Applying Prospect Theory to EU referendum voting behaviour
explaining irrational choice and turnout in the Brexit referendum

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Awarding institution:
King's College London

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Ph.D Thesis

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Title: “Applying Prospect Theory to EU referendum voting behaviour: explaining irrational choice and turnout in the Brexit referendum”

Ethical Approval received by King’s College London: No. LRS15/162641

Two research grants were received from King’s College London for this Ph.D.
DECLARATION

I hereby confirm that this is my original written research submitted at King’s College London.

The parts of the thesis where I analyse existing theoretical or empirical frameworks are clearly cited and attributed to the relevant authors of the pertinent scientific work.
This thesis examines how prospect theory can help to explain voter’s choice and turnout in EU referendums. It intends to propose prospect theory as a challenge to the EU referendum school of utilitarian expectations while at the same time it aspires to contribute to other EU referendum schools such as EU referendum campaigns, substantive issues and identity politics. I argue that the inductive origin of prospect theory may not necessarily be an impediment to empirical testing, which can be achieved via rigorous experimental designs and survey experiments with representative samples. Three survey experiments in cooperation with Ipsos Mori UK were carried out weeks before Britain’s 2016 EU referendum to test the hypotheses derived from prospect theory. On the one hand, the results show that prospect theory’s reference point could not be confirmed for the entire electorate but could be an explanation for outcomes for specific subsamples (i.e. the unmarried, unemployed, and parents). In addition, Quattrone and Tversky’s (1988) ratio-difference principle could not be confirmed. On the other hand, as regards voter’s turnout, the results show that the British voter did fall for the voter’s illusion as set out by Quattrone and Tversky (1986); a paradox to the rational voter’s model, considering the voter’s single vote to be diagnostic of millions of other votes. Thus, British voters were more likely to turn out when informed that the undecided voters will determine the outcome of the referendum, a result that deviates from the voter’s rational model. While the voter’s illusion phenomenon is found to be more influential for the unmarried, it wasn’t confirmed for non-parents, employed and female voters. Meanwhile, the result of a lab experiment didn’t abide by the conventional level of statistical significance but showed tentative support (p<.1) for the suggestion that the voters in the EU referendum regarded Leave as a risky decision while Remain as the risk-averse one. The latter may reaffirm though the importance of risk in the EU referendum which in principle has a core essence in prospect theory. All in all, considering the thesis’ confirmed and null results this PhD
aspires to suggest insights from prospect theory as a possible alternative theoretical model for voter’s choice and turnout in Britain’s EU referendum of 2016, sitting at the intersection of the other EU referendum schools. Naturally, future work may test the thesis’ results further in order to evaluate prospect theory, in conjunction with other relevant literature, as a potential angle of EU referendum voting.
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My first academic encounter with Prospect Theory took place during my postgraduate studies at University College London (UCL), where I graduated from the M.Sc Cognitive and Decision Sciences with Distinction. It is there that 8 years after Kahneman’s Nobel Prize I was taught the details of the revolutionary empirical findings of prospect theory. I owe my significant research influence from prospect theory to Professor David Lagnado, then Course Director of the Masters and also lecturer in the class “Judgement and Decision Making”. It was there that I conducted a stimulating research project on the comparison between Prospect Theory and Expected Utility Theory.

Further, I would certainly like to thank my supervisors at King’s College London, namely the first supervisor Dr. Lee Savage as well as the second supervisor Dr. Ruben Ruiz-Rufino. I’d like to particularly thank the first supervisor for warmly accepting in 2013 my bold research idea in political psychology and helping me to develop it. I also thank him for his continuous support and guidance during all the hardship that a PhD undoubtedly entails.

This self-funded PhD is dedicated first of all to my father, who graduated from university at the age of 65 earning his Bachelors degree while he just started his second Bachelors program in Social Theology at the University of Athens. I clearly owe to my professor mother, lawyer sister and incredible father my perennial belief in education, even when it comes at a consequential cost.

As this Brexit thesis was submitted after UK’s exit and deal with the EU, I want to cordially wish the best to the UK and its people, this beloved country that has been nurturing me with top level education for the past 11 years of my life.
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“There is still significant work to be done in incorporating insights from political psychology into the study of voter decision-making in EU referendums.” (Beach, 2018)

CHAPTER I: INTRODUCTION

Was voting in Britain’s 2016 EU referendums a decision under risk that can be accommodated by prospect theory? The overarching research question of this PhD focuses on how voters’ choice and turnout in that historic EU referendum can be explained as a decision under risk through the risk-ruled prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Despite the richness of literature on voting behaviour, a consistent theoretical model explaining voting behaviour in EU referendums is yet to be established (Hobolt, 2006). Instead, existing literature on electoral behaviour in EU referendums focuses mostly on a single case level, providing results which are hard to generalise. Particularly, there are three main schools in literature accommodating voting in EU referendums: the “second-order election”, the “substantive issues” and a third one according to Hobolt (2005) titled “utilitarian expectations”, which attempts to explain voting in EU referendums based on expected utility theory. The latter, upon which the school of utilitarian expectations is based, is cited to have generally received extensive criticism. This thesis offers insights towards a new theoretical model informed by what scholarship discusses as the alternative to expected utility theory, prospect theory, with the scope to contribute to the explanation of voting behaviour in the 2016 EU referendum. Besides, the nature of EU referendums, choosing between the status quo and a new amendment in the country’s system regarding its relations with the European Union, naturally creates an environment of uncertainty. Further, given that the school of substantive issues is considered to be the most effective in explaining the vote in the Brexit referendum (e.g. Fisher and Renwick, 2018; Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016; Evans, Carl and Dennison, 2018; Goodwin and Milazzo, 2017), this thesis aspires to contribute to it by discussing through prospect theory models for the importance of the EU referendum issues of economy and unemployment. Meanwhile, the thesis argues that the second-order school has
limited validity for the Brexit referendum where turnout was unusually high. Moreover, the thesis reviews in detail more EU referendum perspectives e.g. the EU referendum campaigns, identity politics, cue-taking and institutional design, and discusses how prospect theory can speak to those too.

*Why prospect theory might be a more “profitable” avenue of EU referendum voting*

Prospect theory is suggested to be able to cast light on an understudied angle of EU referendum behaviour based on the mere mechanisms of human decision-making, next to the descriptive character of other EU referendum work. It is aspired that the latter can constitute the benefit of the prospect theory route compared to other EU referendum scholarship, the fact that there is a behavioural theory in this approach that can explain EU referendum voting behaviour. Instead, the other schools of substantive issues, second-order and other perspectives like EU referendum campaigns, identity politics, cue-taking and institutional design treat voting behaviour descriptively but without considering a behavioural theory per se. Hence, empirical results of scholarship showing that an EU referendum issue is more impactful than the other or that the EU referendum was seen as a second-order election, or that a campaign frame or partisan cue influenced voter’s vote, do not seem to establish the grounds for a behavioural theory of EU referendum voting. The reason for that is that there isn’t a behavioural theoretical model behind them. Nevertheless, the EU referendum school that has a behavioural theory model in place is utilitarian expectations, but that was based on expected utility theory which the thesis’ upcoming chapters show that it has been widely cited as flawed. Therefore, prospect theory, which was originally conceived as an alternative to expected utility theory, may show the pathway toward a valid theoretical model of voting in EU Referendums. This is the reason why this PhD was
designed in the first place, to contribute to EU referendums scholarship with an alternative theoretical perspective through prospect theory.

However, this thesis provides both confirmed and null results. On the one hand, this PhD showed tentative support in a non-conventional level of statistical significance (p<.1) to the suggestion that the Brexit vote was a decision under risk. Moreover, it confirmed through survey experiments that prospect theory’s reference point mattered only for the unemployed, unmarried and parent voters. Also, that British voters may have turned out paradoxically to Downs’ (1957) rational model but in line with voter’s illusion phenomenon, something that worked for the entire UK electorate as well as particularly for the unmarried subsample. On the other hand, this thesis didn’t confirm the effect of prospect theory’s reference point as a main effect for the entire British electorate, it didn’t confirm at all the ratio-difference principle, while it didn’t confirm either the hypotheses regarding the effect of voter’s illusion on the employed, non-parents and women voters. As a result, it can be said that the research goal of this PhD was only partially achieved. All in all, this thesis provides some potentially useful insights in the explanation of EU referendum voting through a critical view of the empirical chapters’ results, while simultaneously taking into consideration the criticism that prospect theory has received in social sciences, which is also presented later in the thesis.

The thesis’ overview

The thesis is structured in eight chapters: the introduction, the EU referendum schools’ review, the review of prospect theory in voting behaviour, the theory chapter, the methods chapter, the first empirical chapter, the second empirical chapter and the discussion chapter. Currently, the introduction summarizes the thesis, discusses the PhD’s theory, methods and the results, as well
as the political landscape ahead of Britain’s crucial EU referendum, which sets the environment that the PhD’s subjects were exposed to weeks ahead of the referendum.

EU referendum schools

The thesis’ second chapter is the review of EU referendum schools. First of all, it discusses the three main EU referendum schools, starting from the second-order school (e.g. Reif and Schmitt, 1980; Reif, 1985; Reif and Schmitt, 1997; Schmitt and Mannheimer, 1991; Marsh and Norris, 1997; Van der Eijk & Franklin, 1996; Franklin and Wlezien, 1997; Franklin, van der Eijk and Marsh, 1995; Anderson, 1998; Schmitt, 2005; Franklin, Marsh and Wlezien, 1994; Marsh, 1998; Franklin, 2002; Franklin, Marsh and McLaren, 1994; Ferrara and Weishaupt, 2004) and continuing with the substantive issues (e.g. Garry, Marsh and Sinnott, 2005; Glencross and Trechsel, 2011; Szczerbiak and Taggard, 2004; Lequesne and Schmitter, 2010; Hobolt, 2006; Goldberg and Vreese, 2018; Elkin, Quinlan and Sinnott, 2011; Siune and Svensson, 1993; Siune, Svensson and Tonsgaard, 1994; Svensson, 1994, 2002) and then the utilitarian expectations (e.g. Hobolt, 2005, 2006, 2016; Tucker, Pacek and Berinsky, 2002; Gabel, 1998a, 1998b; Gabel and Palmer, 1995). The chapter provides detailed sections for each EU referendum school with the criticism they have received as well as how prospect theory can speak to them separately. In addition, the chapter presents critically the other EU referendum perspectives of identity politics, EU referendum campaigns, cue-taking and institutional design discussing also the criticism they have received as well as how prospect theory can speak to them too.

While scholars claim that the second-order school isn’t a suitable approach to accommodate the vote in Britain’s EU referendum of 2016 due to its very high turnout (Birch, 2016) and the reduced reliance on partisanship (Swales, 2016; Vasilopoulou, 2016; Birch, 2016), others conclude that it is the substantive issues school that best explains the 2016 EU referendum (e.g. Fisher and
Renwick, 2018; Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016; Evans, Carl and Dennison, 2018; Goodwin and Milazzo, 2017; Ford and Goodwin, 2017; Vlandas and Halikiopoulou, 2018; Becker, Fetzer and Novy, 2017; Colantone and Stanig, 2018; Langella and Manning, 2016; Bell and Machin, 2016; Darvas, 2016). What is more, out of all issues, the economy has been found to be the most impactful issue in the EU referendum (Curtice, 2017). Naturally, the idea of voting according to the benefit that the EU contributes to the economy drew my research syllogism towards the third EU referendum school of utilitarian expectations (Hobolt, 2005). According to that school, the vote in the EU referendums is a rational economic calculation of costs and benefits (Gabel, 1998a, 1998b; Gabel and Palmer, 1995). However, the third EU referendum school of utilitarian expectations, through which the vote in the EU referendums had been discussed (e.g. Hobolt, 2005, 2006, 2016; Gabel, 1998a, 1998b; Gabel and Palmer, 1995) is based on a theory that has received extensive criticism, expected utility theory (e.g. Knight, 1921; Allais, 1953a, 1953b, 1953c). Instead, prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) was introduced as a sound alternative to expected utility theory addressing the latter’s flaws (Levy, 2003; Vis and Kuijpers, 2018; Camerer, 2005), not only in general but also specifically in political science (Vis and Kuijpers, 2018). Besides, prospect theory for which Kahneman received the Nobel prize in 2002 is considered to be one of the most influential theories to date and the base of behavioural economics as a whole (Mercer, 2005).

Prospect theory in voting behaviour

In the third chapter, which discusses prospect theory’s accommodation of voting behaviour, it is argued that Mercer (2005) counted the citations of prospect theory to be 2000. The following discipline analogy locates an important scholarship gap that this research attempts to fill: half of those citations were made by economics, finance, business and management papers, one out of
three were located in psychology journals and the rest was scattered around several research areas, from mathematics to engineering. Surprisingly, only 1/20 of the citations came from the field of Political Science. Moreover, Mercer finds that from 1986 to 2005 prospect theory was cited only 8 times by articles published in the American Political Science Review. The biggest part of literature comes from International Relations, addressing research questions about decisions of US Presidents or other political leaders (Haas, 2001; Brockner and Rubin, 1985; Iriye, 1987; Farnham, 1997; Welch, 1993; Fanis, 2004). Until now, the situation hasn’t changed significantly, while at the same time many scholars call for the importance of prospect theory and the need of political science to study it more systematically (Levy, 2003; Mercer, 2005; Vis, 2011; Vis and Kuijpers, 2018). The aim of this PhD though isn’t just to add to the existing one more citation of prospect theory. Instead, its scope is to provide an original way to look at EU referendum voting by making prospect theory principles relevant to voting behaviour in Britain’s 2016 EU referendum. Why didn’t the political scientists systematically use in the first place prospect theory to interpret voting behaviour, meaning turnout and voter's choice?

