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Determinants of Voting Behaviors in the UK's EU Referendum

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Abstract

The objectives of the paper include the investigation of the determinants of voting behaviors on the UK's EU Referendum. The novelty of this study is that it includes not only various socioeconomic variables in its evaluation but also the perceived preferences, namely, risk and time preferences. Data from 149 British citizens on voting behaviors were collected through a questionnaire survey conducted in person or online. A binary logit model was employed to estimate the determinants. Estimation results indicated that respondents who are older tended to vote to leave. Respondents with higher educational attainment tended to vote to remain. Furthermore, respondents who indicated four factors as important determinants of their voting behaviors (i.e., travel and living abroad, job prospects, international trade and solidarity with EU members) tended to vote to remain. The results also indicated that the time preferences and risk preferences of the respondents showed no statistically significant relationships with voting behaviors. Prior consultation with others before the referendum also had no statistical effect on voters' choices. Several explanations are provided to examine the relationships between personal preferences and voting behaviors. The results yield key information for discussing implications and directions for the attitudes and behaviors of national referendums.

Key Words: Voting Behaviors, Determinants, EU Referendum, UK

1. Introduction

On June 23, 2016, the United Kingdom (UK) decided to leave the European Union (EU) following the result of the referendum. According to BBC (n.d, a), 51.9% of the voters were in favor of leaving the EU while 48.1% voted against, with a 72.2% voter turnout.

The result took the world by surprise, and it has undergone critical analysis from social, political and financial perspectives. For instance, The Guardian (2016) examined the data of the referendum by voters' social attributes, such as their area of residence, income and educational attainment. They found a strong correlation between voters' educational attainment and their vote; those who had a university degree were more likely to vote to remain.

However, with a deeper understanding of the referendum results, the interpretation of voters' characteristics provides limited policy implications. Since each voter's decision could be largely influenced by their intrinsic preferences, examining preference-related attributes is important. Hence, this paper intends to examine voters' characteristics from various dimensions, including but not limited to social and political perspectives as well as risk and time preferences as determinants of voters' decisions. Based on the results of the questionnaire survey on EU referendum voters conducted by the author from February 2, 2016, to June 11, 2017, this paper investigates the determinants of voting behaviors.

2. Background

2.1. History of the UK-EU Relationship

From the very beginning, the UK has not always kept pace with other European countries concerning European integration. According to Kondo (2017, p.134), the UK was not one of the founding members of the European Coal and Steel Community (ECSC) in 1951. It also failed to join the European Economic Community (EEC) in 1961 and the European Community (EC) in 1967. In 1973, the UK finally joined the EC six years after its establishment.

In 1975, however, due to the rise of Euro-skepticism among politicians, the UK conducted a referendum on leaving the EC. According to Hosoya (2016), 67.2% were in favor of remaining inside the EEC, while 32.8% were against. It was the first plebiscite in the UK, thus leading the issues surrounding the UK-Europe relationship to occupy a significant place in its political agenda. Although the result of the 1975 referendum was the opposite, its process was similar to that of the recent referendum in 2016.

In addition, the UK has not introduced the common currency of the euro and still uses its own currency of the pound instead. It has not signed the Schengen Agreement, which abolishes internal border checks in certain areas in Europe. Even though the UK keeps some distance from the EU, it still pays £8.4 billion or £161 million a week to the EU for its membership, according to the BBC (2016a).

The UK-EU relationship has been more complicated than that between other European countries. Thus, as the EU has gradually gained more influence over committee countries, the chaos and confusion inside the country has increased inversely. In 1993, the UK Independence Party (UKIP) was founded, which played a significant role in the leave campaign. All these processes gradually led to the 2016 EU referendum. According to Sakano

(2016), there are two main reasons why David Cameron, the former British prime minister, finally decided to take risks to carry out the EU referendum. Sakano (2016) articulated that Cameron needed to manage external and internal dissent on European integration, and Conservatives had to adopt the pledges for the referendum to respond to the rising UKIP.

