &Stegmaier, 2000, for a clear list of variables), GDP, the overall economic performance, seems to be the most applied. The reason why GDP growth rate, instead of GDP or GNP, is specially chosen in this study is that GDP growth rate, all collected from the International Monetary Fund's (IMF) database, is readily available and is consistent in its calculations. Another reason is that the IMF also calculates the overall growth of the European Union, providing a valid and consistent benchmark in the analysis of benchmarking economic voting. In this study, the unemployment rate, as another economic variable, is introduced in the

model as well since that one economic variable is not enough to account for all of the variances. Having two economic variables makes the model more reliable. The reason why the other two commonly used variables are not included is that the four variables are correlated with one another, putting more than two variables might cause a complication in interactions. For example, the interest rate is usually negatively correlated with the unemployment rate, known as Philip's Curve, and the inflation rate is also highly correlated to the interest rate. Moreover, there is no single institution collecting all indicators regarding the income status of all nations selected, hence only the GDP growth and unemployment rate are applied in the model.

All variables used in the regressions are presented in Table 3.3.1 along with their descriptions.

**Table 3.3.1 List of variables and definitions**

| Variable | Definition |
|---|---|
| *re_election* | Whether an incumbent party get re-elected. |
| *GDP_growth* | The GDP growth rate of an election year. |
| *GDP_growth_t1* | The GDP growth rate one year before an election year (lagged one-year GDP growth). |
| *GDP_growth_t2* | The GDP growth rate two years before an election year (lagged two years GDP growth). |
| *GDP_growth_y2* | The geometric average of the GDP growth rate of an election year and that of the previous year. |
| *GDP_growth_all* | The geometric average of the GDP growth rate of the entire term. |
| *unemployment* | The unemployment rate of an election year. |
| *GDP_deviation* | The difference between a nation's GDP growth rate and the economic growth of the European Union |
| *growthXunemployment* | The interaction term of *GDP_growth* and unemployment. |
| *growthXdeviation* | The interaction term of *GDP_growth* and *GDP_deviation*. |
| *deviationXunemployment* | The interaction term of *GDP_deviation* and *unemployment*. |

Non-economic factors are also known to have significant effects on the result of elections, and has to be controlled to really see the result of the model. Though some early studies concluded that economic factor plus voter's preference about

the candidate explains most of the election results, all research in economic voting has put at least one non-economic factor in their analysis. In this study, a list of variables was chosen, however, the variables were all dropped out of the model except of on regional variable. The reason is that first, when the non-economic controlling variables are run in the model, this single regional variable out preforms most of the variables, making them insignificant in the regressions; Second, those variables which still has an effect are all correlated with the regional variable. It seems that there is a clear difference in culture and behvaiour between the two regions. The final reason is that the correlation between these controlling variables is too complicated, including them inside the model makes it difficult to identify that effects economic conditions and the voting decision, hence deviating with the purpose of this result. A list of variables which were investigated is presented in Table 3.3.2

**Table 3.3.2 List of variables and definitions**

| Variable | Definition |
| --- | --- |
| *WNE* | A binary variable which equals to 1 if a nation belongs to Western or Northern Europe. |
| *CPI* | The Corruption Perception Index |
| *polarization* | People's perceptions of how polarized their society is. |
| *presidential* | Whether a nation has a presidential election |
| *same_president* | Whether the winning party is the same |
| *Debt_ratio* | The government debt to GDP ratio |
| *bribery* | People's perception of how corruption a government is |
| *alternative_source_info* | How many alternative sources of information |
| *two_party* | A binary variable which equals to one when the two main parties collect more than 70% of the vote share. |

The variables are collected primarily from the IMF, Varieties of Democracy (V-Dem), and the Transparency International Organization. Though most of the variables have either solid theoretic basis or firm empirical research, in the model of this study, they either show insignificance in the model or is possibly embedded under the only valid controlling variable, the *WNE*. This variable indicates whether a nation is categorized as a Western or Northern European (WNE) nation or a Central or Eastern European (CEE) nation. In the research of Hernández & Kriesi, 2016, this geometrical factor was found having a significant

effect on the voting outcomes. Variables such as the Corruption Perception Index (CPI), though showing a significant effect, they are all highly bonded to *WNE* because they demonstrate a similar effect to that of *WNE*, and when these variables are put together with *WNE*, they become insignificant.

## 3.3   Methodology and the Models

This research is an empirical analysis using data collected from several data basis. Since the dependent variable is a binary variable, Logistic regression, a quantitative method which estimates the likelihood of the occurrence of an event, is applied. To be specific, the result of the regressions in this study indicates how likely an incumbent party will win in the next election under the given conditions. A simplified model is demonstrated below in order to provide a basic concept before elaborating the variables. The dependent variable is a binary variable, indicating the chances of the incumbent party being re-elected, meaning winning the next election. $\alpha_i$ represents a list of economic factors affecting the election results, while $\beta_i$ represents a list of control variables regarding non-economic factors. The model :

$$Chances\ of\ re\_election = \alpha_i Economic\ factors + \beta_i control\ factors + \varepsilon_i$$

Thus, the three hypotheses and their corresponding model is stated below:

**Model I: the Myopic voting model**

$$re\_election = \alpha_i + \beta_1 Growth\ data + \beta_2 unemployement + \beta_3 WNE$$

Growth data will be replaced by five different periods and calculations of the economic growth (see Table 4.1) in the regression analysis, and a comparison between the results will be made in the next section. Based on the theory, *GDP_growth*, the parameter indicating the GDP growth rate of the election year,

has the highest impact on re-election chances in comparison to other growth data, while other economic conditions such as the average economic performance, should present minor of insignificant results.