The same chapter outlines the main challenge that political science scholars faced in their initial attempts to apply prospect theory. According to Vis (2011), the main “obstacle” that scholars have been facing in their endeavour to use prospect theory in voting behaviour has been its laboratory origins and thus the methodological “limitations” of prospect theory. This thesis endeavours to address this through an original methodological approach that intends to provide added value to political science. Critics had also called it the “aggregation problem” (Levy, 1997a, 1997b). The inductive origins of prospect theory, examining individual behaviour of choice, have been criticised as a method that cannot accommodate collective thinking or decision-making. The critics hold that decision-making which is monitored in a lab isn’t able to account for groups of people (Vis, 2011). Mercer (2005) claims that political scientists don’t have a “problem” with the
inductive nature of prospect theory per se but they seem to show some “resistance” to the discipline of psychology in general.

Nevertheless, it is well known that Kahneman and Tversky (1979) conducted their influential research by using controlled designs in laboratory environments. On the contrary, the vast majority of political scientists use field experiments to test their research hypotheses. It could be said that this is due to the scope of political science to study the position of political stakeholders in complex political systems and real political environments. Particularly when it comes to electoral behaviour one may credit political science scholars who believe that only a field experiment is able to maintain the “as if random” condition (Dunning, 2008). This means that according to the majority of political scientists a field/natural experiment is able to provide representative findings for the population in democracies. Instead, controlled laboratory environments allegedly lack validity to account for collective decision-making. This is what Levy (1997b) discussed as the “aggregation problem”. While underlining the importance of prospect theory and its findings, Levy (2003) browsed through literature where findings can be explained by the core principles of Kahneman and Tversky’s (1979) prospect theory. Although he acknowledges the potential for more systematic research, he also stresses that it is a challenge for prospect theory’s lab approach to be transferred to a field experiment.

Consequently, this thesis will address this obstacle that had pushed away political scientists from applying prospect theory’s context to answer voting behaviour questions by going farther from its lab experiment origins. This PhD tests specific aspects of prospect theory’s adaptation to EU referendum behaviour in survey experiments through representative samples of the UK population in cooperation with Ipsos Mori UK. In order to do so the thesis will review in detail the influential work of Quattrone and Tversky (1986, 1988), which was the first attempt to apply prospect theory to candidate choice and turnout. Their results thus about voter’s choice and turnout
will be discussed from their empirical work on the “reference point”, the “ratio-difference principle” and “voter’s illusion” within the lab structure of Quattrone and Tversky’s studies. Given that they had discussed for the first time the pertinence of prospect theory to voting behaviour, the approach of this PhD is to adapt Quattrone and Tversky’s research structure to Britain’s EU referendum of 2016.

Particularly, the reference point in prospect theory refers to a paradoxical phenomenon for expected utility theory’s rationality whereby voters’ perceived position of the reference compared to the position of the current situation results in risk-seeking or risk-averse votes. To be noted that according to prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), decision-makers take risk-seeking decisions (risky vote) when placed in a domain of losses. For the reference point this is the case whereby the British voter is placed in the position of the reference (i.e. economy of the European Union) being above the status quo (i.e. current economy of the UK). According to prospect theory, this happens to minimize losses. Contra, prospect theory holds that when decision-makers are placed in a domain of gains, which for the reference point is when the position of the reference is higher than the one of the status quo, then she makes risk-averse decisions (status-quo vote) to maximize gains. Additionally, Quattrone and Tversky’s (1988) ratio-difference principle refers to another paradoxical phenomenon for expected utility theory’s rationality where only the wording of the framing, either positive (i.e. employment) or negative (i.e. unemployment) can switch around the voter’s choice despite the prospects’ value remaining exactly the same. Quattrone and Tversky explained that with the example of the gain from 1 to 2 pounds which is felt greater than the gain from 3 to 4 pounds, albeit same (1 pound). They attributed that to the difference in the ratio of the prospects (ratio-difference principle) between the former (2/1=200%) and the latter case (4/3=130%). They underlined that phenomenon as another major failure of expected utility theory to accommodate voter’s choice. Finally, Quattrone and Tversky’s (1986) voter’s illusion refers to an additional paradoxical phenomenon
for expected utility theory’s rationality whereby voters’ turnout decision is determined by the information received about the turnout behaviour of fellow partisans. When the voters are informed that fellow partisans will determine the ballots’ result, they go to the polling station more massively. The latter challenges Downs’ (1957) rational voter model which was based on expected utility theory. Overall, this thesis positions Quattrone and Tversky’s (1986, 1988) historic work of transferring prospect theory into voting behaviour as a reference for the adaptation of prospect theory in EU referendum voting. Hence, the empirical part of this research will test the external validity of those researchers’ findings within a methodological design which is customized to the EU referendum question through representative samples of the UK population.

Finally, the thesis’ third chapter discussing prospect theory’s application to voting behaviour presents a general and detailed criticism of prospect theory as theory in social sciences which provides an overview of the flaws of prospect theory itself. That section is important in order to maintain a balanced perspective on how prospect theory has been critically viewed by scholars. It also makes the clear statement that this thesis suggests prospect theory as an alternative way to look into EU referendum voting despite all of its acknowledged flaws articulated in the literature review. Therefore, this PhD doesn’t suggest prospect theory as a panacea for EU referendum voting but instead the empirical results of this research can provide some useful insights for voting behaviour in EU Referendums, especially when considered in conjunction with the other EU referendum perspectives.

*The theory chapter*

The fourth chapter of this thesis is the theory chapter which outlines and justifies the research’s theoretical framework. It describes in detail the specific theoretical assumptions and the 14 hypotheses tested throughout the thesis’ empirical chapters. This chapter consists of three
theoretical parts and five sections. These sections present the hypotheses tested through this PhD’s methods: three survey experiments and one lab experiment. Part I of the thesis’ theory reflects on voter’s choice in Britain’s EU referendum of 2016. First, that chapter explores whether Britain’s in or out of the EU referendum should be viewed as a vote under risk. In a pertinent referendum research Nadeau, Martin and Blais (1999), exploring voting behaviour in the 1995 Quebec referendum, found that the electorate’s general inclination towards risk shaped the referendum’s outcome. They showed that risk-avoiders voted more for the status quo in that referendum than risk-seekers. Hence, in the first section of the theory chapter Hypothesis 1 is introduced for Britain’s EU referendum anticipating the general risk-takers to vote more for Leave than the general risk-avoiders who should vote more for Remain. Since the thesis relies on prospect theory which is governed by risk-seeking and risk-averse decisions (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), H1 was conceived to be of primary importance. At the second section of the theory chapter the discussed reference point is theorized, as it was launched by prospect theory and adapted by Quattrone and Tversky (1988) to voter’s choice. Specifically, this section discusses the test of the validity of the reference point in the EU referendum vote. It thus anticipates that at the high reference point, which is where the EU grows more than the UK and the voter is thus placed in a domain of losses according to prospect theory, the voter would be risk-seeking by voting for Leave in the referendum (H2). Instead, at the low reference point, where the EU doesn’t grow more than UK, the voter is placed in a domain of gains and thus should be making the risk-averse decision to vote for the status quo, remain. At the third section of the theory chapter the ratio-difference principle is adapted in the context of voter’s choice in the EU referendum. It is hypothesized there that in the high ratio frame of unemployment the voters will vote more for the risk-averse remain option than the employment frame, which is of lower ratio, despite the frame values being exactly the same (H3). This is justified in prospect theory terms because the high ratio unemployment frame that informs about negative unemployment prospects post Brexit
should lead more to risk-aversion maximizing the status quo (gains) relating to the UK’s current unemployment rate. Both the reference point and the ratio-difference principle, as in Quattrone and Tversky (1988), had challenged the rationality of the rational voter addressed by expected utility theory.

Part II of the PhD’s theory addresses turnout behaviour in the EU referendum. The section begins with the discussion of Quattrone and Tversky’s (1986) voter’s illusion phenomenon with which those researchers exerted criticism against Downs’ (1957) rational voting model. Adapting though voter’s illusion and testing it in the environment of UK’s EU referendum required amendments as regards the partisanship element. Besides, partisanship had little power in fully explaining the referendum’s result (Swales, 2016; Vasilopoulou, 2016; Birch, 2016) while the referendum campaigns supporting Remain and Leave exerted influential polarization effects and assimilated closely to political parties (The Electoral Commission, 2016). Hence, the PhD’s theory was led to anticipate that the “partisanship” aspect in Quattrone and Tversky’s (1986) work should be replaced by the affiliation to the polarizing leave/remain campaigns. Moreover, the non-aligned voters to which Quattrone and Tversky (1986) referred were theorized as more relevant to be replaced by the notion of the millions of undecided voters who existed prior to the referendum’s ballots (Fenner, Leven and Loizou, 2018; Howard and Kollanyi, 2016; Vasilopoulou, 2016). Consequently, the adaptation of Quattrone and Tversky’s voter’s illusion to the turnout question of the EU referendum anticipated that voters will consider to a greater extent their vote as diagnostic of millions of other votes when exposed to the frame informing that the undecided voters will determine the referendum’s outcome compared to the frame showing that the campaign followers will shape the result (H4).

Part III of the theory chapter explores the moderating effects of demographics on the EU referendum vote seen through the prism of prospect theory. Influenced by scholarship’s substantial
volume on demographics explaining the leave outcome of June 2016 (e.g. Hobolt, 2016; Kaufmann, 2016; Barslund and Ludolph, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2018; Antonucci, Howarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017), this thesis hypothesizes a number of heterogeneous treatment effects for demographics, within the prospect theory design of the three survey experiments. Specifically, the third part of the PhD’s theory focuses on the rather understudied demographics in the EU referendum: marital status, parenthood, employment and gender. The reason for doing so is the pertinent literature for the thesis’ prospect theory model about the relationship between risk and marital status, parenthood, employment, gender as well as conservatism. In a nutshell, scholars consider the married to be conservative (Weisberg, 1987; Hayes, 1993; Plissner, 1983; Welch and Thomas, 1988; Deitch, 1988; Poole and Zeigler, 1985; Carroll, 1988; Kingston and Finkel, 1987; Chapman’s, 1985; Miller, Shanks and Shapiro, 1996) who turn out (Wilensky, 1961; Wolfinger and Wolfsperger, 2008; Wolfinger, Rosenstone and Rosenstone, 1980; Strate et al., 1989; Timpone, 1998; Plutzer, 1998, 2002; Plutzer and Wiefek, 2006; Bramlett and Mosher, 2001; Squire, Wolfinger and Glass, 1987; Stoker and Jennings, 1995; Denver, 2008; Crewe et al., 1977; Swaddle and Heath, 1989) and take less risks than the married (Grabble and Lytton, 1998; Roussanov and Savor, 2014; Chaulk, 2000; Klein and White, 1996), parents to be also conservative (Stalsburg, 2014; Elder and Greene, 2012; Arnold and Weisberg, 1996; Jost et al., 2003; Kerry and Murray, 2018; Weeden and Kurzban, 2014; Eibach, Libby and Ehrlinger, 2009; Buckels et al., 2015) and risk-averse people (Allman et al., 1998; Chaulk, Johnson and Bulcroft, 2003; Warner and Cramer, 1995; Eibach and Mock, 2011; Wang, Kruger and Wilke, 2009; Cameron, DeShazo and Johnson, 2010; Spivey, 2010) who abstain (Wolfinger and Wolfsperger, 2008; Jennings, 1979; Sandell and Plutzer, 2005; Van Ham and Smets, 2012; Kern, 2010), the employed to be risk-averse (Gachter, Johnson and Herrmann, 2010;
Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004; Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004) who turn out (Stockemer and Scruggs, 2012; Anderson and Beramendi, 2008; Dahl, 2006; Galbraith and Travis, 2009; Goodin and Dryzek, 1980; Lister, 2007; Mahler, 2002; Merrifeld, 1993; Schattschneider, 1960; Solt, 2008; Verba, Schlozman and Brady, 1995; Nguyen and Garand, 2007) while women are said to have remained undecided until the last moment of EU referendum’s ballots (Haastrup, Wright and Guerrina, 2016; Katwala and Ballinger, 2016). The above assumptions are expressed through hypotheses H5-H7 for the unmarried, H8-H10 for parents, H11-13 for the unemployed and hypothesis H14 for the female voters. These 10 hypotheses reflecting on the moderating role of demographics in the adaptation of prospect theory to voting behaviour produce results that accommodate both voter’s choice and turnout in the EU referendum, seen through the prism of the PhD’s theory. The overall scope for the addition of the heterogeneous treatment effects in this research is to present throughout this PhD a more complete theoretical proposition inspired by the substantially studied role of demographics in the Brexit referendum.