2.2 Arguments on the Referendum

The leave side emphasized the cost of staying inside the EU: the cost of its membership and the increase in the number of immigrants. They claimed that they could reduce these costs and use them for the National Health Service (NHS) instead. According to Kondo (2017), the leave side's campaign was more aggressive than that of the remain side and tried to appeal to voters' emotions. For example, the website "Leave.eu" (n.d.), which participated in the leave campaign, asks visitors "Who is Brexit's greatest enemy?" In addition, it states "Following a catastrophic general election, the prospects of a clean Brexit have dimmed horrendously. The powerful Remain factions of the Establishment smell blood and a chance to keep Britain in the European Union, but which of them is the most influential and committed?"

On the other hand, the remain side emphasized the stability and protection that staying inside the EU can provide: the stability of the price of goods, rights for the workers and stable employment. According to Kondo (2017), the remain side held a more conservative view than did the leave side since they claimed that it would be a risk for the UK's economy if it were to leave the EU. The website "Britain Stronger in Europe" (n.d.), which participated in the remain campaign in the referendum, argues, "You and your family are stronger IN: more jobs, lower prices, workers' rights."

2.3 Result of the Referendum

According to BBC (n.d., a), the total number of voters was 46,501,241, with a voting rate of 72.2%. Of the voters, 51.9% voted in favor of leaving and 48.1% voted against. As a result of this referendum, the UK was to leave the EU. The number of leave supporters was high in England and Wales, while this number was low in Scotland and Northern Ireland.

According to the Telegraph (2016), there were strong disparities across ages; 73% of those aged between 18 and 29 voted to remain, while 63% of those aged 60 and above voted to leave. Most of those who support the Greens voted to remain, while UKIP supporters voted to leave (Telegraph 2016).

3. Literature on the UK Referendum and Voting Behaviors

3.1 UK Referendum

Some studies have analyzed the result of the EU referendum from the sociodemographic attributes of voters. For instance, the BBC (2016a) has examined the voters' areas of residence for a possible correlation between geographical areas and votes. They found that the majority of those living in England voted to leave (53.4%), while in Scotland, only 38.0% voted to leave. Furthermore, The Guardian (2016) examined voters' educational attainment, age and income, finding that those who voted to remain tended to be younger, have a degree and have a higher income.

By examining determinants, Zhang (2018) showed that the voters' educational attainment had the strongest influence on votes. He also argues if the number of voters with a bachelor's degree were greater by 3% in England and Wales, the result of the referendum would have been overturned.

Sampson (2017) examined the aftermath of Brexit from economic perspectives. He argues that the decision to leave the EU is irrational for the UK by noting that it will certainly be disadvantageous to its economy, since trade costs are expected to increase if the UK loses its EU membership. He studied the social attributes and characteristics of the leave voters to see why the UK voted to leave even when it would be financially harmful to do so. He found that "Brexit came from a coalition of less-educated, older, less economically successful and more socially conservative voters who oppose immigration and feel left behind by modern life" (p.164). This finding roughly describes the characteristics of those who voted to leave, which is consistent with arguments by Zhang (2018) and The Guardian (2016).

Sampson (2017) also argued that there are two hypotheses on why people voted to leave. First, voters placed more importance on the UK's sovereignty. In other words, voters placed more value on the primacy of the nation-state rather than on its economic interests. Second, voters thought that the quality of life in the UK had deteriorated after the financial crisis in 2009 and believed that EU membership affected their discontent with the status quo.

Recently, the UK has experienced another historical referendum prior to the one in 2016. On September 18, 2014, Scotland had an independence referendum, asking its residents whether or not Scotland should be independent from the UK. According to the BBC (n.d., b), Scotland voted no, with 55.3% of voters against and 44.7% in favor, with a 84.59%

voter turnout. Those who were against Scottish independence had complaints about the policies of the Westminster Parliament. On the other hand, those who supported Scottish independence regarded the stability of the currency, pensions and the NHS (National Health Service) as significant and thought Scottish independence would improve policies regarding those factors. This finding is consistent with the tendency that the elderly, who are anxious about quality of life after independence, avoided rapid change by voting against leaving.