**Model II: the Negative Economic Voting model:**

$$re\_election = \alpha_1 + \beta_1 GDP\_growth + \beta_2 unemployement + \beta_3 WNE,$$

$$where\ GDP\_growth < x\ or \geq x, \qquad x = deteminant\ growth\ rate$$

Though having the same structure as the myopic voting model, this model only examines one growth data, which is the *GDP_growth.* It then divides the data set into two parts, those representing a good economic, and whose indicating that the economy is bad. Two regression will then be presented, and two results to be compared.

**Model III: the Benchmarking economic voting model**

$$re\_election = \alpha_1 + \beta_1 GDP\_growth + \beta_2 GDP\_deviation$$

$$+ \beta_3 growthXdeviation + \beta_4 unemployement + \beta_5 WNE$$

The final model puts *GDP_growth* and *GDP_deviation* together to compare the effect between the two variables. In the research conducted by Hansen et al., 2015, the comparison variable outperforms the economic condition, becoming the main explanatory variable.

# 4. Regression Results

After running all regressions, significant results were found in all three hypotheses. A statistical summary of the variables is shown below. Table 4.0 shows that the dependent variable, *re_election,* has a mean of 0.528, which means that regardless of any factors, the chance of winning re-elections is slightly higher than 50%, making the result which differs from a fifty-fifty chance meaningful. The three economic factors all have seemingly extreme values, creating possible influential cases. However, after excluding those cases, the result of the regressions are not affected much. These variables are thus kept in the data and do not need further discussion. The final variable, *WNE*, divides the data into two groups, where 55% of the observations, or, election, happened in western or northern Europe, while the other 45% took place in central or eastern Europe.

**Table 4.0 Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *re_election* | 229 | .528 | .5 | 0 | 1 |
| *GDP_growth* | 963 | 2.221 | 3.853 | -14.8 | 25.1 |
| *GDP_deviation* | 229 | .495 | 3.067 | -16.8 | 8.4 |
| *unemployment* | 967 | 8.323 | 4.518 | .5 | 27.5 |
| *WNE* | 992 | .452 | .498 | 0 | 1 |

## 4.1   Myopic Voting Model

The result of the myopic voting model regression is presented in table 4.1. Though the election-year GDP growth rate has the most significant effect on the election outcomes aligning with myopic voting theory, the average economic performance through the whole term also shows a significant effect, which contradicts with the hypothesis. All three coefficients of Model (1) in Table 4.1 shows a significant effect under a 99% confidence level. The coefficient of *GDP_growth* is 0.168, indicating the positive correlation between the economic condition and election outcome. The interpretation of the whole regression is that when *unemployment* and *WNE* hold constant, say *WNE* = 0 (the nation belongs to central or Eastern Europe) and *unemployment* = 5%, an increase in *GDP_growth* from 2% to 3% increases the *re_election* outcome from 0.869 to

1.028, which are log odds ratio. By taking the exponential form and transforming odds ratio to probability, this change in *GDP_growth* increases the chance of winning re-election from 46.5% to 50.7%. Other conditions the same, if *GDP_*growth falls from 6% to 5%, then the re-elected chances drop from 63% to 50%. In model (2), *GDP_growth_t1*, the economic performance of the previous year of an election, also shows a significant effect with a 95% confidence level. However, with a coefficient of 0.095, the effect is less than the election-year economy. In model (3), *GDP_growth_t2*, the economic performance two years before an election, shows no significant effect on election outcomes. The coefficients regarding GDP growth in models (1), (2) and (3) shows a clear end bias in voting decision among European voters, that new information matters more than previous ones.

Model (4) goes one step further, and tests for whether the average growth of how the election year and the before affecting the election outcomes (see Wlezien, 2015). The result not only aligns with Wlezien's research, that the economic performance of four to eight quarters before the election year matters. However, the effect is unexpectedly high; the result shows both the coefficient and the significance are almost the same as that of Model (1), where the effect of the two-year average is expected to be somewhere between model (1) and (2). Among the results so far, the finding model (5), testing for the average growth rate through the whole term, seems to tell a different story. In contrast to the myopic voting theory, model (5) shows that voters are rational, evaluating the economic performance of the whole term. However, this is not the case, since the average of the whole term also includes the first and second term, which are both very significant in driving election outcomes. Moreover, if the two variables, including their interaction term, is put together in one model, the election-year coefficient remains highly significant, while the average growth becomes minor and insignificant.

One obvious problem of these models is that their explanation power, meaning the Pseudo R squared and the correct classifications. The Pseudo R squared is relatively low for a regression model, wherein this model economic variable only accounts for 10% of the variation in election outcomes; however, a similar result