The methodological approach

The thesis continues with its methods chapter which outlines in detail the methodological approach followed to test the three parts of the theory chapter and its relevant hypotheses. This chapter consists of 10 sections. The first section is the chapter’s introduction. At the second section a brief introduction provides information about the use of survey experiments in political science, because three survey experiments were conducted to address the issue that the critique against prospect theory refers to, its laboratory origins. The third section of the chapter presents the research design of this PhD consisting of three survey experiments in cooperation with Ipsos Mori UK and one lab experiment. The chapter’s fourth section outlines the operational definitions, the
dependent and independent variables. Section five of the methods chapter provides word for word the research questions inserted within different survey waves of Ipsos Mori UK. These distinct pairs of questions represent the experimental frames that test the reference point, the ratio-difference principle and voter’s illusion. The sixth section of the methods chapter is devoted to the details of the lab experiment. That section contains information regarding the sampling method followed, the participants, the design and operational definitions, the procedure as well as the materials and instruments used. Subsequently, the seventh section of the methods chapter presents the research questions exhibited in the lab, which reflect on the risk propensity and the question assessing the unbiased vote for leave or remain in the referendum regardless of the framing stimuli. At the eighth section of the methods chapter the data collection approach is outlined for the survey and the lab experiment’s data. At the chapter’s ninth section detailed specifications about the analysis followed for the survey and lab data were articulated as well as the statistical methods applied. The methods chapter ends with its conclusion section.

The empirical chapters

The thesis continues with the two empirical chapters that discuss the results of the hypotheses’ tests at the three survey experiments and the lab experiment. The first empirical chapter is dedicated to voter’s choice in the EU referendum. This reflects on two survey experiments conducted in cooperation with Ipsos Mori UK, one to test the hypotheses regarding the reference point and another testing the hypotheses about the ratio-difference principle. The analysis finds that the reference point is not statistically confirmed as a main effect for the entire electorate but solely for Britain’s unmarried, unemployed and parents within a representative sample of the UK electorate. This means that, paradoxically to the expected utility theory, the unmarried, the unemployed and the parents voted in the EU referendum according to prospect theory’s principle
of the reference point. However, in the second empirical chapter the analysis shows that the ratio-difference principle was not confirmed at all. Relevant discussion is presented there estimating the possible reasons leading to those null results.

The second empirical chapter analyses the results of the third survey experiment conducted in cooperation with Ipsos Mori UK, which is relevant to the turnout hypotheses testing voter’s illusion in the EU referendum. The results of the analysis confirm voter’s illusion for the entire UK population and particularly for the unmarried but not for the employed, non-parents and female voters. This means that, paradoxically to Downs’ (1957) rational voter model, the decision to turn out was dependent on information received informing that the undecided voters will go to the polling station and shape the referendum’s result.

Finally, the results of the lab experiment conducted at the premises of King’s College London confirmed at a non-conventional significance level Hypothesis 1. The latter shows that voting in the EU referendum can be seen as a decision under risk whereby those who generally take risks voted for risk-seeking Leave and those who don’t take risks voted for the risk-averse Remain (H1).

Thereafter, the thesis ends with its discussion chapter which elaborates on the key takeaways of this PhD research, the criticism of its theory as well as the suggested direction for future scholars to test prospect theory as an alternative plausible model of EU voting next to the other EU referendum schools and perspectives as well as to other polities.

The stakes of the Brexit referendum

On another note, it is essential to devote a section in the thesis’ introduction to discuss the setting prior to Britain’s EU referendum of June 2016, as this was the environment that the PhD’s subjects were exposed to days before the ballots, either through survey experiments or inside the
lab. This historic referendum took place on June 23, 2016 and 51.9% of the votes were cast in favour of Leave while turnout reached 72.21%. Meanwhile, Britain’s most significant constitutional decisions of the past twenty years have been made based on referendums. By that Glencross (2015) referred to devolution in Scotland and Wales in 1997, the Belfast Agreement of 1998, the attempt to replace the “first-past-the-post voting” in 2011 and the Scottish independence referendum in 2014. Not to omit certainly the 1975 referendum, the first one in the whole country, where the UK citizens were asked if they would like the country to be part of the European Economic Community (Smith, 1999; Saunders, 2018). Although then the citizens voted to stay inside the EEC, the debate on UK’s deeper European integration has been escalating during the past 40 years. There is no doubt that the EU has changed considerably in the meantime with an independent and solid European Parliament, numerous civic and defence collective projects, the creation of the Schengen Area to promote free movement and the creation of the single currency monetary union, Eurozone. Despite the growth and development of the EU project, there is scepticism whether the question of the 2016 referendum after 40 years was truly different, particularly given that the UK had already stayed outside the Schengen Area of free movement and the Euro currency, two cornerstone evolutions of the EU (Glencross, 2015). Amidst discussions over the 2016 referendum’s question, it is important to discuss here what was at stake for the British voter ahead of the ballots of June 2016, because this PhD embraces the 2016 Brexit environment in order to test its risk-ruled prospect theory assumptions.

(2017) puts it, the term was invented in Britain in the 1990s “building off” Thatcher’s 1988 speech in Bruges. Although scholars have attempted to define Euroscepticism (e.g. George, 2000; Hooghe and Marks, 2007; Condruz-Basescu, 2014), Usherwood (2018) insightfully stresses that there isn’t one Euroscepticism as ideology but rather various ideologies can be Eurosceptic. With the latter being the first characteristic of Euroscepticism the other two are the critical reactiveness that it endorses without a solid alternative at hand and its diversity in practices e.g. public opinion mobilization, party politics (Usherwood, 2018). The same scholar introduced three eras in Euroscepticism: a) the early first era up to 1973 shaping the view of the UK being either inside or outside the EU with no compromise b) the second era which stood for the adaptation of the EU edifice from within the EU membership and c) the third era which follows Brexit which creates existential questions about Euroscepticism after UK exits the EU.

Although Euroscepticism expands beyond Britain in other member states like France (e.g. Usherwood, 2002, 2004, 2007, 2013), the uniqueness of British Euroscepticism lies in the country’s geography, governance and culture (McCrary, 2017; Geddes, 2003; Grant, 2008). Indeed, from a geography point of view, the country doesn’t have borders with other EU member states other than Ireland, while ocean is what distances the island from mainland Europe (McCrary, 2017). Grant (2008) discusses Britain’s historic orientation beyond the European continent referring to the British colonies around the world. Furthermore, EU’s “supranationalist” governance whereby the EU law overrules the members’ law doesn’t match with Britain’s preferred system of governance which is based on intergovernmental collaboration (Geddes, 2013). What is more, following the Maastricht treaty there have been political parties in the UK that have been nurturing through Euroscepticism (Usherwood, 2017). UKIP, the United Kingdom Independence Party, was considered to be a nationalist (Hayton, 2016) and single-issue party with great success in Britain which had been campaigning for the country’s exit from the EU since its
creation in 1993 (Usherwood, 2008). This party has received support from the “left-behind” in the UK for its hard Euroscepticism, its opposition to immigration and the criticism over Westminster’s politics (Ford and Goodwin, 2014). However, although the referendum’s result was what UKIP had been advocating for, its leader Nigel Farage or else the “best-known face of British Euroscepticism” (Usherwood, 2016) stepped down two weeks after the leave result. Overall, UKIP’s scope for existence in the post Brexit era has been debated by scholars while criticism has been exerted because it is leaning towards populism and radical right (e.g. Usherwood, 2016a, 2016b, 2016c, 2016d, 2019; Goodwin and Dennison, 2018).

Besides, historically Winston Churchill (1930) had said about the country: “we are with Europe, but not of it”. The promise for the UK referendum appears aligned with the “British superiority” or “exceptionalism” in relation to the EU (Gifford, 2010; Hayton, 2016; Cini and Borragan, 2016; Geddes, 2005). Nevertheless, the EU integration matter had not been really able to judge a win or loss in previous British elections. The UK political parties after the 1975 referendum tended always to downplay the prominence of the EU question in their campaigns (Mair, 2007). According to Oppermann (2008), even Blair’s government that was amicable towards the EU hadn’t highlighted the importance of the EU integration topic. Consequently, citizens were not well informed about the stakes of the EU question, as Gifford (2010) maintains, but referendums with an international character like the EU attracted the attention of the voter as a vague promise (Glencross, 2015).

Certainly, David Cameron wasn’t the first UK Prime Minister who tried to capitalise politically on referendum promises for renegotiations with the EU. On the eve of the 1975 referendum on UK’s participation at the European Economic Community (ECC), the then Labour Prime Minister Harold Wilson had committed to renegotiations of Britain’s position in the ECC, particularly concerning the funding contributions of the country towards the block (Denton, 1984). A main difference between the two UK referendums though is that the one in the 1970s was about the
European economic union, while the 2016 referendum was about the European political union, which naturally stands for a much thorough question.

Coming down to the selection of the UK referendum as the right political environment to test the PhD’s theory, this is the political event of high importance that this research of EU referendum voting under risk was seeking. David Cameron had reiterated in 2013 his strong will to renegotiate the terms of the relations of the UK with the European Union (Usherwood, 2013) when he committed to “ask for a mandate from the British people for a Conservative government to negotiate a new settlement with our European partners in the next parliament” (The Telegraph, 2013). Those renegotiations that the UK Prime Minister had announced in 2013 referred mainly to topics like immigration, welfare benefits, increased veto power of the member states’ parliaments and abolishment of the “ever closer union” section from the EU treaties (Glencross, 2015). Naturally, as Glencross (2015) puts it, the UK-EU renegotiations could have had two possible outcomes: mutually agreed changes in the treaties to satisfy Britain’s interests or unilateral reforms made by the UK. This debate led to a climax and dead-end in the relations, making a British exit (“Brexit”) an imminent reality. According to Glencross, the UK’s in or out of the EU referendum had aimed at exerting pressure on the EU member states to concede with the Tory demands. Indicatively, representing the cynicism of the British conservative party that won May’s 2015 election, Boris Johnson, the then Mayor of London, had maintained in 2014: “if we can’t get that reform, then the second option is also attractive”.

Concerning the effects of the “second option” of Leave upon which the notion of risk was conceived for this thesis, there had been an ongoing debate since 2013, when David Cameron launched the “referendum promise”, and naturally the impact’s estimations varied. In Glencross’ view (2015), there could have been no way that the country broke all ties with the EU, for it would always be in the interests of the UK to have an institutionalisation of its relations with the block.
One of the major areas that “Brexit” had been assumed in the pre-referendum era to influence the country was undoubtedly trade. The removal of the UK single market would signify a major economic collapse, impeding the economy from beneficial WTO trade terms (Glencross, 2015). Moreover, the LSE based Centre for Economic Performance Policy in their relevant study (Ottaviano et al., 2014) had noted that more than 50% of British exports had as destination the EU and that this was equivalent to 15% of the country’s GDP. Further, the same LSE scholars posit there also that if Britain were to decide to leave, it would be inevitable that trade would be substantially damaged since there would be much higher tariff and non-tariff barriers for trade with the European block. Moreover, Ottaviano et al. (2014) had constructed a quantitative trade model to forecast Brexit’s trade impact with two scenarios, a pessimistic and an optimistic one. In the pessimistic scenario Brexit would cause a 50 billion pound worth recession or 3.1% of the GDP and in the optimistic scenario the recession would be limited to 1.1% or 18 billion pounds. This was the economic disaster that loomed only in the optimistic scenario of their simple “static” model. When they attempted though to enlarge their model into an extensive and more realistic one with “dynamic losses”, then the scenarios were even starker. Their optimistic scenario in that case would reflect on 2.2% recession, while the pessimistic one would cause a horrible economic crisis between 6.3% and 9.5%, equivalent to the economic crash of 2008 or even worse. Of course, at the same time there was a number of Eurosceptics and conservatives who had been claiming that Brexit would actually bring growth to the UK economy.

According to experts in the pre-referendum era, trade wouldn’t have been the only sector that the UK would see significant changes on the scenario of a “No” outcome in the 2016 referendum. Another major area of debate had been health and safety at work regulations. Eurosceptics had long criticised how the UK shoulders extreme financial costs by adhering to the EU policies in this regard. Minford, Mahambare and Nowell (2005), for example, had calculated those costs for the
UK GDP up to the impressive figure of 6%. Hence, it had been supported by experts and also part of the electorate that Brexit could have boosted the British economy thanks to the facilitation of the operations of the British SMEs and the overall benefit to the economy. Glencross (2015), on the other hand, had seriously doubted whether the EU could have ever been able to exclude the country from that costly regulatory net, since there needs to be parity among EU member states for that.

Moreover, a major EU flag has always been the non-compromised freedom of movement of people and goods. Goods left aside, as said previously with the trade repercussions, free movement of people has long been a point that met criticism by Eurosceptics, claiming the burden that the UK economy bares to share social welfare with immigrants from the block (Glencross, 2015). It is assumed though, given the EU’s hard line on this issue, that a Brexit which would secure less employment standards for the EU immigrants in the UK, would possibly cause losses to Britain in relevant EU funding (Glencross, 2015). Besides, when the Swiss decided in 2014 to limit the EU immigration rules in the country, blocking from their welfare system EU member states, the EU answered back with a fund haircut and exclusion from the Swiss Erasmus programme or from the generous Horizon 2020. However, many conservatives, politicians and most of all voters believed moments before the referendum that the EU immigration burden is something that Britain needs to get rid of, in order to save costs for the native population.