Furthermore, according to Rikihisa (2014), on referendums in developed countries such as the UK, a major focus of discussion tends to revolve around the economy. On the Scottish independence referendum, the affirmative side tried to gain support by claiming that independence would boost the Scottish economy. In comparison, the negative side emphasized the cost of independence and the disadvantages for the Scottish economy. According to Young (1994), with regard to an independence referendum, votes against independence signify the preservation of the status quo. On the other hand, votes for independence signify a gamble on an uncertain future, which highlights the costs of independence rather than the benefits. Therefore, the manner in which people view risk is important in the outcome of an independence referendum.

3.2 Voting Behaviors and Originality of the Research

Markus (1988) claims that "Individual voting decisions and, consequently, election outcomes may be influenced by a myriad of factors: prevailing attachments to political parties, ideological and policy considerations, the personal characteristics and traits of the contenders for office, regional loyalties, group memberships, candidate debates, media imagery, and more." As he states, studies have shown that in addition to individuals' beliefs or opinions, multiple factors in society, such as the framing of information or loyalty to a certain group, affect their final votes.

To examine multiple factors that potentially affect voters' decisions, this paper examined the determinants of voting behaviors in the case of the UK's EU referendum. Compared to studies on the aftermath effect or the process of leaving the EU, fewer studies have specifically focused on voting behaviors. Moreover, this paper contributes to the debates on voting behaviors, especially in regard to the following three points.

First, this paper examines whether there is a correlation between political parties that voters support and their votes. For the EU referendum in particular, campaigns performed by political parties such as the UKIP seem to have influenced votes to some extent. Ac-

cording to Hobolt (2006), political parties can influence voting behaviors on a referendum. She examined voting behaviors in two Danish referendums on the Maastricht Treaty in 1992 and 1993 and found that the uncertainty and framing of the information, in association with the ballot proposal, changed the outcome of the referendum. Since voters make decisions on a referendum based on the knowledge they gain from the media or official campaigns, she argues that campaigning by political parties plays a vital role in referendum outcomes.

Second, this paper examined the possible relationship between votes and politically important and contentious issues. The paper included 20 relevant politically important issues that were announced by the BBC (2016b) on this referendum. Takeshita (1988, p.157) refers to the idea of "issue voting," which is when people tend to vote for candidates who either have ideas that are closest to their own on relevant issues or appear to have the ability to deal with the issues in the manner in which voters prefer. Rabinowitz and Macdonald (1989) further analyzed this concept and compared two contradicting theories: spatial and directional theories. The former assumes that voters make decisions based on their closeness to the candidates, as previously mentioned. However, the latter assumes that voters make decisions based on directions and the intensity of policymakers, meaning that voters make their decisions rather diffusely and emotionally. Examining which theory better explains the voting behaviors in the EU referendum is beyond the scope of this paper; however, the empirical analysis of votes and issues provides interesting implications.

Third, this paper focuses on voters' intrinsic factors, such as risk preferences and time preferences. Hobolt (2006) claims that uncertainty in elections and referendums affects voters' choices. She developed a theoretical model of voting behaviors in a referendum, noting that "voters are risk averse" and that "greater proximity leads to greater utility, whereas greater uncertainty reduces expected utility" (pp.627-628). When people make choices under conditions of uncertainty, such as in a gamble or referendum, their perception of risk affects their choices. Therefore, this paper examines the possible relationship between voters' risk and time preferences and their actual votes to provide deeper insight into the EU referendum.

4. Methodology

4.1. Survey Method

A questionnaire survey was conducted between February 2, 2016, and June 11, 2017.

The respondents were British nationals who had been registered to vote. Among the 149 British nationals (54 males, 91 females, 4 other) who responded, 106 participants completed the paper questionnaire distributed and collected in-person, while 43 responded online. The online questionnaire was created using Google Forms; it was accessible through the following link:

https://docs.google.com/forms/d/1kOwYr91JAcDUwrSTJSzqcuu7IJfIU0y07TgmKMcZD iw/edit.