**Table 4.1  Regression result of re-election chances: Myopic voting model**

| | (1)<br>Election year | (2)<br>One year before<br>an election | (3)<br>Two years<br>before an election | (4)<br>Average growth<br>of two years | (5)<br>Average growth<br>of the whole term |
|---|---|---|---|---|---|
| unemployment | -0.128*** | -0.120*** | -0.123*** | -0.125*** | -0.114*** |
| | (0.043) | (0.044) | (0.044) | (0.044) | (0.043) |
| WNE | 1.254*** | 1.205*** | 1.121*** | 1.278*** | 1.181*** |
| | (0.332) | (0.326) | (0.319) | (0.334) | (0.322) |
| GDP_growth | 0.168*** | - | - | - | - |
| | (0.052) | | | | |
| GDP_growth_t1 | - | 0.095** | - | - | - |
| | | (0.048) | | | |
| GDP_growth_t2 | - | - | 0.057 | - | - |
| | | | (0.043) | | |
| GDP_growth_2y | - | - | - | 0.169*** | |
| | | | | (0.059) | |
| GDP_growth_av~l | - | - | - | - | 0.143** |
| | | | | | (0.061) |
| _cons | 0.164 | 0.280 | 0.461 | 0.105 | 0.166 |
| | (0.476) | (0.495) | (0.481) | (0.500) | (0.490) |
| Obs. | 225 | 222 | 221 | 224 | 225 |
| Pseudo $R^2$ | 0.170 | 0.150 | 0.140 | 0.169 | 0.148 |
| Correct classification | 67.11% | 66.22% | 67.42% | 67.86% | 68.00% |

Standard errors are in parenthesis

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

is also found in research using election results as the dependent variables.

The correct classification means that applying the data to this model, how many results matches the actual outcomes. All five models in the table have a similar correct classification rate, and a pair-wise t-test shows no significant difference among them. Though the explanation power of the models is low, yet this does not change the conclusion, since the purpose of this study is to clarify which economic factor has the highest impact, not pursuing a good model to explain election outcomes fully.

In addition, the reason why the model isn't adjusted for the possible multicollinearity between *GDP_growth* and *unemployment* is that, though having a variance inflation factor (VIF) larger than 0.9, adding or removing one another from the model does not affect the regression result. The interaction term itself is not significant as well. This conclusion is showed in Table 4.2, where the coefficients of *GDP_growth* and *unemployment* are not affected much through models (1) to (4).

**Table 4.2 : Results of re_election regarding interactions**

|  | (1) *GDP_growth* only | (2) *unemployment* only | (3) Without interaction | (4) With interaction |
|---|---|---|---|---|
| GDP_growth | 0.128*** | - | 0.138*** | 0.137*** |
|  | (0.043) |  | (0.047) | (0.047) |
| unemployment | - | -0.177*** | -0.190*** | -0.207*** |
|  |  | (0.038) | (0.040) | (0.045) |
| growthXunempl~t | - | - | - | 0.020 |
|  |  |  |  | (0.016) |
| _cons | -0.172 | 1.564*** | 1.338*** | 1.448*** |
|  | (0.170) | (0.333) | (0.356) | (0.372) |
| Obs. | 226 | 227 | 225 | 225 |
| Pseudo R$^2$ | 0.033 | 0.084 | 0.122 | 0.128 |
| Correct classification | 61.06% | 62.11% | 64.89% | 65.33% |

Standard errors are in parenthesis

*** *p<0.01, ** p<0.05, * p<0.1*

In conclusion, the myopic voting behaviour is observed among the thirty-one European nations, with the election-year economic having the most potent influence and the one-year before economic having less influence. In contrast, the third year has no significant effect on election outcomes. Though the overall

growth rate of the whole incumbent period also shows significance, yet it is because the last two years are also included in the calculation.

## 4.2   Negative Economic Voting Model

This hypothesis tests for whether there is a difference in voting behaviour between economic adversities or economic booms. If people are rational than the regression of both analysis should be similar to each other. Table 4.3 below presents the first regression result in this section. In this table, Model (1) is the same model analyzed in the myopic voting section. Model (2) only uses the data which *GDP_growth* is less than 2.3%, while model (3) analysis the data which GDP_growth is larger or equal to 2.3%. The reason for using 2.3% is because it is the average growth rate of the whole data set. In Though having a smaller sample size, the coefficient of *GDP_growth* in Model (2) still performs a significance under a 95% level of confidence, and has a coefficient increase from 0.164 to 0.304, waving a higher impact on election outcomes. On the other hand, in Model (3) where economic conditions are good, *GDP_growth* becomes insignificant. Taking a further look at the whole picture, in Model (2), the Pseudo R squared increases from 0.174 to 0.232, and the correct classification rate increases from 66.22% to 73.47%. The reason why the interaction between growth and unemployment is put inside the model is that the effect of this division on both *GDP_growth* and *unemployment* is unknown. The result shows that this division also has a high impact on unemployment, where during economic adversity*, GDP_growth* is a more important decisive factor than unemployment, while in an economic boom, unemployment waves more influence on election outcomes.

One of the biggest questions in this study is that what is the decisive economic condition, meaning that in what condition will people perceive as "good" or "bad" economics (Park, 2019). In order to find some more insights in answering this question, further regression is constructed. The decisive values are 0% GDP_growth, 2.3% GDP_growth, and 6% GDP_growth. The 6% growth is simply an addition of one standard deviation to the average value. The result is

presented in Table 4.4.