The compelling debate on the positive or negative outcomes of the “No” result in the 2016 UK referendum was escalating as the ballot time was approaching. I thus argue hereby why the UK’s in or out the EU referendum on 23 June 2016 was the right momentum for data collection in this PhD. It is mainly because the PhD’s research questions, which are presented in the methods chapter, focus on the estimation of the economic repercussions that a Leave or a Remain result would bring. Previously in this introduction it was stipulated that the economy was the issue with
the greatest impact on the referendum’s vote. Hence, it was exactly upon the economic prospects that a Yes or No vote at the UK referendum would bring to the UK economy and life standards that the PhD’s research design was structured. Those economic prospects were presented as newspaper information, or framing in prospect theory terminology, included in questions inserted in opinion poll survey waves by Ipsos Mori UK. The referendum vote per se stood for the required environment of risky decision-making, as in this thesis Brexit is theorized to be a risky choice, hiding numerous negative or positive effects on the country’s economy and the citizens’ welfare e.g. unemployment. Besides, Ottaviano et al., (2014) had precisely called the Brexit decision a “very risky gamble”, supporting the PhD’s research syllogism to apply prospect theory to accommodate voting behaviour in the EU referendum. The decisive importance that this referendum had for the course of the UK rendered the Yes or No decision as the right vehicle to attain the research’s methodological goal, transfer the lab rooted prospect theory into political behaviour recorded in survey experiments, suggesting thus a concept for a new theoretical model for EU referendum voting. This research thus passes from the laboratory experiments of Quattrone and Tversky (1986, 1988) to representative of the UK population survey waves treating Britain’s EU referendum.

The next chapter of the thesis analyses in depth all EU referendum literature that is essential for the explanation of the design and deployment of this research syllogism. The following chapter commences with a review of theories explaining electoral behaviour in EU referendums (second-order, substantive issues, utilitarian expectations) as well as existing scholarship discussing the voting behaviour of the British electorate in June 2016 together with the criticism they have received and how prospect theory can speak to each one of them. In addition, the other EU referendum perspectives are also reviewed (EU referendum campaigns, identity politics, cue-taking, institutional design), again with the critique they have received and how prospect theory can possibly speak to them too.
In the chapter after that the thesis focuses on the critique against expected utility theory upon which the EU referendum school of utilitarian expectations was based. Thus, prospect theory is mainly presented as a sound alternative to expected utility theory. However, there is limited application of prospect theory to political science and especially voting behaviour. The thesis locates the main issue of prospect theory for political scientists to be its laboratory origin and explains how it addresses it. Subsequently, the chapter elaborates on the initial application of prospect theory to voter’s choice and turnout (Quattrone and Tversky, 1986, 1988) as this PhD adapts their design and findings to the EU referendum context. Hence, a detailed discussion about their findings on the reference point, ratio-difference principle and voter’s illusion are outlined. Also, a detailed criticism of prospect theory as a theory in social sciences is presented for the reader to understand the weak points of the theory as cited in scholarship and have a balanced view over prospect theory.
CHAPTER II: EU referendum voting, what we know so far and how can prospect theory contribute

2.1 Introduction

This chapter consists of 10 sections. First, the chapter begins with its introduction. Second, the second-order school is presented, its criticism and how prospect theory is able to speak to it. Third, the chapter continues with the substantive issues school, the criticism received and how prospect theory can speak to it. Fourth, the literature on the utilitarian expectations school is discussed together with its criticism and the way prospect theory can contribute as an alternative to it. Fifth, identity politics is outlined as literature to explain EU referendum behaviour, together with its critics and how prospect theory is able to speak to it. Sixth, the strand of literature on EU referendum campaigns follows coupled with its criticism and how prospect theory can speak to it. Seventh, cue-taking is presented as another way to explain EU referendum behaviour whereas its weak points and prospect theory’s possible contribution are cited. Eighth, there is a section on the importance of the institutional design in EU referendums, the presentation of its critics and the way prospect theory can speak to it. Ninth, there is a section on the scarce work on risk and prospect theory to explain the Leave vote in the Brexit referendum of 2016. Tenth, the chapter ends with its conclusion section recapitalizing its contribution to this thesis.

Since the first EU referendum of 1972 in France on European integration, 46 EU related referendums have taken place (Beach, 2018). Two main schools in political science explain voting behaviour in EU referendums: the “second-order election” and the “substantive issues” (e.g. Garry, Marsh and Sinnott, 2005; Atikcan, 2010, 2015, 2017; Glencross and Trechsel, 2011; Szcerbiak and Taggart, 2004; Lequesne and Schmitter, 2010; Hobolt, 2006; Goldberg and Vreese, 2018; Elkink, Quinlan and Sinnott, 2011). On the one hand, the second order approach was introduced by Reif and Schmitt (1980) discovering that citizens decide in European elections reflecting their
national government’s satisfaction. Their vote is a reward or punishment towards national incumbent policy makers instead of a focus on the European agenda. On the other hand, the “substantive issues” approach holds that the citizens’ vote is a result of engagement with specific European integration issues (e.g. Siune and Svensson, 1993; Siune, Svensson and Tonsgaard, 1994; Svensson, 1994, 2002; Garry, Marsh and Sinnott, 2005). The following sections provide first of all a critical review of the two main schools, and the chapters continues with the “third” school of utilitarian expectations (Hobolt, 2006) as well as the other perspectives of EU referendum voting of identity politics, EU referendum campaigns, cue-taking and institutional design.

2.2 The second-order school

Regarding the second-order school, Reif and Schmitt (1980) developed their theory by examining the first European elections of 1979 among the then nine EU member states. They introduced the classification between first and second-order elections. First-order elections refer to general parliamentary or presidential elections while second-order to municipality, regional elections and by-elections (Reif and Schmitt, 1980). They claimed that European elections should be considered as second-order elections because compared to first-order they share the following characteristics: lower turnout, larger vote share for minority parties, protest votes against the government, invalid ballots, smaller media exposure and campaigns on external issues to the election’s agenda. Reif and Schmitt attributed these characteristics of the 1979 European elections to the inferior salience of second-order elections for voters compared to first-order. They notice that in European elections there is “less at stake” compared to general elections. The reduced turnout component of second-order elections is attributed to the smaller interest of the electorate in the issue at stake and the poor campaigning about it. They add that invalid ballots are increased
because of voters’ dissatisfaction from first-order elections. Moreover, voters in second-order European elections vote to punish the governing parties and thus smaller parties gain more power than first-order elections while big parties lose vote share.

Reif and Schmitt (1980) underlined that aggregating the election results of the 9 polities of the first European elections doesn’t sum up to a European integration vote but to 9 distinct second-order election votes. Apart from the 1979 European election paradigm, subsequent research corroborated that voters vote in the EU elections based on discontent derived from the result of former national elections (Carruba & Timbone, 2005; Marsh, 1998). Schneider and Weitsman (1996) call that disappointment demonstration in second-order elections the “punishment trap”, for which the electorate falls in European elections/referendums in order to punish or reward incumbent parties. Reif and Schmitt (1980) and subsequent scholars (Schmitt, 2005; Eijk, Franklin and Marsh, 1996; Kavanagh, 2015) added the “voting with the heart” perspective according to which in second-order elections voters vote more genuinely than the first-order and more “salient” elections where they tend to vote more tactically to contribute to the preferred government’s win. Reif and Schmitt (1980) concluded that voting behaviour in the second-order elections, referring to the European elections of 1979, cannot be distinguished from first-order elections in the same polity. Is the second-order approach valid for EU referendums too?

While the second-order school was developed in a study of European elections, scholarship has embraced EU referendums within the second-order election school (Reif & Schmitt, 1997; Reif, 1984; Schmitt, 2005; Kavanagh, 2015). Carruba and Timpone (2005) maintain that literature generally regards EU elections as referendums on national governments’ performance. This is based on the premise that as voters pursue a policy effect with their vote, EU elections serve this purpose to a much lesser extent than national elections, because the European parliament is less impactful than national parliaments (Carruba and Timpone, 2005). Consequently, European voters
by default view EP elections as referendums to express their dissatisfaction with incumbent politicians. Garry, Marsh and Sinott (2005) add that “a referendum is just a general election by another name”. Hence, the second-order school regards EU referendums the same way as European elections, a “by-election” (Reif & Schmitt, 1980; Franklin, van der Eijk, & Marsh, 1995; Reif, 1984, 1985; van der Eijk & Franklin, 1991, 1996a, 1996b; Franklin & Wlezien, 1997; Marsh, 1998).

The second-order theory of Reif and Schmitt (1980) is corroborated by a number of scholars studying subsequent European elections (Reif, 1985; Reif and Schmitt, 1997; Schmitt and Mannheimer, 1991; Marsh and Norris, 1997; Van der Eijk & Franklin, 1996; Franklin and Wlezien, 1997; Franklin, van der Eijk and Marsh, 1995; Anderson, 1998; Schmitt, 2005). Particularly on EU referendums, researchers have adopted the second-order school on the electorate’s voting behaviour (e.g. Franklin, Marsh and Wlezien, 1994; Marsh, 1998; Franklin, 2002; Franklin, Marsh and McLaren, 1994; Ferrara and Weishaupt, 2004; Franklin et al., 1995).

2.2.1 Criticism about the second-order school

However, there is also literature that criticizes the second-order school (Reif, Schmitt and Norris, 1997). In particular, Marsh and Mikhaylov (2010) argued that “Reif and Schmitt do not provide a theory of the European Voter”. Also, Jeffery and Hough (2003) claim that the first/second-order classification is too simplistic to embrace all polities and events. Marsh and Mikhaylov (2010) add that the results of second-order elections are not judged always by second-order criteria but by first-order too. Johns (2011) and Van der Eijk and Franklin (1996) posit that behaviour in second-order elections depends highly on the context, the institutions and voters’ idiosyncrasy. Schakel and Jeffery (2013) underline that regional elections have less chances of revealing second-order specifications. What is more, Koepke and Ringe (2006) discovered that in
central and Eastern Europe the second-order school has little validity because voters in “second-order” elections don’t punish the incumbent government. Reif, Schmitt and Norris (1997) stress that scholarship needs to focus on why the second-order school doesn’t always work among polities. Van der Eijk and Franklin (1996) propose instead a greater focus on the context of the European election and the characteristics of political systems.

What is more, there is scholarship that argues that the European elections despite being framed by Reif and Schmitt (1980) as second-order they have distinctly important meaning for some member states (van Egmond, 2007; Kroh, van der Eijk and van der Brug, 2007; Freire and Teperoglou, 2007; van der Eijk and Franklin, 1996). Moreover, Marsh (1998) cites that in some second-order EU elections the incumbent party recovers losses from previous national elections instead of suffering losses from being voted with punishment motives as Reif and Schmitt (1980) would claim. Other scholars stress that the European elections, although of less importance according to the second-order school, they have been transforming more and more into EU issues than a punishment to national elections (Hobolt and Wittrock, 2011; Van der Brug, Van der Eijk and Franklin, 2007; Clark and Rohrschneider, 2009; Hobolt, Spoon and Tilley, 2009; Hobolt and de Vries, 2016). In fact, Bobba and Quaranta (2019) argue that the 2019 European elections “undermined the paradigm of the second-order elections defined by Reif and Schmitt (1980)” because the Europeans voted focusing on the issue of European integration. Hobolt, Spoon and Tilley (2008) found that the second-order school is not the only way to explain the voting behaviour in the 1999 and 2004 European elections but another key to that is the issue of European integration. Moreover, Hobolt and Wittrock (2011) show that information about European integration can switch a second-order vote to a vote on the basis of the EU issues at stake. In addition, Hobolt and de Vries (2016) find that the 2014 European elections were not decided only based on second-order motives but also on people’s views about the EU which cause the rise in the Eurosceptic parties. Marsh and Mikhaylov (2010) argue that the latter depends on the extent
of integration of European issues in the national agenda. Obviously, if the European issues gain autonomy, then the second-order character will be questioned. Indeed, literature has been reviewing how much integrated the EU issues are in the national political debate (van der Eijk and Franklin, 2007; Hooghe and Marks, 1999; Hix and Lord, 1997). All in all, in spite of the recognized general appreciation and value of the second-order school (Marsh, 1998), as the EU agenda increases awareness and power over the European electorate, the school’s value is challenged.

In particular, a specific problem of the second-order school has been cited to be the “aggregate approach” of election results to compare loss/gain of votes between the European and national elections (Clark and Rohrschneider, 2009), something that doesn’t cast light on the mechanisms behind voters’ defection from the incumbent parties. Besides, the second-order school is based on the “transfer hypothesis” according to which the electorate is content with the incumbent party if it is voted for. However, Clark and Rohrschneider (2009) underline that it is likely that voters vote in European elections for a party irrespectively of the party’s performance in the national elections. However, Hobolt and Wittrock (2011) revisit the second-order model and discover an individual-based pattern of voting behaviour in European elections instead of the aggregate model. Another problem of the second-order election according to Clark and Rohrschneider (2009) is that this school presupposes that there is a difference in the party vote between a European and a national election, whilst this is not always the case. Instead, often voters vote consistently between the first-order and second-order elections.

2.2.2 How can prospect theory speak to the second-order school of EU referendum voting?

Interestingly, viewing EU elections and EU referendums as second-order elections of lower salience than first-order elections whereby voters vote to punish the incumbent government and express dissatisfaction could be relevant to voting under prospect theory. As previously said in the
introduction of the thesis, risk has a key value in prospect theory and voting through the prism of this theory is conceived as voting under risk. According to prospect theory, the decision-maker in a domain of losses tends to make a risky decision while in a domain of gains tends to decide more safely. Moreover, the importance of risk in prospect theory can replace the greater “salience” that scholars attribute to first-order elections compared to second-order (Schmitt, 2005; Eijk, Franklin and Marsh, 1996; Kavanagh, 2015). Hence, it could be said that seen through prospect theory the first-order elections are elections of high risk, or high salience as second-order school literature posits. Instead, second-order EU referendums are of lower salience, or put differently, risk.