The questionnaire was designed to be completed in approximately 5 minutes. Its purpose and use were explained on the first page to respondents. Prior to the survey, the author asked a native speaker of English to proofread the questionnaire for grammatical mistakes. Before the questionnaire was distributed, the author asked two participants to complete it to see if the entire questionnaire was clearly understandable. These two sets of data are not included in the analysis. The questionnaire also paid attention to ethical considerations. The survey was conducted anonymously, and participants were able to choose not to reveal their gender identity. However, one participant commented via e-mail that the question should have included a choice for "nonbinary" to enable anyone to complete the questionnaire.

4.2. Questionnaire design
4.2.1. First Section: Socioeconomic Demographics

The first section of the questionnaire inquired about participants' demographic characteristics, such as their gender, age, area of residence, educational attainment, occupation, and whether they support any political party. The educational attainment ranged from completing secondary school to a doctoral program, and each participant had 7 options to choose from. The response options for occupation ranged from having a full-time job to being a student. There were five options from which they could choose, and the responses were categorized into two categories in the analysis: paid or unpaid. In addition, the last question asked participants whether they supported a certain political party. Respondents could choose "Do not support a certain political party" or a party of their choice from 12 parties in Parliament.

4.2.2. Second Section: Decision on Vote

The second set of questions asked about participants' votes on the referendum: their vote to leave or to remain; their reasons for withdrawing from voting if they did not vote; the possibility of changing their vote in the second referendum if the current result were

determined to be invalid; their selection of 5 issues out of 20 (adopted from BBC (2016 b), Table 1) in order of significance; their expectation of the result being to leave; the presence or absence of consultation with others about their vote; and the side they perceived to be more successful in campaigns, regardless of their actual vote.

Table 1: 20 Important Issues on the Referendum (adopted from BBC (2016b))

Immigration system	Border control
Ability to control our own laws	Travel and living abroad
Consumer affairs	Reputation of the UK from abroad
Protection against terrorism	Job prospects
Solidarity with EU members	Quality of life in the UK
Energy security	Global role and defense
Financial cost of membership	Opportunities for children and young citizens
International trade	Farming and fishing
Environmental protection	Rights for people in the UK
Fairness in the social welfare system	Investment in the UK by international enterprises

4.2.3. Third Section: Voters' Risk Preferences

The third section asked the respondents to imagine participating in a simple gambling game to provide insight into their risk preferences through their answers. This paper refe-reed to Kudo et al. (2015) in the crafting of the description of this section. Respondents were asked to choose Lottery A or B in 4 scenarios. In Lottery A, the respondents have a 50% chance of receiving £150 or a 50% chance of receiving a lower amount (i.e., £25, £50, £75 or £100). In Lottery B, the respondents receive £100 with 100% certainty.

In Scenario 1, respondents have a 50% chance of receiving £150 and a 50% chance of receiving £100 if they choose Lottery A. They receive £100 with 100% certainty if they choose Lottery B. The scenario was intended to examine the rationality of the voters. Lottery A definitely has better options than does Lottery B.

In Scenario 2, respondents have a 50% chance of receiving £150 and a 50% chance of receiving £75 if they choose Lottery A. Voters who are not risk averse would choose Lottery A, since their expected gain would be calculated as follows: £150*0.5+£75*0.5=£112.5.

In Scenario 3, respondents have a 50% chance of receiving £150 and a 50% chance of receiving £50 if they choose Lottery A. The expected gain by choosing Lottery A would be calculated as follows: £150*0.5+£50*0.5=£100. This is equal to the interest in Lottery B (£100

for 100%). Thus, those who choose Lottery A in a gambling game are categorized as risk lovers or risk neutral. Those who choose Lottery B are categorized either as risk averse or risk neutral.