**Table 4.3 : Results of re_election regarding interactions**

|  | (1) | (2) | (3) |
|---|---|---|---|
|  | Myopic model | GDP_growth $< 2.3\%$ | GDP_growth $\geq 2.3\%$ |
| GDP_growth | .164*** | .304** | .155 |
|  | (.052) | (.125) | (.11) |
| unemployment | -.144*** | -.006 | -.162* |
|  | (.048) | (.123) | (.095) |
| growthXunemploy~t | .017 | .091 | .021 |
|  | (.016) | (.061) | (.033) |
| WNE | 1.23*** | 1.04* | 1.381*** |
|  | (.331) | (.549) | (.442) |
| _cons | .294 | -.698 | .364 |
|  | (.491) | (1.199) | (.938) |
| Obs. | 225 | 98 | 127 |
| Pseudo $R^2$ | .174 | .232 | .134 |
| Correct classification | 66.22% | 73.47% | 63.78% |

*Standard errors are in parentheses*
*** *p<.01, ** p<.05, * p<.1*

In Table 4.4, a clear pattern of negative voting is revealed. The more people focus on worse economics, the higher the effect of economic voting. For the variable *GDP_growth* in worse economic scenarios, moving toward worse economics from the right side of the table makes the coefficient larger, from 0.155 to 0.323. Though in Model (2), the coefficient of *GDP_growth* is insignificant, yet this is not the case. This model has a Pseudo R squared at 0.55, and a correctly classified rate of 91.18%, all indicate that it is an effective model; the reason of the insignificance is likely due to the small sample size with only 34 observations. In this analysis, the effect of *unemployment* also shows the different behaviour under the two conditions. Though it is a control variable in this model, it is worth taking a closer look in other research.

In conclusion, negative voting behaviour is also observed in European elections. A bad economic increases the effect of economic voting, making the re-election more difficult, while a good economic moderates the economic voting effect, making *GDP_growth* a less critical factor.

**Table 4.4: Regression results of re_election on different divisions**

| | (1) Myopic model | (2) GDP_growth < 0% | (3) GDP_growth ≥ 0% | (4) GDP_growth < 2.3% | (5) GDP_growth ≥ 2.3% | (6) GDP_growth < 5% | (7) GDP_growth ≥ 5% |
|---|---|---|---|---|---|---|---|
| GDP_growth | 0.164*** | 0.323 | 0.141* | 0.304** | 0.155 | .214*** | .07 |
| | (0.052) | (0.233) | (0.078) | (0.125) | (0.110) | (.073) | (.246) |
| unemployment | -0.144*** | -0.820 | -0.108** | -0.006 | -0.162* | -.154*** | .388 |
| | (0.048) | (0.701) | (0.054) | (0.123) | (0.095) | (.051) | (.39) |
| growthXunempl~t | 0.017 | -0.051 | 0.001 | 0.091 | 0.021 | .033 | -.1 |
| | (0.016) | (0.112) | (0.021) | (0.061) | (0.033) | (.026) | (.092) |
| WNE | 1.230*** | 2.325* | 1.121*** | 1.040* | 1.381*** | 1.058*** | 2.643** |
| | (0.331) | (1.276) | (0.358) | (0.549) | (0.442) | (.353) | (1.272) |
| _cons | 0.294 | 5.515 | 0.144 | -0.698 | 0.364 | .385 | -3.845 |
| | (0.491) | (5.443) | (0.609) | (1.199) | (0.938) | (.515) | (3.951) |
| Obs. | 225 | 34 | 191 | 98 | 127 | 189 | 36 |
| Pseudo $R^2$ | 0.174 | 0.550 | 0.104 | 0.232 | 0.134 | .188 | .192 |
| Correct classification | 66.22% | 91.18% | 64.40% | 73.47% | 63.78% | 68.78% | 66.67% |

Standard errors are in parenthesis

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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## 4.3 Benchmarking Economic Voting Model

This model is the most understudied behaviour among the three hypotheses tested in this research. The regression result is presented in Table 4.5. In this Table, Model (1) is still the myopic voting model, while in Model (2) *GDP_growth* is replaced by *GDP_deviation*, which the difference between a nation's GDP growth rate and the EU nation's growth rate. We can see that in Model (2), the new variable has a larger coefficient, 0.236 compared to 0.168, with the same significant level of 99%. However, in Model (3) when both variables are put together along with their interaction term, things changed. The coefficient of GDP_growth became minor, from 0.168 to 0.049, and insignificant; while that of *GDP_deviation* became stronger, from 0.236 to 0.325, and still remains a significant level at 95% confidence. The reason why the interaction term is added in this model is that if this variable is not included, there exists a substantial change in the coefficients of the two principal variables. A further examination shows that the two variables have a high correlation of 0.875, with a VIF (produced from running an OLS regression using the same variables) of only 4.28, where a VIF larger than 8 shows possible signs of multicollinearity. Moreover, the direction of the change in the coefficients is not affected. Hence, it can be concluded that though having some level of correlations between the two variables, there is a low multicollinearity problem in this model, and the interaction term explains the variation sue to this issue. Hence, the result is reliable. Model (4) an interaction term between *unemployment* and *GDP_deviation* is added; however, both interaction terms are insignificant, and the effect on the coefficients is minor. This result shows an exciting finding since very little research has been conducted on this subject, and with an effect so significant, finding a benchmark for each nation regarding economic voting can further increase the explanation power of the existing models. The two previous studies in the academic field both state that the source of benchmarking comes from the media, where the information of economic and non-economic conditions of other nations are being transmitted into the country. Nonetheless, the cause of comparison and the source of benchmarking is not the purpose of this study.