The above link between prospect theory’s risk and the salience of first-order elections over EU referendums could lead to an alternative explanation of the second-order school of EU referendum voting, this time through prospect theory. This means that the EU referendums could be viewed as less salient because they are less risky elections than a general election. This is because often the stakes are lower and less decisive in an EU referendum that judges the relation of a member state with the EU. Subsequently, in a less salient/less risky environment the voter is placed in a domain of gains which would lead her according to prospect theory to vote for the safer option, which is the status quo. An example of that could be the referendums for the EU constitution of 2005 which resulted in electorates being risk-averse, voting for the status quo. On the contrary, in a very salient/very risky first-order election, through the prism of prospect theory, the voter would be placed in a domain of losses and thus become risk-seeking, which would make him vote for the more risky candidate. An example of this could be the election of Syriza in Greece’s 2015 general election amidst the Grexit crisis, which is the domain of losses which called for risk-seeking behaviour according to prospect theory. Syriza had been a party of little governing experience which was naturally the risky option compared to the experienced conservative party New Democracy.
In order for prospect theory’s contribution to the second-order school to be more solid, one inescapably must look into scholarship to assess if there is a link between risk and salience. According to Taylor and Thompson (1982), “salience refers to the phenomenon that when one’s attention is differentially directed to one portion of the environment rather than to others, the information contained in that portion will receive disproportionate weighting in subsequent judgments”. Similarly, one of the inventors of prospect theory (Kahneman, 2011) cites that “our mind has a useful capability to focus on whatever is odd, different or unusual”. What is more, Bordalo, Gennaioli and Shleifer (2012) have launched their “salience theory of choice under risk”. According to their theory which is based on the structure of prospect theory, a decision’s outcome depends on the level of salience that payoffs mean to the decision-maker. These researchers found that the mere salience of the prospects can lead someone to an illogical decision towards risk-seeking or risk-aversion. Consequently, one may infer that prospect theory can speak to the second-order school based on the premises of the salience that first-order elections have over EU referendums and how salience has been referenced in literature to shape a decision under risk through prospect theory.

However, this thesis’s scope is not to compare first-order with second-order elections in terms of salience and risk but to introduce prospect theory as an alternative theory of EU referendum voting which, as said in the introduction, sits mainly next to the school of utilitarian expectations, which will be outlined later in this chapter. It is thus important to examine the relevance of prospect theory to EU referendum voting by seeing how it can speak to other EU referendum schools too. Therefore, having discussed how prospect theory can speak to the second-order school, in the following section I discuss how prospect theory can speak to another main school of EU referendum voting, substantive issues.
2.3 The substantive issues school

Can the second-order school accommodate the voting behaviour in Britain’s EU referendum of 2016? At a first glance, one may be sceptical about that given the referendum’s extremely high turnout of 72%, which is the highest turnout in the UK since 1992’s general election (Birch, 2016). Even considering that turnout in Britain’s 2015 general election was only 66.1%, which was the first-order election before the EU referendum, suffices to maintain reservations regarding the applicability of Reif and Schmitt’s (1980) second-order theory to the Brexit referendum. In addition, research shows that partisanship didn’t play a defining role in shaping the referendum’s result (Swales, 2016; Vasilopoulou, 2016; Birch, 2016). The latter contradicts the aforementioned reward or punishment motives against the government that the electorate shares in second-order elections. Consequently, the second-order school doesn’t appear to succeed in accommodating the Leave result (Vasilopoulou, 2016). Which school of EU referendum behaviour literature succeeds instead? Fisher and Renwick (2018) maintain little doubt that given the substantial salience of the UK referendum it is the second EU referendum school, the substantive issues approach, which comes closer to explaining voters’ behaviour. Besides, de Vries (2007) had highlighted that the substantial issues’ salience is important for issue voting in EU referendums.

The substantive issues school holds that the voters’ view on EU integration defines their vote in EU referendums (Garry, Marsh and Sinnott, 2005; Svensson, 2002). Pro-Europeans will vote “Yes” in a referendum for an EU treaty, while Eurosceptics will vote “No”. According to Garry, Marsh and Sinnott (2005), the issues at stake can be the country’s economic and political self-determination in relation to the EU or the issue of the EU having its own military or EU’s expansion. Numerous scholars applied the substantive issues approach to explain EU referendums. In Norway, Pettersen, Jenssen and Listhaug (1996) studied the EU issue of the 1994 and 1972 European integration referendums. In Denmark, Suine, Svensson and Tonsgaard (1994) found that
between the “No” of the Maastricht Treaty referendum of 1992 and the subsequent “Yes” of 2013 what actually changed was the perception towards the EU integration. Siune and Svensson (1993) claimed that the reason the Danes voted “No” in 1992 was their fear of losing their sovereignty. Svensson (1994) reaffirmed that attitudes concerning the Danish referendum shaped voting behaviour. Ehin (2001) examined issues and perceptions of European integration in European referendums in the Balkans. Pierce, Valen and Listhaug (1983), who compared Norway’s 1972 European Community referendum with Britain’s 1975 first EU referendum, outlined that if parties don’t take clear positions with the European referendum issues at stake, the electorate will be divided. The latter is also relevant to Britain’s 2016 EU referendum, which had polarized voters between Leave and Remain (Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016).

Overall, in UK’s referendum the substantive issues approach is considered to provide the closest explanation of voters’ vote (Hobolt, 2016, Clarke, Goodwin and Whiteley, 2016). Evans, Carl and Dennison (2018) emphasized on Eurosceptic tendencies as determinants of the leave result while Goodwin and Milazzo (2017) highlighted the issue of immigration to shape the Leave outcome. Concerning how the EU referendum issue moulded UK’s voting behaviour, Evans and Tilley (2017) attached Leave to those with lower education, Ford and Goodwin (2017) showcased the white working class to vote more for Leave, while others stressed the economic inequalities of the left-behind voters (e.g. Vlandas and Halikiopoulou, 2018; Becker, Fetzer and Novy, 2017; Colantone and Stanig, 2018; Langella and Manning, 2016; Bell and Machin, 2016; Darvas, 2016).

2.3.1 Criticism about the substantive issues school

However, the substantive issues approach has also received critical reviews by some scholars. Garry, Marsh and Sinnott (2005) studying two Irish referendums on the Nice Treaty claim that the effectiveness of the substantive issues school to accommodate the EU referendum depends on the
campaign’s angle and strength. Gallagher (2014) stresses about the 2005 EU referendums in France and the Netherlands that voters didn’t vote based on the substantive issue but they were influenced by campaigns like the one of the “Polish plumber” who threatens the interests of the local populations due to their lower salary. In addition, it is maintained that there is no black or white applicability between the second-order and substantive issues school but depending on the EU referendum voters consider the EU issue and the performance of the incumbent government (Galllagher, 2014; Nijeboer, 2005; Hainsworth, 2006). In addition, Marsh (2007) and Hobolt (2009) hold that the more salient the campaign the bigger the emphasis on the substantive issue at stake. Moreover, Lamond and Reid (2017) argue that Britain’s EU Referendum wasn’t judged over substantive issues but over the “style” of the referendum campaigns.

Further, Franklin (2002) elaborated on his criticism on the substantive issues school by arguing that the information available to the voters can judge whether they will be influenced by considerations about the political parties or not. Bowler and Donovan (1994) add that it is the elite cues by informed voters that can shape their voting behaviour. What is more, Kriesi (2008) maintains that the vigour of the campaigns can enhance the substantive issues’ role. Also, Font and Rodriguez (2009) claim that voters in the 2005 Spanish EU referendum and the 2006 Catalan referendum would have voted based on substantive issues if they had shaped clear opinions about the EU and the position of Catalonia and Spain in it. The same researchers argue about the aforementioned scholars’ connection between the intensity of the campaign and the vote being determined by substantive issues.

There are also scholars who support that the nature of the question isn’t binary (substantive issues or second-order) but instead there are elements from both schools which are located in voters’ behaviour in EU referendums (Marsh, 2015; de Vreese and Semetko, 2004; Hobolt, 2009; de Vreese and Boomgaard, 2007). Thus, research shows that voters vote in EU referendums
both out of dissatisfaction with the incumbent government and based on the issues at stake and their attitudes towards EU integration. De Vreese and Boomgaarden (2007) find that a vote against the EU in a referendum can be caused both by issues like anti-immigration issues and negative economic forecast and by a general dissatisfaction against the government. Besides, in the 2000 EU referendum in Denmark the voter’s behaviour was influenced by a lack of trust towards the government and issues like scepticism, a gloomy economic outlook, left political tendency and exposure to specific media campaigns (de Vreese and Semetko, 2004).

2.3.2 How can prospect theory speak to the substantive issues school of EU referendum voting?

Hobolt (2006, 2012) is a scholar who has produced major work on the substantive issues school and has already used the terminology “risk-averse” and “risk-seeking” in her work about voting in EU referendums, citing Kahneman and Tversky’s (1979) prospect theory. However, she didn’t elaborate towards a prospect theory model of voting, as this PhD thesis attempts to do. Instead, she focused on utilitarian expectations models based on expected utility theory which are discussed in the next section of the chapter. In addition, there has been scarce work (e.g. Carreras, 2019) on prospect theory to explain the voting behaviour in the Brexit referendum. The question here though is how can prospect theory speak to the substantial issues school of EU referendum voting?

The potential link between substantive issues and prospect theory is found in the very substance of an EU issue at stake, like the deeper integration in the political and economic union or free movement, security or healthcare benefits. It is logic to regard the vote of Yes for the change or No for the status quo in an EU referendum as a decision under risk. There is already work on citing the Yes as the risky option while the No as the safer status quo (e.g Morisi, 2018; Shuck and de Vreese, 2006; Nadeau, Martin and Blais, 1999). Thus, in line with prospect theory’s principles
(Kahneman and Tversky, 1979), voters who are placed in a domain of gains in the substantive issue at stake (e.g. EU integration) will tend to make a risk-averse vote in an EU referendum, which is the status-quo. On the contrary, voters who are placed in a domain of losses in the substantive issue at stake, they will be inclined to vote for the risky vote which corresponds to a deeper EU integration like for instance the adherence to EU constitution. Consequently, given that scholarship already regards the Yes/No of an EU referendum as a risk-seeking/risk-averse vote, prospect theory in the substantive issues school speaks to the specific issue at stake, from the broader topic of EU integration to more specific ones like immigration law.

All in all, a prospect theory model accommodating voter’s behaviour in the EU referendum could have a lot to say about the main substantive issue at stake in June 2016, which was the departure of Britain from the EU as well as specific issues that gained particular importance such as that one of immigration (e.g. Goodwin and Milazzo, 2017), the argument to save the NHS from the excessive EU cost burden (e.g. Menon and Salter, 2016) etc. Overall, prospect theory in the substantive issues school can look into the domain of losses or gains that each substantive issue at stake in the EU referendum places the voter into. Hence, the risk-seeking vote of Yes and risk-averse No of the status quo depends on the very nature of the substantive issue and also on the predispositions and opinions that the voters have on the EU issues ahead of the ballots.

2.4 The EU referendum school of “Utilitarian Expectations”

While investigating the Leave result with the substantive issues approach, Curtice (2017) discovered that it was the effect of Leave on the economy that was the most determining factor. Besides, the issue of the economy will be also examined later through the theory of this PhD as the fourth chapter shows. For Curtice, those who were convinced that Brexit would hurt UK’s economy voted more for Remain than those thinking that the exit from the EU would invigorate
it. This emphasis on the issue of the economy could be juxtaposed with Hobolt’s (2005) “third school” of EU referendum voting behaviour next to second-order and substantive issues, the “utilitarian expectations” approach. Hobolt referred to Gabel’s research (1998a, 1998b) who regarded the EU integration as an economy issue for the electorate, measuring the opportunities and threats it creates. According to Gabel, the European voter is voting rationally based on the cost-benefit of European integration. The voter who foresees an economic benefit from the EU integration will vote yes in the EU referendum, contrary to the status quo. Gabel and Palmer (1995) had launched the “utilitarian appraisals models of integrative policy” which held that European integration was regarded by the voter as a cost-benefit analysis where high income, education, work skills and proximity to borders were associated with a vote towards European integration. Notwithstanding, Hobolt (2005) argued that the utilitarian approach and the other two schools are “informative” about EU attitudes in the society but don’t accommodate effectively voting behaviour in EU referendums. Hobolt (2006), who had criticized in 2005 the “utilitarian expectations” EU referendum school, a year later located the root of empirical problems in EU referendum scholarship on the lack of a theoretical model of voting behaviour in EU referendums, despite the richness of literature on choice between candidates or political parties. She added next to that the limited “understanding” on EU referendum turnout too. Hence, Hobolt tried to bridge that gap by forging a constructive model variation of expected utility theory, called “proximity model of referendum voting”. It is purposeful to briefly present here Hobolt’s improved EU referendum model, because it could also face issues because it is based on the cited as flawed expected utility theory.

Hobolt’s proximity model:

\[ U_{ix} = c_{ix} - (P_{ix} - I_i)^2 \]
U stands for the utility of the ballot proposition, x is the Yes or No vote decision, c is the voter’s considerations regarding the issue at stake, P is the ballot proposition as perceived by the voter and I is the ideal or most preferred point of the voter regarding the issue. According to Hobolt’s “rational voter” model the utility of the EU treaty mainly depends on the distance between the perceived benefit of voting yes and the “ideal or most preferred” point of the voter regarding the issue. It becomes clear that a weakness of this model lies in the fact that it is hard for voters to know either the exact location of the ballot’s proposition or their mere “ideal point”. Therefore, Hobolt introduced the “voter’s uncertainty” module in her model, accounting for a probability distribution rather than single points. Her modified model was:

\[ E[U_{ix}] = c_{ix} - (p_x - I_i)^2 - \sigma_{ix}^2 \]

The \( \sigma_{ix}^2 \) represents voters’ variance in how they perceive the ballot proposition, the degree of their uncertainty. As Hobolt maintains, the higher the voter’s uncertainty about the EU treaty, the less the voter’s utility from voting for it.