In Scenario 4, respondents have a 50% chance of receiving £150 and a 50% chance of receiving £25 if they choose Lottery A. The expected gain in the selection in Lottery A would be calculated as follows: £150*0.5+£25*0.5=£87.5. Those who choose Lottery A are categorized as risk lovers. The rest who choose Lottery B are either risk averse or risk neutral.

Therefore, as the number of respondents choosing Lottery A increases, the higher the number of respondents who are considered to be risk lovers. For empirical analysis, the respondents are categorized into whether they are risk lovers, risk averse, or in between.

4.2.4. Fourth Section: Time Preference

The items included in the fourth section were intended to determine time preference, as respondents could choose either option A or option B. In the scenario, respondents will hypothetically receive £300 tomorrow if they choose option A. They will receive an amount equal to or greater than £300 three months later (with a £5-interval, for up to £330 in total). Those who choose A rather than B cannot tolerate the wait, meaning that they are more likely to pursue quick profits. Those who constantly choose option B can tolerate the wait. The paper also refereed to Kudo et al. (2005) in the crafting of the description of this section. The number of respondents who answered B is included in the estimation: as the number of B responses increases, the more patient respondents are.

5. Results

5.1 Summary of the Questionnaire Survey

Based on the breakdown of 149 respondents in the questionnaire, a summary of the results is provided as follows. Since this research was conducted in Scotland, a majority of respondents voted to remain (n=99, 67%). Only 17% (n=26) of them voted to leave. The percentage of those who did not vote was 16% (n=24).

In terms of gender, this study included more female than male participants. A total of 91 (61%) of respondents were female, 54 (34%) respondents were male, and 4 (3%) were others. Regarding the breakdown of respondents' age, almost half of the participants were in their twenties. The number of those in their teens, thirties and forties was almost equal to 12% or 13%. Those over fifty comprised 17% of respondents. Approximately 7% of respon-

dents were in their 60s, 3% were in their 70s, and 1% were in their 80s.

In terms of respondents' educational attainment, the majority of participants graduated from secondary school. This figure includes those who are still studying in university or college, which corresponds with the percentage of those in their teens or twenties in diagram 4. Of the 149 respondents, 28% had a bachelor's degree, and 12% had a master's degree.

Regarding the respondents' occupations, a majority of participants held paid positions, whether full- or part-time, while 35% did not. The latter includes those who were already retired, were in their schooling or were performing unpaid work, such as volunteering and doing household chores.

Regarding political preferences, 40% of participants did not support a particular political party, and 18% of participants claimed to support the Scottish National Party, which is consistent with the number of Scottish residents in this research. More than 10% of the participants supported the Labour Party and the Conservative Party. Only 1 participant supported the UKIP.

5.2 Estimation Results

In this research, all analyses were conducted using Stata 14.2 software (StataCorp LLC). The determinants that seemed to directly affect one's voting behavior were analyzed. In the questionnaire, respondents had three options to choose from: remain, leave or not voting. In the analysis, respondents who voted to remain were defined as 0, and those who voted to leave were defined as 1. Since the decisions made by voters are binary, a binary logit model was employed. Those who refrained from voting were excluded from the estimations for the following two reasons. First, their input was not reflected in the result of the referendum. Second, nonparticipation was not by choice but due to reasons such as studying abroad or being on trips.

First, as Table 2 shows, no statistical significance was found for the job, gender and country factors. However, a positive correlation was found between vote and age, which implies that those who were older tended to vote to leave. On the other hand, a negative correlation was found between vote and education, although it is statistically significant at 10%, which suggests that those with higher educational attainments tended to vote to remain. This finding is also supported by a study by Zhang (2018), such that education is the predominant factor dividing voters, and voters with higher educational attainment tended to vote to remain.

Table 2: Relationship between Vote and Social Attributes

	Coeff.	Std.Err.
Age (1=10s, 2=20s, … 6=60s)	0.356**	0.147
Education (1=completion of junior secondary, --- 6= university graduates)	−0.220*	0.125
Job (1=employed, 2=unemployed)	−0.607	0.522
Sex (1=male,2=female)	−0.304	0.500
Country (1=Scotland, 2=other)	−0.026	0.668
No. of observations	114	
Log-likelihood	−52.751	

Note: ** and * indicate statistical significance at 5% and 10%, respectively.