**Table 4.5: Benchmark Voting Model**

|  | (1) Growth model | (2) Deviation model | (3) Interaction model | (4) Full model |
|---|---|---|---|---|
| GDP_growth | 0.168*** | - | 0.049 | 0.048 |
|  | (0.052) |  | (0.086) | (0.086) |
| unemployment | -0.128*** | -0.123*** | -0.133*** | -0.148*** |
|  | (0.043) | (0.043) | (0.044) | (0.050) |
| WNE | 1.254*** | 1.305*** | 1.295*** | 1.263*** |
|  | (0.332) | (0.335) | (0.345) | (0.346) |
| GDP_deviation | - | 0.236*** | 0.325** | 0.321** |
|  |  | (0.068) | (0.143) | (0.144) |
| growthXdeviation | - | - | -0.027 | -0.027 |
|  |  |  | (0.017) | (0.017) |
| deviationXunem | - | - | - | 0.014 |
|  |  |  |  | (0.019) |
| _cons | 0.164 | 0.358 | 0.421 | 0.542 |
|  | (0.476) | (0.454) | (0.497) | (0.526) |
| Obs. | 225 | 227 | 225 | 225 |
| Pseudo $R^2$ | 0.170 | 0.175 | 0.192 | 0.194 |
| Correct classification | 67.11% | 66.96% | 68.89% | 68.44% |

Standard errors are in parenthesis

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

In conclusion, the three models tested in this study all indicate that there exist some heuristics in economic voting behaviour. For hypothesis II and III, the result strongly confirms that negative economic voting and benchmarking economic voting can be observed within a general condition. The economic voting behaviour is more vigorous during economic adversities than in good economic condition; and when considering the relative economic performance to an effective benchmark, the benchmark replaces a nation's economic condition and becomes the decisive factor in economic voting. As for the first hypothesis, which states that people only value the latest information regarding the economic, the result shows that though previous periods of the economy also have some impact, only the performance of the previous year before an election matters, while its importance being heavily discounted.

# 5. Robustness

Two studies are designed to check the robustness of the result. The first study separates the data into two groups of nations by the regional variable WNE to see whether the same behaviour can be observed under different socio-structures. The second study uses the fifty-one states in the United States and runs the same test, aiming to find similar results.

## 5.1 Robustness check on a smaller scale

The first study separates the data set into two divisions by the regional factor *WNE*. In the previous testing, all non-economic variables are less effective than his single variable. This regional factor is also thoroughly studied by Hernández & Kriesi, 2016, and found a significant difference between the two regions; hence this robustness check is expected to find a different behaviour between the two data set while still remaining the same results. One of the reasons why this will be a good test is that the two data set has a similar statistical property: they have observations of 116 and 109, and economic conditions of similar distributions. This property makes the analysis more robust. Finally, to avoid too much complication, only the best models in each section will be discussed.

### 5.1.1 The Myopic voting model

Table 5.1.1 presents the regression result of the first robustness check. Model (1) and (2) runs *GDP_grwoth* and *GDP_growth_t1* separately under the condition of WNE = 0, where a nation belongs to Western or Northern Europe; Model (3) and (4) tests for the same variables under the condition of WNE = 0, where a nation belongs to Central or Eastern Europe. The regression results show that in both criteria, the myopic voting behaviour still holds effective. For the election-year economic variable *GDP_growth*, the coefficient remains significant in both criteria; however, the coefficient becomes larger, to 0.193, when WNE = 1, and becomes slightly smaller to 0.158 compared to the result of Model (1) in Table 4.1. On the other hand, the economic condition one year before an election (*GPD_growth_t1*) becomes insignificant when WNE = 0; and

when WNE =1, it not only remains significant under a 90% confidence level but also has a larger coefficient just as that of *GDP_growth* in Model (4). Furthermore, Model (3) and (4) also has a higher Pseudo R squared around 0.14 and a correct classification rate of 75%. In contrast, Model (1) and (2) only has a Pseudo R squared smaller than 0.1, and a correct classification rate of 62%. In conclusion, the myopic voting behaviour is consistent under different socio-structure, but the effect is different; for nations in central and eastern Europe, the effect of myopic voting is stronger, since only the election-year conditions matters, moreover, the economic voting phenomenon itself is weaker, according to the smaller coefficient and less significant. In contrast, western and northern Europe shows less myopic voting behaviour, where both economic conditions examined in this model are significant with similar coefficients, while the economic voting if more effective since the models have a higher Pseudo R squared and a better correctly classification rate.

**Table 5.1.1 : Robustness check of Myopic voting model**

| | WNE = 0 | | WNE = 1 | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Election year | Previous year | Election year | Previous year |
| unemployment | -.063 | -.054 | -.289*** | -.277*** |
| | (.048) | (.049) | (.087) | (.086) |
| GDP_growth | .158** | | .193** | |
| | (.062) | | (.093) | |
| GDP_growth_t1 | | .079 | | .182* |
| | | (.053) | | (.109) |
| _cons | -.413 | -.286 | 2.449*** | 2.38*** |
| | (.545) | (.566) | (.642) | (.672) |
| Obs. | 116 | 113 | 109 | 109 |
| Pseudo R$^2$ | .071 | .035 | .147 | .137 |
| Correct classification | 62.07% | 61.95% | 75.23% | 75.23% |

*Standard errors are in parentheses*
*** p<.01, ** p<.05, * p<.1*

## 5.1.2 The Negative economic voting model

Table 5.1.2 presents the result of the regressions. The problem of this model is that since the data is divided two times, once by *GDP_growth* at 2.3%, and the other time by *WNE* = 0 or 1. The reason why the 2.3% division point is still applied is that the average growth rate for both criteria is 2.14% (std 3.09) and

2.27% (std 4.40), meaning the distribution of the growth rates is similar to the collective data (2.3% with std. 3.85), hence the original method is still applied. The four models all have a small sample size; hence it is possible that all models come out insignificant. In Model (1) and (2) where = 0, the result is consistent with the original negative voting model in Table 4.3. When *GDP_growth* is smaller than 2.3%, the coefficient is significant, while when *GDP_growth* is greater than 2.3%, the coefficient becomes insignificant. However, when *WNE* equals to one, it appears to be a different story. The economic voting not only shows significance when economic growth is larger than 2.3%, the coefficient also comes to 0.824, the highest value ever found in this study. Moreover, the Model (4)'s Pseudo R squared come to 0.207, and the classification rate of 78.95%. Though this does not necessarily mean that the economic voting behaviour cannot be observed during economic adversity due to the small sample size, however, the economic voting effect is very strong when economic is in good condition. This means that for Western and Northern European nations, they do not have explicit a negative voting behaviour, but its opposite: voters respond stronger to economic factors when economic is good but act relatively passive in economic adversities.