Furthermore, the same researcher in 2016 used the utilitarian model to explain the Leave vote in the UK referendum by drawing on the possible explanations around Euroscepticism (Hobolt, 2016). She theorized that voters who saw the EU as beneficial to their work/wealth they would vote more for Remain than the ones who didn’t benefit from the EU membership and free trade, in alignment with relevant utilitarian studies on EU integration (Tucker et al., 2002; Gabel, 1998a, 1998b; Gabel and Palmer, 1995). In her utilitarian models Hobolt confirmed that the highly educated, young and high earning part of the electorate were more likely to vote for Remain, because they were benefiting more from EU membership. Instead, the poorly educated, old and of low income voters were more susceptible to Euroscepticism and Leave since they didn’t acknowledge benefits from the EU membership.
Although Hobolt’s (2006, 2016) expected utility models endeavoured to suggest a needed theoretical framework to voting behaviour in EU referendums, they can be simultaneously challenged because of their mere reliance on the rational voter model of expected utility theory. As it is explained in the next section, expected utility theory has been widely criticized for failing to accommodate political choice. Prospect theory instead, for which Kahneman received the Nobel Prize in 2002, provides a coherent behavioural platform to explain decisions under risk or uncertainty in areas where expected utility theory fails. For instance, if in Hobolt’s model the voter’s uncertainty about the EU treaty is high, then he is bound to always vote for the option that maintains the status quo, although this is neither the case throughout the EU referendums’ history nor it was in Britain’s EU referendum of 2016. Consequently, one may deduct that the voter doesn’t always vote rationally in a way that maximises his utility. Instead, as it is explored below, prospect theory’s core principles transferred by Quattrone and Tversky (1988) to voting behaviour, which are the reference point, ratio-difference principle and voter’s illusion, may provide an alternative theoretical framework for EU referendum voting. Thus, referendum voting is conceived as decision-making under risk which embraces decision outcomes that aren’t perfectly rational deriving from a maximization of utility.

2.4.1 Criticism of the utilitarian expectations school

Hobolt (2005), although she described the utilitarian expectations models as informative, she stressed that they don’t succeed in explaining the role of various factors across references and different segments of the electorate. What is more, Surwillo, Henderson and Lazaridis (2010) found that for voters who don’t have information and knowledge about EU issues, the utilitarian expectations model doesn’t work. In addition, Jupille and Leblang (2007) in the Danish referendum found that the cost-benefit essence of utilitarian expectations around the economic
considerations of the referendum wasn’t relevant. Anderson and Tverdova and (2000) in their analysis of tendencies to the EU enlargement in six candidate countries found results that contradict the utilitarian expectations models, because the highly educated weren’t more favourable to the enlargement than the uneducated. Similarly, Landripet (2015) didn’t find such a strong role of utilitarian expectations among voters in the European integration of Croatia. Kuhn (2019) argues that collective identities have a more prevalent role in European integration than the utilitarian logic, something that other scholars agree with (Hobolt and Wratin, 2015; Citrin and Sides, 2004; Hooghe and Marks, 2005; Carey, 2002; Netjes and Edwards, 2004; Marks and Hooghe, 2003). Moreover, there are studies challenging the utilitarian expectations model and instead suggest the impact of nationalism and hostility to other cultures (Carrey, 2002; De Master & Le Roy, 2000; McLaren, 2002). Niedermayer and Westle (1995) hold that the affective/diffuse support has a more critical effect on people’s orientations towards the EU than the utilitarian calculations based on cost-benefit. Besides, scholars argue that humans are not able to follow perfectly utilitarian models of cost-benefit (Kinder, 1998; Chong, 2000). Lupia (1994) argued that in referendums the voters cannot ever be so well educated and informed to process all information and maximize utility but they rather rely on elites’ influential views.

Further, the utilitarian expectations school of EU referendum scholarship (Hobolt, 2005, 2006; Gabel, 1998a, 1998b; Gabel and Palmer, 1995) was based on expected utility theory (Bernoulli, 1738; Von Neumann and Morgenstern, 1944; Friedman and Savage, 1948). According to that theory, people behave rationally and their decision’s outcome is perfectly predictable based on the conditions placed within, because in every decision they seek to maximize their utility. Developed by Bernoulli (1738) to solve the St. Petersburg game reflecting on a maximisation of utility from a gamble, for nearly two centuries expected utility theory wasn’t treated by economists until Von Neumann and Morgenstern (1947). The latter elaborated on this theory by maintaining that
decision-makers weigh the average probability of all possible conditions and choose the optimal option, although it is true that they cannot know all relevant probabilities beforehand. However, a large array of empirical work criticized expected utility theory arguing that people don’t always make decisions by rationally weighting probabilities and choosing the option that maximizes their utility (Knight, 1921; Allais, 1953a, 1953b, 1953c; Savage, 1954; Ellsberg, 1961; Kahneman and Tversky, 1979; Camerer, 1998; McCarthy and Meirowitz, 2007; Mercer, 2005; Barberis, 2013; Kahneman et al., 1982; DellaVigna, 2009; Jervis, 2004; Jones, 2001; Gilovich, 2002; Kameda and Davis, 1990, Camerer, 2003; Linde and Vis, 2015; Weyland, 2006; Bone, Hey and Suckling, 1999; Kameda and Davis, 1990; Starmer, 2000; Mearsheimer, 2001; Waltz, 1979 Tversky and Kahneman, 1992; Samuelson & Zeckhauser, 1988; Hausman, 1979; Hartman, Doane, & Woo, 1991; Kahneman, Knetsch, & Thaler, 1991).

2.4.2 How can prospect theory speak to the utilitarian expectations school of EU referendum voting?

In lieu of the expected utility theory, Levy (2003) stressed that prospect theory, originally born in the field of economics, stands as a coherent behavioural alternative to expected utility theory, contemplating its observed failures (Vis and Kuijpers, 2018), whereas Camerer (2005) cites that it isn’t only an alternative but a “psychophysical perspective”. While the expected utility theory is based on axioms, prospect theory relies on induction (Levy, 2003). This theory introduced the following failures of expected utility theory to effectively accommodate decision-making: loss aversion, status quo bias, the endowment effect, the negativity and the certainty effect (Vis, 2009). First, loss aversion refers to prospect theory’s finding that people are risk-seeking when placed in a domain of losses and risk-averse in a domain of gains, because losses have greater impact than gains (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Second, the status quo bias
holds that, since losses are more impactful than gains, people tend to prefer the current status quo (Kahneman and Tversky, 1979; Kahneman, Knetch and Thaler, 2000; Samuelson and Zeckhauser, 1988). Third, Kahneman and Tversky launched the endowment effect, according to which people cannot afford to lose assets which constitute their “endowment” (Kahneman and Tversky, 2000). Fourth, the negativity effect expands on the status quo bias by maintaining that when equal positive and negative information becomes available, the negative frame is stronger and more impactful (Samuelson and Zeckhauser, 1988). Finally, the certainty effect shows that people overestimate the value of choices considered to be certain (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). In political science, expected utility theory used to be the prevalent theory to explain voter’s behaviour as rational decision-maker but was found inefficient following prospect theory’s launch (Vis and Kuijpers, 2018).

All in all, prospect theory speaks to the EU referendum school of utilitarian expectations by providing an alternative explanation of voter’s behaviour. Instead of the maximization of the economic benefits from the EU (maximization of utility in expected utility theory), prospect theory discusses how the voter votes for a risky referendum option (e.g. Brexit) when placed in a domain of losses and for a risk-averse option (e.g. Remain) when positioned in a domain of gains. For example, when voters are framed with information about the EU threatening their sovereignty and prosperity, according to prospect theory they would experience losses by the EU and thus they would be ready to vote against a potentially deeper EU integration. Contra, when placed in the frame informing about their lives and income being better off within the European Union, according to prospect theory they will be placed in a domain of gains and therefore they would be inclined to vote for the “deeper” EU integration.

Therefore, one may say that while the utilitarian expectations school regarding voter’s behaviour is a direct result of the evaluation of cost and benefits from the EU integration, prospect
theory suggests that the outcome of the EU referendum is based on framing together with the voter’s propensity to risk. Kahneman and Tversky’s theory (1979) finds that when framed with losses people tend to be risk-taking while when framed with gains they are risk-averse. The latter contradicts the utilitarian expectations in a similar way that prospect theory challenged expected utility theory in the first place, because the latter theory claims that equal prospects cannot lead to rational choice regardless of being framed as losses or gains (Rossiter, 2018). Therefore, prospect theory is a window to the irrational way of decision-making of human beings (Kahneman and Tversky, 1979). Instead, prospect theory holds that losses have a greater impact on decision-making than gains (Tversky and Kahneman, 1992). Indeed, prospect theory suggests something paradoxical for the utilitarian expectations school, since taking more risks when losing cannot be explained in pure cost and benefit terms as being risk-averse when in gains, as it was previously analysed.

Thus, since prospect theory is an alternative theory to expected utility theory, which has been credited with the Nobel Prize in 2002 for contemplating the failures of the latter, seeing the EU referendum behaviour through prospect theory can be an alternative to the utilitarian expectations school. Besides, applying this theory to EU referendum voting behaviour (voter’s choice and turnout) is the overarching scope of this PhD. Hence, this PhD research speaks to the utilitarian expectations school by providing mainly a theoretical alternative to the school of utilitarian expectations, coupled with empirical results from survey experiments with representative samples of the general UK population. The validity of prospect theory in the explanation of the outcome of EU referendums can thus inescapably challenge the effectiveness of the utilitarian expectations school to accommodate voters’ behaviour. The thesis’ empirical chapters will discuss the results for prospect theory’s reference point, the ratio-difference principle as well as voter’s illusion. Meanwhile, this chapter continues its review with a presentation of other EU referendum
perspectives like identity politics, EU referendum campaigns, cue-taking and institutional design, while it discusses how prospect theory could be of contribution to them too.

2.5 Identity politics

In addition, another substantial strand of scholarship accommodating the UK referendum result focused on the role of identity in voting behaviour (e.g. Hobolt, 2016; Carey, 2002; De Vreese and Boomgaarden, 2005; McLaren, 2006; Hooghe and Marks, 2005). Hobolt (2016) in her identity models found that the more the voters felt they had a European identity, the more they would vote for Remain. On the contrary, the more they felt British the more they were keen to vote for Leave. Furthermore, identity formation is often reactive to EU integration, something that enables Euroscepticism (Trenz and de Wilde, 2009; Westlake, 2019). Indeed, there is scholarship describing the rising Euroscepticism in the UK as an explanatory factor of the leave vote (e.g. Hobolt, 2006; Leruth, 2016; Swales, 2016; Vasilopoulou, 2016; Corbett, 2016; Fox and Pearce, 2018; McGowan and Phinnemore, 2017; McCrery, 2017; Bailoni, 2017; Alaimo, 2018). However, while the thesis’ introduction discussed Britain as the birthplace of Euroscepticism, scholarship argues that neither all Leave voters identified themselves as Eurosceptics nor traditional Euroscepticism exerted a large influence on the leave outcome (Usherwood, 2017).

2.5.1 Criticism about identity politics

Despite the reference to identity politics to explain the Brexit result question, there are scholars who maintain their reservations concerning the validity of that theory in the first place (Bernstein, 2005). Brubaker and Cooper (2000) stated that too many use the term identity politics but too few have empirical proof about it. Moreover, Lichterman (1999) frames identity politics as a “slippery
term”, whereas Bickford (1997) views identity politics mostly as an argument against political theories rather than a legit scientific space in political science. Not to omit that Fraser (1997) assimilates the word “identity politics” with the words feminism, anti-heterosexism and anti-racism. Besides, scholars have attributed various contradicting notions to identity politics: neo-Marxists use the term to make the segregation from class politics, new social movements segregate class-based movements from others, while postmodernism/post-structuralism regard identity politics as a political activism instead of cultural activism (Bernstein, 2005).

Hence, Bernstein (2005) after having thoroughly reviewed the domain of identity politics, concluded that the theory is more than anything else of descriptive nature rather than explanatory. Identity politics was heavily criticized by this scholar for making “axiomatic predictions” about a political outcome as a causal result of people belonging to specific status identities. Most importantly, scholars of identity politics make arbitrary and phenomenological assumptions and draw conclusions about causality between the status of identity restructuring and the political outcome, in lieu of thorough empirical analysis. As Bernstein (2005) puts it, the term “identity politics” obscures rather than clarifies.

2.5.2 How can prospect theory speak to identity politics in EU Referendums?

In order to assess how prospect theory speaks to identity politics in EU referendums one needs to assess the risk-seeking and risk-averse behaviour that specific identities in the electorate endorse. For example, it is logic to infer that the English white men who nurture an old “British exceptionalism” are voters who were in a domain of losses. Thus, they were keen to take the risk-seeking Yes vote of leaving the EU in a desperate attempt to restore the old glamour of the British Empire. On the contrary, it is inferred that the voters who identify with the European identity of free movement were placed in a domain of gains at the moment of the ballots, being already within
the EU. Consequently, they should have been keen to vote for the risk-averse option of Yes, Remain.