Of the 20 priorities that voters could choose from, 7 priorities that 30% of all respondents chose were analyzed (Table 3). Travel and living abroad, job prospects and international trade were each found to have a negative correlation with votes, implying that respondents who view those factors as important voted to remain. These results may overwhelm other factors, such as age and education, which were statistically significant in Table 2.

The correlation between votes and whether the respondents were risk lovers or risk

Table 3: Relationship between Vote and Priorities

	Coeff.	Std.Err.
Age (1=10s, 2=20s, … 6=60s)	0.155	0.227
Education (1=completion of junior secondary, ---6=university graduates)	−0.243	0.177
Job (1=employed, 2=unemployed)	−0.995	0.730
Travel and living abroad (0= not evaluated, 1=evaluated)	−2.583**	1.177
Job prospects (0= not evaluated, 1=evaluated)	−1.479*	0.810
Solidarity with EU members (0= not evaluated, 1=evaluated)	−18.356	1,597.570
Quality of life in the UK (0= not evaluated, 1=evaluated)	0.773	0.771
Opportunities for children and young citizens (0= not evaluated, 1=evaluated)	−0.605	0.732
International trade (0= not evaluated, 1=evaluated)	−1.509*	0.793
Rights for people in the UK (0= not evaluated, 1=evaluated)	−0.104	0.689
No. of observations	114	
Log-likelihood	−29.698	

Note: ** and * indicate statistical significance at 5% and 10%, respectively.

Table 4: Relationship between Vote and Risk/Time Preferences

	Coeff.	Std.Err.
Age (1=10s, 2=20s, ... 6=60s)	0.255*	0.151
Education (1=completion of junior secondary, ---6= university graduates)	−0.256**	0.123
Risk lover (0=non-risk-lover, 1=risk-lover)	−0.112	1.178
Risk averse (0=non-risk-averse, 1=risk-averse)	0.872	0.547
Time preference (higher number indicates more patient)	−0.140	0.092
No. of observations	114	
Log-likelihood	−51.029	

Note: ** and * indicate statistical significance at 5% and 10%, respectively.

Table 5: Relationship between Vote and Prior Consultation

	Coeff.	Std.Err.
Age (1=10s, 2=20s, ... 6=60s)	0.356**	0.147
Education (1=completion of junior secondary, ---6= university graduates)	−0.226*	0.123
Job (1=employed, 2=unemployed)	−0.650	0.518
Consultation (1=consulted, 2= did not consult)	−0.054	0.665
No. of observations	114	
Log-likelihood	−52.938	

Note: ** and * indicate statistical significance at 5% and 10%, respectively.

averse was analyzed (Table 4). The results indicated that there was no statistically significant relationship between risk preferences (for both binary codes, namely, risk lover and risk averse) and votes. Moreover, the degree of patience was no significantly associated with voting behaviors. A similar relationship was observed for the variable "whether respondents did prior consultation on the vote" (Table 5).

6. Discussion

In this research, a positive correlation was observed between vote and age, indicating that those who were older tended to vote to leave. Therefore, this paper provides additional support to the previous studies performed by Zhang (2018). Furthermore, a negative correlation was found between vote and education, suggesting that those with higher educational attainment tended to vote to remain in the EU. This finding is also supported by

the BBC (2016b) and The Guardian (2016). These results imply that the sociodemographic attributes of voters matter to a certain extent.

However, no correlation was observed between voters' area of residence and their votes, even though a clear relationship was found in previous studies in the BBC (n.d.) and The Guardian (2016). This result may be due to the skewed distribution of the sample since most participants in this research were living in either Scotland or England. Thus, respondents from Wales and Northern Ireland are not represented in this research. Priorities such as "travel and living abroad" and "international trade" were highly correlated with support for remaining in the EU. These priorities were particularly highlighted in the campaign to remain in the EU.