**Table 5.1.2 : Robustness check of Negative voting model**

|  | WNE = 0 | | WNE = 1 | |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
|  | *GDP_growth* | *GDP_growth* | *GDP_growth* | *GDP_growth* |
|  | < 2.3% | ≥ 2.3% | < 2.3% | ≥ 2.3% |
| GDP_growth | .42* | .059 | .242 | .824* |
|  | (.234) | (.126) | (.215) | (.436) |
| unemployment | -.012 | -.078 | -.03 | -.49** |
|  | (.16) | (.109) | (.241) | (.216) |
| growthXunemploy~t | .032 | .007 | .15 | .135 |
|  | (.075) | (.038) | (.13) | (.121) |
| _cons | -.791 | .12 | .362 | 1.857 |
|  | (1.457) | (1.161) | (1.895) | (1.504) |
| Obs. | 46 | 70 | 52 | 57 |
| Pseudo R$^2$ | .181 | .015 | .146 | .207 |
| Correct classification | 71.74% | 60.00% | 69.23% | 78.95% |

*Standard errors are in parentheses*
*** p<.01, ** p<.05, * p<.1*

### 5.1.3 The Benchmarking economic voting model

In the final regressions, the effect of benchmark voting still holds in both criteria. However, the same with section 5.1, there is a different effect between the two regions. In Table 5.1.3, Models (1) and (3) are the simple deviation model without *GDP_growth*, Models (2) and (4) are the full deviation model with *GDP_growth*. Models (2) and (4) shows that in both criteria when GDP_deviation is considered, the coefficient of *GDP_growth* becomes minor and insignificant, while *GDP_deviation* remains significant**.**

**Table 5.1.3: Benchmarking voting model**

|  | WNE = 0 | | WNE = 1 | |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
|  | Deviation Model | Deviation + growth model | Deviation Model | Deviation + growth model |
| GDP_deviation | .203*** | .473** | .407** | .398* |
|  | (.073) | (.225) | (.165) | (.235) |
| unemployment | -.048 | -.042 | -.32*** | -.316*** |
|  | (.048) | (.057) | (.089) | (.09) |
| GDP_growth |  | .075 |  | .023 |
|  |  | (.126) |  | (.131) |
| growthXdeviation |  | -.053* |  | .023 |
|  |  | (.028) |  | (.038) |
| deviationXunemp~t |  | -.012 |  | .026 |
|  |  | (.023) |  | (.057) |
| _cons | -.295 | -.456 | 2.982*** | 2.83*** |
|  | (.513) | (.673) | (.649) | (.727) |
| Obs. | 118 | 116 | 109 | 109 |
| Pseudo $R^2$ | .079 | .119 | .174 | .179 |
| Correct classification | 61.86% | 61.21% | 73.39% | 72.48% |

*Standard errors are in parentheses*
*\*\*\* p<.01, \*\* p<.05, \* p<.1*

In conclusion, the robustness check on myopic voting and benchmarking voting is consistent in both WNE (Western and Northern Europe) and CEE (Central and Eastern Europe) regions despite the significant cultural differences which exist among them. However, for *WNE* nations, the effect of economic voting is higher, since the coefficient is larger than that of CEE nations. On the other hand, for negative economic voting, the opposite behaviour is observed. Though in CEE behaviour is consistent to that of the original model, in WNE nations, economic voting is more effective under good economics.

## 5.2   Robustness check under a different content

The second way to conduct the robustness check is to conduct the same regressions under a highly different condition by using the of the United States. Previous studies of the US election regarding economic voting mainly focuses on the presidential election; however, the economic voting behaviour of each individual state is less examined. The design of the examination is that the fifty-one states in the US are similar, familiar, and connected with each other; and in presidential elections, each state vote for the party they pursue, regardless to what other states vote. In this aspect, the situation of the US can be simulated to that of Europe.

**5.2.1 data and variables**

The data set ranges from 1997 to 2019. The reason why the years of 1990 to 1996 is not included just as that of Europe is that the official real state's GDP growth data is only available starting from 1997. Though the statistic bureau has nominal GDP data tracing back to the 1970s, however, state data for transforming nominal GDP to real indicators, such as inflation rate or CPI index, is not fully available on the official database, hence using those data do not provide the necessary consistency. Nevertheless, four times of fifty-one state election results provide a sufficient sample size of 204 observations, hence tracing way back into the early years is not necessary. Furthermore, most research on economic voting focuses on the period from the 1960s to at most the 1990s; this examination of state data and election results is the first one ever conducted, both in the modern years of election and using states as comparison units.