Besides, as the thesis discusses later, the prospect theory model proposed in this PhD makes the assumption derived from established literature about the risk propensity of specific demographic segments or identities e.g. employed/unemployed, married/unmarried, parents/non-parents. For example, the unemployed are cited in scholarship to take more risks than the employed (Gachter, Johnson and Herrmann, 2010; Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004), the parents risk less than non-parents (Allman et al., 1998; Chaulk, Johnson and Bulcroft, 2003; Warner and Cramer, 1995; Eibach and Mock, 2011; Wang, Kruger and Wilke, 2009; Cameron, DeShazo and Johnson, 2010; Spivey, 2010) while the unmarried also take more the risky route than the married (Grabble and Lytton, 1998; Roussanov and Savor, 2014; Chaulk, 2000; Klein and White, 1996). It is thus logic that prospect theory speaks to identity politics too, because specific strong identities that voters are characterized with can establish a domain of losses or gains, which respectively lead to risk-seeking or risk-averse votes, according to prospect theory (Kahneman and Tversky, 1979).

Having stressed on the predominantly descriptive nature of identity politics, this PhD syllogism goes beyond the causal link between what appears true and logic concerning the identity of the Brexiteer. Instead, prospect theory (Kahneman and Tversky, 1979) expands further the discussion as it explores a new model of EU referendum vote under risk. Inspired by Wrong (2003) who holds that the roots of identity politics can be explored in psychology, this thesis discusses how prospect theory explains the underlying reason that the Leave voter took the risk-seeking decision, instead of describing a demographic trend. Scholarship may benefit from this approach as it explains the EU referendum vote, instead of describing it as identity politics tend to. This was achieved here by using a theory that won the Nobel Prize in 2002 for succeeding to explain human behaviour in places where the rational model had failed. Hence, given the thesis’ results discussed in the thesis’ empirical chapters, the EU referendum voting behaviour under prospect theory may explain for
instance why UK parents were placed in a domain of gains that endorsed risk-aversion (Remain) compared to the unmarried and unemployed UK voters who sought for risks, because they had been placed in a domain of losses. It is thus aspired that the results of this thesis may contribute to identity politics by examining voting in EU referendums as a risky exercise accommodated by prospect theory.

### 2.6 EU referendum campaigns

Furthermore, scholars have been also addressing the role of campaigns in EU referendums (e.g. Atikcan, 2015; Hobolt, 2005, 2009, 2016; Atikcan, 2015, 2017, 2018; Garry, 2013, 2014; Garry et al., 2005; Elkink and Sinott, 2015; Druckman and McDermott, 2008; Bowler and Donovan, 1994; LeDuc, 2002a, 2002b, 2007, 2009; Jahn and Storsved, 1995; Hobolt and Brouard, 2011; Kriesi, 2006; Christin, Hug and Sciarini, 2002; Hobolt and Hagemann, 2016; Schuck and de Vreese, 2009; de Vreese, 2007; Kurer, 2019; van Kingeren et al., 2015; Siune and Svensson, 1993; Seidendorf, 2010; Marsh, 2007; Cushion and Lewis, 2017; Semetko and de Vreese, 2004; Jackson, Thorsen and Wring, 2016; Dekavalla, 2018; Moore and Ramsay, 2017). Hobolt (2009) stressed that the campaigns about the Yes/No in the referendum can increase voters’ mobilization to vote in the direction that the campaign points to. She adds that the one-sided messages in the campaigns make the voters vote in the direction of the campaign while in campaigns with conflicting messages the campaign has to be in the direction of their real vote intent to influence them. Moreover, Hobolt (2009) underscores that the negative impact of the anti-EU side causes voters to vote in favour of the EU proposal while the negative consequences of the pro-EU side led voters to vote against the EU issue. Hobolt and Brouard (2011) also stress the impact of the issue salience on the campaign’s effectiveness. Szczerbiak and Taggart (2005) add that the extent of the voter’s
information and awareness about the EU issue at stake influences considerably his vote choice in the EU referendum.

Garry (2014) claims that the campaign information can elicit anger or fear which can thus influence the referendum’s vote. Similarly, Druckman and McDermott (2008) show that voters who are afraid tend to vote for the less risky option in the EU referendum. Vreese and Semetko (2004) also stress that adverts about the issues of the No side of the referendum can impact voters’ choice. Apparently there are issues that are stronger in a campaign and more influential than others (e.g. Benford and Snow, 2000; Chong and Druckman, 2007a, 2007b). Atikcan (2015) referring to the 2005 EU referendums about the European Constitution supports that given the varied results in the member states the referendum campaigns played a crucial role. In that study the author found that the campaign frames of “No” in the Netherlands and France informed about the pessimistic impact on unemployment, economy, state welfare and national sovereignty while the “Yes” frame was broader and didn’t focus on the benefits of the EU treaty’s ratification. Also, Atikcan (2018) in her thorough study of 11 EU referendums reaffirms that campaigns are related to the result of the referendum. Elkink and Sinnott (2015) find that if the voter’s anti-EU attitudes align with the campaign’s direction then they are more likely to vote against the EU in the EU referendum. De Vreese (2007) generally concludes that the referendum campaigns are more effective than elections in national elections. At the same time there is literature on how there can be a domino effect between EU member states having EU referendums whereby the voters across the EU are influenced by how the voters of another EU country had voted in the EU referendum (e.g. Atikcan, 2015; Jahn and Storved, 1995).

Campaign scholars have been focusing on the power of media on the EU referendum campaigns. Semetko and de Vreese (2004), acknowledging the impact of framing, priming and agenda-setting on campaigns show in their book that media information influences the electorate’s
understanding of the issue at stake in the referendum, the evaluation of politicians as well as the public opinion’s position on the campaign. They thus conclude that the campaigns in EU referendums have a decisive impact on the result depending on the context and the characteristics of the electorate. Baden (2010) focuses on the case of the Dutch EU referendum and argues that it is not so much the individual characteristics that make the campaign frames but the context instead and the association between the frames. In addition, there seems to be a consensus on the power of conflict news framing, according to which media covering a conflict of two parties, politicians or issues have the power to mobilize the EU voter to turn out (Schuck and de Vreese, 2009; Schuck, Vliegenthart and de Vreese, 2014). It is interesting to note here that Khabaz (2018) underlines that the Brexit outcome was judged by strong repetitive frames used by Britain’s newspapers which focused on taking back control or being British.

2.6.1 Criticism about EU referendum campaigns’ ability to explain EU referendum voting

First of all, some scholars have cited that national media, which are the platforms of EU referendum campaigns, haven’t focused in the past on EU issues but on the national agenda instead (e.g. Blumler, 1983; Leroy and Siune, 1994; Demertzis, 2006; Kaid et al., 2005; Norris, 2000; Kevin, 2001; Ward, 2002; Brettschneider and Rettich, 2005; de Vreese, 2001, 2007; Stromback and Kaid, 2009; de Vreese, Lauf and Peter, 2006). The latter leads to the inference that in member states where the media are emphasizing on the EU agenda, the EU referendum campaigns are not receiving high level of salience. Furthermore, Font and Rodriguez (2009) found with their empirical work that in spite of the intensity of campaigns in the Spanish EU referendum of 2005 the factors shaping the vote were not influenced by the campaign itself. These scholars express their clear reservations regarding scholarship’s link between the impact of the intensity of the campaign and the substantive issues forming the EU referendum’s result. Overall, they call
scholars to revisit the discussed link between the intensity of the campaign and the referendum outcome. On the other hand, other researchers argue that campaigns don’t always matter in EU referendum voting but it depends on factors like the type of campaign messages e.g. one-side or conflicting, the voters’ level of awareness of the EU issue or the role of ideological and partisan cues (e.g. Hobolt, 2009; Szczerbiak and Taggart, 2005; Atikcan, 2015, 2017).

Campaigns don’t seem to be the panacea in the explanation of voters’ behaviour. It is worthy of mentioning here that Holbrook (1996), referring to US elections, argues that there are scholars who believe in the power of campaigns on the elections’ result (e.g. Germond and Witcover, 1985), there are others who cite them as of little importance (e.g. Quirk and Dalager, 1993) as well as scholars who believe that campaigns have no importance after all (e.g. Pomper, 1985; Finkel, 1993).

2.6.2 How can prospect theory speak to EU referendum campaigns?

Prospect theory speaks to the role of campaigns in EU referendums through the key role of framing in the theory’s nature. The same options when “framed” differently can lead to a completely different and sometimes inconsistent and irrational decision (Tversky & Kahneman, 1981). Kahneman and Tversky (1979) found in various empirical studies that the nature of the first option, either presented as a sure gain or a sure loss, has the power to lead the person to be risk-averse or risk-seeking. According to Kahneman and Tversky, there is no such thing as “frame invariance”. They insightfully supported that “invariance is normatively essential, intuitively compelling and psychologically unfeasible”. Consequently, given the role of framing in EU referendum campaigns one can deduct that the prospect theory’s viewpoint of framing can contribute to the EU referendum campaign scholarship. Besides, it is within the scope of this thesis to make this contribution.
Hence, in line with prospect theory it can be said that ahead of an EU referendum the frames of the EU referendum campaign can significantly influence the voter by placing her in a domain of gains or losses, which can in turn make the voter cast a risk-averse vote (status-quo) or a risk-seeking one (EU integration). As discussed previously, the Leave campaign used a lot of frames about the maintenance of the British sovereignty, the EU usurping jobs from the Britons as well as healthcare rights, affecting the British economy etc. Hence, according to prospect theory, the Leave campaign’s frames positioned the voters in a domain of losses, which must have enabled their risk-seeking attitude to vote for the unknown Leave. On the other hand, one can elaborate that the remain campaign targeted on placing the voter in the domain of gains of Britain enjoying the benefits of EU membership (e.g. EU single market, free movement), instead of taking the unknown path of Brexit, in order to place the voter in a domain of gains, with the purpose to vote for Remain in June 2016. The discussion of the thesis’ results at the subsequent empirical chapters will revisit prospect theory’s contribution to the EU referendum perspective of EU referendum campaigns.

2.7 Cue-taking

There is also a number of scholars studying the effect of cue-taking on forming the public opinion regarding the European integration. A large part of that strand of research focuses on party cues (e.g. Ray, 2003; Hobolt, 2007, 2009, 2016; Feld and Wilgden, 1976; Steenbergen, Edwards and De Vries, 2007; Hooghe and Marks, 2005). Cue-taking thus depends on the salience that issues have with parties (Goren, Federico and Kittilson, 2009; Hooghe and Marks, 2005). The cue-taking models are based on behavioural theory and particularly rely on the premises that people don’t have fixed views about political issues but they consciously or unconsciously use heuristics by taking cues from the political parties they favour (Zaller, 1992; Anderson, 1998; Hooghe and
According to Carrubba (2001), the “cue-taking” theory maintains that it is the elites that influence the public opinion through their policy positions. Lupia (1994) highlights that voters use cognitive shortcuts and are much influenced by cue-taking from elites in order to understand better the political prospect and vote in a referendum. Anderson (1993) claims that citizens are not able to analyse complex political information and therefore in EU integration issues they rely on cue-taking from influential elites or political parties from the national political arena. De Vries and Steengergen (2013) reaffirm that European citizens shape views about EU integration by taking cues from their national political parties. Hobolt (2007) holds that party endorsements can have a powerful influence on voters’ behaviour in European integration issues as long as voters are knowledgeable of the party. The influence of those cues depends on the clarity of the cues provided by the political parties (Steenbergen, Edwards and De Vries, 2007; Ray, 2003). Some scholars argue that even when the cues from parties are clear, it is possible that cue-taking doesn’t help voters shape opinions on the European Union, as the perceived difference between parties is an important factor (Ray, 2003; de Vries, 2007, 2009). The nature of cue-taking can also depend on whether it is a mainstream or extreme party (Edwards, Netjes and Steenbergen, 2005). Hobolt (2016) confirms that the importance of party cues matters, particularly when parties are aligned with their position. Overall, cue-taking is considered to be a rational and effective way for citizens to make good political choices (Kuklinski and Hurley, 1994).

Regarding the influence of cue-taking on Britain’s EU referendum result, polls prior to the ballots showed the noteworthy confusion of the UK voters (Borisova, 2018). While 96% of Labour MPs backed Remain, Labour voters believed that only half of Labour MPs were pro Remain (Swales, 2016). Similarly, voters believed before the referendum that the Conservative MPs were equally split between Remain and Leave while 43% of them were pro Leave and 57% supported Remain (Swales, 2016). Further, Yougov polls showed that Corbyn’s cue and main stance ahead of the referendum as a leader wasn’t clear to voters. Borisova (2018) makes the point that the
unclear positions for the voters by the two main parties (Conservative, Labour) didn’t constitute cue-taking as an influential theory to accommodate voting behaviour in Britain’s EU referendum. The latter is supported by the fact that Yougov polls demonstrated that 61% of Conservative voters voted for Leave while Cameron had advocated for Remain. On the contrary, cue-taking can explain the behaviour of voters from the smaller parties like UKIP and SNP, because the elites’ cues were clearer (Borisova, 2016). Particularly, Yougov showed that only 1% of voters had the impression that Nigel Farage favoured remain while 95% of UKIP voters voted Leave. Also, Goodwin and Heath (2016) and Becker, Fetzer and Novy (2017) had found prior to the referendum that the vote share in the European Parliament of 2016 was a very good predictor of Brexit vote. In addition, more than 70% of British voters were accurately informed about Nicola Sturgeon’s Leave stance. Thus, the lack of clarity in the views of the main political parties and their leaders in Britain prior to the EU referendum confined the role of cue-taking in explaining the electorate’s vote (Borisova, 2018). Besides, Vasilopoulou (2016) agrees that cue-taking didn’t work in the case of the Brexit referendum because partisanship wasn’t a good predictor of the result except for UKIP voters.