As for the risk and time preferences of voters, no statistical significance was observed. Although there could be a number of reasons why the result was statistically insignificant, the author would like to suggest two possibilities. First, some respondents may not have been able to make rational decisions on votes. For instance, as Kondo (2017, p.18) notes, the leave side's campaign was more aggressive than that of the remain side and tried to appeal to voters' emotions. In addition, according to Ida (2016, p 53), people tend to be more sensitive to losses than gains, which is called "loss aversion". The leave campaigns emphasized the financial costs of maintaining EU membership and of migrants replacing UK citizens in the workforce. The respondents who supported those campaigns may have voted to leave regardless of their risk preferences. These issues could have affected voters' decision-making process. Second, voters may not have adequately considered long-term costs or benefits. For example, according to Ida (2016, p 60), people tend to value gains right now more than in the future, even if the latter is the same as or higher. The phenomena called "status quo bias" could have affected how people voted on the referendum. The person who voted to leave may have believed that leaving the EU would benefit the UK immediately through reallocating funds for the NHS, although such expectations have yet come true since the process of leaving the EU is troublesome and time-consuming.

In this research, there was only one person who wished to change her vote if the current referendum becomes invalid and there is a prospect for another referendum. However, there would be more people who would regret their votes and would prefer to change their choice.

As a whole, the sample size of this study was small, with only 149 respondents, which limited the establishment of statistical significance. However, the result may change if similar studies are to be performed with a sample that is more representative of the geographi-

cal distribution or a sample that is on a larger scale. Despite its shortcomings, this research was meaningful since it qualitatively examined more individual factors, such as whether voters consulted with others about their votes or whether they were categorized as risk lovers or risk avoiders. These findings provide insight into the possibility of more in-depth statistical studies on voting behaviors that take one's preferences into account.

7. Conclusion

As a result, respondents' ages and votes were positively correlated, which suggests that the older the voter is, the more likely he or she would have voted to leave. In addition, voters' educational attainment and votes were found to be negatively correlated, which implies that the higher their educational attainment was, the more likely they were to vote to remain. Furthermore, the 3 priorities that voters regarded as important, namely, "travel and living abroad," "job prospects," and "international trade", were proven to be significant factors that were negatively correlated with votes. This finding implies that voters who considered those factors to be important tended to vote to remain.

In conclusion, this paper contributed to research on voting behaviors by attempting to examine the correlations between individuals' preferences and their decision making on votes, which had not been explicitly examined in previous studies. Similar to previous studies on the determinants of votes in the EU referendum, this paper also provides additional support that voters' age and educational attainment are correlated with votes.

For future research, the author would like to make five suggestions for improvement, given the result of the analysis. First, the sample size should be increased, which would increase the validity of the results. Second, the research should also be conducted in regions other than Scotland. Collecting samples from various regions in the UK would lend diversity to the sample as well as reduce bias based on areas of residence. Third, an interview survey of the psychological factors behind the voters' decisions should be conducted. The author originally hypothesized that those who support remaining in the EU may be psychologically risk averse. However, the result was that risk lovers might vote to remain if it negatively affects respondents' livelihoods. The interview survey on how voters presumed that remaining inside or leaving the EU would actually affect their daily lives can deepen the interpretation of this research as well as the result of the EU referendum itself. According to Ida (2016), people tend to take more risks when facing losses, while they avoid risks to ensure their gains. Whether people saw the referendum itself as a risk or gain may

matter in analyzing the correlation between their votes and risk preferences. Fourth, since approximately 30% of the population did not vote in the referendum, a detailed questionnaire survey for these participants should be included in future research. If sufficient data are collected from nonvoters, a multinomial logit model can be employed. Fifth, a question on whether participants supported the former Prime Minister David Cameron should be included. Voters who disliked his policies and did not support him could have voted to leave, which he was against. The analysis of the five issues mentioned above can provide further implications for the examination of voters' decisions in the EU referendum.

Acknowledgements

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