The variables applied in this study is the same as those in section 4. The only difference is that European data becomes US state data, and the regional controlling variable becomes *swing_state*, a variable indicating whether a state is a swing state, where the presidential voting outcome changes, or a safe state, where the voting outcome is consistent for a consecutive year. Similar variables to those dropped from the European model as described in section 3.2; nevertheless, the result is also similar: The regional data is the only variable valid in the models.

5.2.2 Analysis and the result

Though most of the research concluded that myopic voting is common in the US, this data set tells the contrary. In Table 5.2.1, it is shown in Model (3) that the economic condition of two years before an election, meaning the third year of the president's term, matters the most. Economic conditions in Models (1) and (2) are not significantly affecting the election outcomes, while Model (4) explicit a significant effect under a 90% level of confidence. This result shows that when focusing on a state's election, voters highly value the economic condition two years before vacation. One possible explanation is that that year is where the midterm election occurs, and the midterm election results have a stronger influence on economic factors. However, the cause of this phenomenon will not be discussed since it is irrelevant to this study.

**Table 5.2.1 Presidential election result, US state data, myopic voting model**

|  | (1) Election year | (2) One year before elecion | (3) Two years before election | (4) Average growth |
|---|---|---|---|---|
| swing_state | -0.444 | -0.472* | -0.473* | -0.462 |
|  | (0.283) | (0.284) | (0.285) | (0.285) |
| state_GDP_growth | 0.046 |  |  |  |
|  | (0.044) |  |  |  |
| state_GDP_growth_t1 |  | 0.083 |  |  |
|  |  | (0.058) |  |  |
| state_GDP_growth_t2 |  |  | 0.137** |  |
|  |  |  | (0.059) |  |
| state_GDP_growth_all |  |  |  | 0.132* |
|  |  |  |  | (0.070) |
| _cons | 0.177 | 0.074 | -0.080 | -0.003 |
|  | (0.173) | (0.203) | (0.211) | (0.206) |
| Obs. | 255 | 255 | 255 | 255 |
| Pseudo $R^2$ | 0.010 | 0.013 | 0.023 | 0.018 |
| Correctly classified | 57.25% | 56.86% | 59.22% | 56.47% |

Standard errors are in parenthesis

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.2.2 presents the result of negative economic voting. The decisive growth rate in this study is 2.1%, the average growth rate of the aggregate data. Again, this rate is merely a reference point where it can also be 1.5% or 5%, as long as people perceive the economic condition differently to the two divisions. Models (1) and (2) tests the two divisions using election-year economic data,

while Models (3) and (4) examines the economic condition two years before an election according to the previous regression. The result shows that first, the coefficient of the election-year economy is consistent with the US negative voting model, that such factor has a minor and significant effect. For the economic condition two years before an election, the result is the same when *state_GDP_grwoth* is smaller than 2.1%; however, the effect is significant when the growth rate is larger than 2.1 %. Unfortunately, there is not sufficient evidence to interpret this unique result. Moreover, the four Models all have a very small Pseudo R squared and low classification rate, meaning the variables cannot account for the variances of the election results.

**Table 5.2.2 : US presidential election, state election results, negative voting model**

|  | Election-year economy | | Economic two years before an election | |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
|  | GDP_gorwth < 2.1% | GDP_gorwth ≥ 2.1% | GDP_gorwth_ t2 < 2.1% | GDP_gorwth_t2 ≥ 2.1% |
| state_GDP_growth | -0.075 | 0.084 | | |
|  | (0.107) | (0.088) | | |
| swing_state | -1.075*** | 0.288 | -1.068*** | 0.193 |
|  | (0.405) | (0.426) | (0.405) | (0.433) |
| state_GDP_growth_t2 | | | 0.077 | 0.159* |
|  | | | (0.087) | (0.085) |
| _cons | 0.312 | -0.137 | 0.129 | -0.229 |
|  | (0.204) | (0.439) | (0.284) | (0.327) |
| Obs. | 137 | 118 | 137 | 118 |
| Pseudo $R^2$ | 0.042 | 0.009 | 0.044 | 0.026 |
| Correctly classified | 60.58% | 57.63% | 58.39% | 61.02% |

Standard errors are in parenthesis

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.2.3 presents the result of benchmark voting. Models (1), (2) and (3) uses the economic data of the election year, while Models (4), (5) and (6) uses the economic data two years before en election. The result of the first three Models shows that when the two economic variables are examined separately, the effect of both is minor and insignificant. While they are put together, the GDP growth rate becomes significant, while the deviation variable remains the same, meaning that the effect of economic growth is affected by how much a nation's economic deviates from the average performance. Though this does not fully

match the EU voters behaviour, it still reveals some behavioural insights. Interestingly, the economic-condition two years before an election shows the exact opposite result, that the two economic variables are both significant if examined separately, but both become insignificant when put together. This result is also difficult to interpret without gathering further evidence.

**Table 5.2.3 : US state election, benchmarking economic voting**

| | Election year | | | Two years before an election | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Growth of election year | Deviation of election year | Full model | Growth of t2 | Deviation of t2 | Full model |
| state_GDP_growth | 0.046 | | 0.139* | | | |
| | (0.044) | | (0.083) | | | |
| state_deviation | | 0.007 | -0.153 | | | |
| | | (0.048) | (0.097) | | | |
| growthXdeviation | | | 0.021 | | | |
| | | | (0.013) | | | |
| state_GDP_gro_t2 | | | | 0.137** | | 0.032 |
| | | | | (0.059) | | (0.144) |
| state_deviation_t2 | | | | | 0.145** | 0.096 |
| | | | | | (0.061) | (0.149) |
| growthXdeviat_t2 | | | | | | 0.018 |
| | | | | | | (0.017) |
| swing_state | -0.444 | -0.444 | -0.431 | -0.473* | -0.475* | -0.452 |
| | (0.283) | (0.282) | (0.285) | (0.285) | (0.285) | (0.287) |
| _cons | 0.177 | 0.274* | -0.167 | -0.080 | 0.309** | 0.136 |
| | (0.173) | (0.149) | (0.249) | (0.211) | (0.152) | (0.431) |
| Obs. | 255 | 255 | 255 | 255 | 255 | 255 |
| Pseudo $R^2$ | 0.010 | 0.007 | 0.027 | 0.023 | 0.024 | 0.028 |
| Correctly classified | 57.25% | 56.08% | 55.69% | 59.22% | 59.22% | 57.65% |

Standard errors are in parenthesis
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

In conclusion, the phenomenon observed in European data is not found in US state presidential votes. In fact, the US state election results seem to be totally different circumstances compared to that of Europe. The regression results are all very insignificant and confusing, and unfortunately, there is not enough evidence to make a clear statement regarding these regressions. Though there is no firm conclusion, yet there is also no evidence to deny the findings in section 4 and 5.1.

# 6. Discussion

The results of his research revealed some behavioural heuristics in economic voting. The first result confirmed that myopic voting behaviour not only exists but is also consistent with current literature (see Hibbs,1989; Suzuki &Chappell, 1996; Healy &Lenz, 2014; Wlezien, 2015), that the election-year economic effects election outcomes the most. The research then showed that voting behaviour alters according to different economic circumstances. People react more vigorous on economic factors during slow or negative economic growth and put less attention on those factors when the economy is good or secured. This fining is also consistent with the knowledge in the field (see Lau &Sears, 1975; Fiorina &Shepsle, 1989; Anderson, 2000). The testing for the last hypothesis provides perhaps the most interesting finding in this study that the relative economic growth is an even more decisive factor than a nation's economic growth, a conclusion that aligns with the few recent research (see Kayser &Peress, 2012; Hansen et al., 2015; Park, 2019). These findings shed light on current economic voting research since that while many researchers are still looking for better economic factors or a set of more complicated or contemporary non-economic elements, it provides an essential and profound aspect, that how people perceive the economic environment is substantial. For instance, in benchmarking voting, the comparison economic variable has a more significant level and the coefficient value larger than that of the ordinary economic variables. This implies that reinvestigating existing studies with psychological insights might result in a more efficient way of studying this subject.

Though having significant results in these unconventional aspects, this research also comes with some limitations. First, one of the conclusion stated that factors which affect people's perception of economic conditions are important; however, this aspect is not fully assessed in this paper. In the begging stage of the research, too much attention was put on conventional non-economic factors. Luckily, the only one non-economic factor, *WNE*, was eventually being chosen for its substantial impact on election outcomes. This variable itself is an indicator that distinguishes two kinds of people who perceive economic differently. For WNE nations, economic condition is more important than the other nations, and

according to the result of section 5.1.2, WNE nations either tend to punish the government less or reward the government more. Unfortunately, the data and evidence collected for this research cannot give an answer to which one is the case. Nevertheless, this finding enlightens a new way of selecting variables since conventional variables do not identify how much of people's perception can be explained by them. Another issue worth discussing is the negative economic voting. Since the studies of negative and benchmarking voting are scattered between the fields of Economics, Psychology and Political science, there is not yet a firm theory or enough empirical research to accurately identify such behaviour. Despite examing different behaviour under two kinds of economics, the so-called negative effect can also be interpreted as a comparison to the previous years of the economic condition. As stated by Lau &Sears, 1975, the better the performance of the previous year, the more likely the public will demonstrate a dissatisfaction to the government. In this sense, the interpretation of negative voting transforms from negative bias to the issue of reference bias, or, the anchoring heuristic, where voters are not using the actual economic performance but the relative ones as decisive economic factors. From this aspect, this study has not thoroughly examined the effect of negative voting, leaving some space for future research. Finally, one of the purposes of this research is to see whether behavioural economic voting exists in a larger context. It is confirmed that these three behaviours all exist in a larger scale of data; however, the robustness check revealed that when scaling down to a smaller environment, many things changed. Besides initiating new questions and possible research subjects, the result of this general behaviour in a larger scale of data also provides a benchmark for future research, that seeing this collective behaviour as a general condition, and explaining why the behvaiours of individual regions or nations deviates from the general condition.

# 7. Conclusion

In conclusion, this research aimed to examine whether economic voting behaviour is affected by people's psychological heuristics, or, in other words, their perceptions about the economic condition. Three hypotheses were formed, and statistical tests showed significant effects, that all three hypotheses were accepted. The first perception that affects economic voting behaviour is that people perceive the economic condition myopically, overweighting the latest economic factors, while heavily discounting past performances. The second perception is that people perceive economic condition negatively, that economic is a more important factor in deciding who to vote when the country is undergoing a moderate or even negative economic growth, while people pay less attention to it during good economies. The final perception is that voters make comparisons of their nation's economy to others. In this study, the EU growth rate is set as the benchmark, and the result showed that relative economic growth is a more decisive factor than conventional economic factors,

However, the robustness check revealed some missing aspects of this research. First, these behaviours exist within a large scale of nations and populations. However, they do not necessarily exist while scaling down to individual studies. Moreover, it is also found that regions perceive economic conditions differently; thus, individual nations are expected to exhibit specific voting behaviours according to how their perception of the economy is formed.

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