2.7.1 Criticism about cue-taking

Vasilopoulou (2016) clearly challenges the importance of cue-taking given the Brexit referendum’s result whereby, as discussed in the previous section, it worked only for UKIP supporters. Vasilopoulou argues that although Hobolt (2016) finds results in support of cue-taking one cannot say with certainty that it is party cues that influenced the voters. Vasilopoulou uses the argument of the Conservative party that remained divided although officially promoting Remain while the Labour campaign of Corbyn was not too influential for Labour voters. Thereby, Edwards, Netjes and Steenberge (2005) maintain that cue-taking is dependent on whether the party’s views
are positioned in the mainstream or at the extremes of politics. All in all, Vasilopoulou (2016) highlights the gap between the elites’ cue-taking and citizens’ views.

Furthermore, Gabel and Scheve (2005) discuss the methodological problems of the conflict within the party which weakens cue-taking from parties in European integration. The clarity of the message within the party is also of major importance (Ray, 2003). Moreover, European national parties are not internally aligned on European integration (Franklin, Marsh and McLaren, 1994; Marks and Steenbergen, 2004). Gabel and Scheve (2005) consider that the level of disagreement within the party can actually determine the impact of cue-taking.

2.7.2 How can prospect theory speak to cue-taking in EU referendums?

Prospect theory can speak to cue-taking in the sense that partisan cues could have had the role of framing in a voting decision under risk. For example, if Corbyn had taken a clear stance against Brexit describing it as a clear loss for the economy, then the voter would have been placed in a domain of losses. According to prospect theory, that would make her choose the risky option which in the referendum’s question was the Leave vote. Similarly, given that Cameron was clearly positioned in favour of Remain advocating for the benefits to the British economy then that would place the voter in a domain of gains and thus would opt for the risk-averse option of Remain. In short, cue-taking could form part of prospect theory’s framing.

However, Kahneman and Tversky’s prospect theory (1979) was based on hypothetical and mathematical examples of decisions under risk e.g. gamble. Instead, cue-taking in EU referendum voting refers to non-hypothetical but real-time elite and partisan cues. Moreover, Quattrone and Tversky’s (1988) application of prospect theory to voting behaviour didn’t engage with the influence that a partisan cue could have on voting under risk, thus this will not be done either in this thesis. In conclusion, the reason that cue-taking is discussed herewith is for the completeness
of theories on EU referendum voting. In fact, Buddi (2017) saw cue-taking as a way to explain voters’ behaviour in the Brexit referendum and particularly as an alternative to the identity theories and the one about the utilitarian interest.

2.8 Institutional design

According to Hollander (2019), the majority of referendum scholars are inspired by the sociological institutional theory which tracks the use of referendums on a democratic crisis. The same scholar categorizes this literature to classical institutionalism, historical institutionalism, social institutionalism and rational choice institutionalism. First, classical institutionalism puts the country’s institutions at the forefront and how they can influence political behaviour while the scholars of the field (e.g. Jung, 1996; Lijphart, 1999; Anckar, 2014; Fiorino and Ricciuti, 2007; Vatter, 2009; Marxer and Pallinger, 2007; Tsebelis, 1999, 2002; Jacobs, 2011; Hooghe and Deschouwer, 2011; Rahat, 2008; Koole, 1996) compare the institutional design of countries instead of investigating how it can be modified. Second, historical institutionalism scholars (e.g. Pierson and Skocpol, 2002; Thelen and Steinmo, 1992; Mahoney and Thelen, 2010; Schmidt, 2006; Pierson, 2004; Sewell, 2006; Capoccia and Keleman, 2007; Hall and Taylor, 1996; Albi, 2005; Auer and Bützer, 2001; Crum and Hollander, 2011) reaffirm the validity of classical institutionalism’s position that the institutions hold a pivotal role in the political outcomes and add that those outcomes activate the repetition of outcome patterns in the upcoming political events e.g. referendums.

Third, the common referendum literature of sociological institutionalism focuses on the constant interaction between institutions and society which also creates a diffusion (e.g. Doorenspleet, 2004; Huntington, 1991; Closa, 2007; Schimdt, 2006) of imitations of political decisions between polities. Some scholars argue that the need for referendums stems from citizens’
demands (e.g. Inglehart, 1971, 1977) while others cite that it is political dissatisfaction (e.g. Hausermann and Schwander, 2009; Hibbing and Theiss-Morse, 2002; Dalton, 2004) that sparks a referendum. In sociological institutionalism it is also the party ideology that can create support to referendums (e.g. Pilet, 2007; Bowler, Donovan and Karp, 2002; Lucardie, 1997). Finally, the rational choice institutionalism claims that the political actors make decisions about referendums based on their own political interests (Butler and Ranney, 1978; Walker, 2003) and thus politicians pursue referendums as part of their policy-seeking strategy (e.g. Bjorklund, 1982; Rahat, 2009) or as empowerment tools (e.g. Qvortrup, 2006). Besides, Oppermann (2011) cites that referendums are organized in the EU to make the power of the incumbent party legitimate. Rahat (2009) recognizes another referendum strategy, which is called avoidance, according to which sometimes politicians decide to have a referendum when the stakes of an issue are high in order to avoid the blame for a political decision. In addition, Bjorklund (1982) discusses a referendum strategy in the area of rational choice institutionalism that is called “depoliticization” according to which when the party’s base thinks different from the party’s leaders then the leadership can initiate a referendum in order to set the “hot issue” apart from the party’s political agenda. All in all, out of the aforementioned four institutionalisms Hollander (2019) identifies six factors of referendum practice: the type of democracy, the veto players who can resist change, the past referendum experience, the public demands, the political values and the strategic interests.

Consequently, there is a particular tranche of EU referendum literature focusing on their institutional design. Cheneval and Wakil (2018) argue that EU referendums vary on their institutional design. They differentiate referendums based on their institutional lines of variations: the mandatory and optional nature, their top-down character originated by governments, while the bottom-up by non-elected actors gathering citizens’ signatures. Most EU Member states have non-mandatory referendums (Cheneval and Ferrin, 2018). In addition, in some EU member states the referendums can be called only by the government e.g. President/Prime Minister or parliamentary
majority and in others referendums can be originated by legislative minorities and electors (Cheneval and Ferrin, 2018). Hollander (2019) classifies referendums in five categories: legislative majority, presidential, legislative minority, citizen-initiated and mandatory. Furthermore, the result of a referendum can be binding or consultative. There are countries in the European Union whereby non-mandatory referendums are also binding (e.g. Denmark), others where sometimes they are binding (e.g. Austria) and some more that a referendum’s result can never be binding (e.g. Lithuania). Especially regarding EU referendums or referendums on EU issues the two main types of referendums are mandatory and non-mandatory. Regarding the frequency of the EU referendums, from 1957 to 2016 the mean frequency per year is less than one (Cheneval and Ferrin, 2018).

Further, Silagadze and Gherghina (2018) cast light on three institutional factors that determine the success in an EU referendum, the popularity of the initiator, the size of parliamentary majority and the political cues in referendum campaigns. The initiator is one of the key factors in the institutional design of a referendum (Setala, 2009; Vatter, 2009). Besides, according to Leduc (2002) a referendum is none other but “a conscious political decision taken by a party, organization or group”. As per Silagadze and Ghergina (2018), it is based on the initiator’s discourse that the EU referendums can have the issue-voting perspective or the second-order election, two major EU referendum schools as it has been reviewed in previous sections of this thesis.

According to Van Crombrugge (2020), the referendums in principle are legit means to make decisions because they institutionalise political equality and self-determination. At the same time, the political equality and self-determination depends on the way the referendum process has been institutionalized instead. The latter depends on how and by whom the political agenda is shaped. The referendum cannot be considered to provide the democratic characteristic of equal voting if the political agenda is controlled and manipulated by an elite (e.g. Romer and Rosenthal, 1979;
Hug and Tsebelis, 2002; Matsusaka and McCarty, 2001; Renwick, Palese and Sargeant, 2019; Tierney, 2012). The same applies for the campaign’s financing (e.g. Lutz and Hug, 2009; Gerber, 1999).

The Brexit referendum was a top-down referendum while Italy’s referendum of 2016 a bottom-up one. There is also scholarship discussing how to better institutionalize the processes that lead to a referendum to strengthen the democratic system (e.g. Tierney, 2012, Setala, 2006; Lacey, 2017). They cite that top-down referendums and purely the consultative use of referendums should be avoided for the sake of democracy. Instead, bottom-up referendums through signature collections, which lead to a legally binding vote, enhance democracy further. Van Crombrugge (2020) highlights that the result of a democratic process depends on the institutional context it unfolds. While some scholars (e.g. Weale, 2018; Haskell, 2001; Riker, 1988) argue that referendums cannot represent the will of the people due to their arbitrary nature, some researchers attempt to locate a remedy by amending aspects of the institutional design of the referendums like the initiator of the referendum, the question set or the campaign before the ballots (e.g. Tierney, 2013; Moore, 2017). Nevertheless, the referendums according to Van Crombrugge (2020) pose threats to democracy.

Particularly on the Brexit referendum, Offe (2017) suggests that it is wrong to ask people to decide on critical political issues. Weale (2018) added that the reason Britain’s EU referendum of 2016 hurt democracy is that people who questioned the Brexit result were demonized by the press and politicians. Van Crombrugge (2020) underlines that in cases like the Brexit referendum it is not correct to defend that the referendum’s result necessarily expresses the collective will. On the contrary, the Brexit referendum reveals Britain being a democratic society without defensive mechanisms to populism.
Regarding the EU, Hix (1998) states that it will remain a multi-level system despite any institutional changes made. He adds that voters’ turnout depends on the institutional design of the EU system. He concludes that for democracy to be enhanced in the EU more creative institutional designs are required whereby the EU’s executive arms are accountable to the EU voter. Moreover, the institutionalization of an EU referendum is the sole way to solidify democracy in the European Union by engaging further the EU citizens (Flauss and Auer, 1997; Rose, 2013; Lacey, 2017).

2.8.1 Criticism about the institutional design of EU referendums

Cheneval and Ferrin (2018) stress a number of faults in the institutional design of EU referendums. First of all, the EU referendums are used by incumbent government parties. Second, these scholars refer to the “unequal negotiating power” stemming from how governments use the referendum results. Third, the EU referendums’ nature leads often to citizens’ discrimination. Both Hug (2003) and Cheneval and Ferrin (2018) highlight that the above deficiencies are dependent on the referendum’s nature. Overall, optional EU referendums can be more accountable for the above deficiencies than mandatory EU referendums.

In general, direct democracy in the EU has been criticized for: a) the inability of the voter to decide; b) the “impossibility” to have direct democracy in sizeable political units; c) there is a bias towards political groups and d) direct democracy in Europe favours expressive voting.

2.8.2 How can prospect theory speak to the institutional design of EU referendums?

Obviously prospect theory, as it is being reviewed and theorized in this thesis by studying the voter’s choice and turnout, cannot speak to the institutional design of EU referendums given that the latter is about the a priori decision to launch a referendum. Nevertheless, as it is cited later in
the next chapter of the thesis the area of political science scholarship that focuses on international relations has used prospect theory to explain the risk-averse and risk-seeking behaviours of political leaders (e.g. Linde and Vis, 2017; Taliaferro, 1998; Tir, 2010; Stein and Pauly, 1993; Levy, 1992, 1994, 1997, 2000; McDermott, 1998, 2001, 2004; Jervis, 1994, 2004; Haas, 2001; Berejikian 1997, 2002; Faber, 1990; Sheafer and Dvir-Gvirsman, 2010; Davis, 2000; Fatas, Neugebauer and Tamborero, 2007). Therefore, one can say that the risk-seeking or risk-averse decision of a politician to hold a referendum could be explained by prospect theory in a way that it contributes to scholarship researching the institutional design of referendums.

However, this is not relevant to this thesis which studies voter’s choice and turnout and not the political leader’s decisions. Instead, what can be noted here is regarding the aforementioned literature on institutional design which discusses who controls the campaigns/agenda in the EU referendum. It can be thus said that the confirmation of the PhD’s prospect theory model using framing that influences the voters’ vote could serve as a challenge to the democratic characteristic of equal voting that an EU referendum should hold. The manipulation of the agenda by an elite, as this PhD’s results in the empirical chapters show, raises inescapably discussions about the institutional design of Britain’s EU referendum of 2016. The latter is in line with the aforementioned work of Offe (2017), Wale (2018) and Van Crombrugge (2020) who criticized the democratic character of the Brexit referendum.

All in all, despite the substantial interest in referendums as major democracy apparatuses, scarce focus was shown by scholars on a single model of voting behaviour in EU referendums (Leduc and Pammett, 1995). Instead, existing scholarship in EU referendum voting focused on single country referendums (Garry, Marsh and Sinnott, 2005; Svensson 1984; Widfeldt 2004; Siune, Svensson and Tonsgaard, 1994), the results of which are difficult to generalise (Gallagher and Uleri, 1996; Qvortrup, 2002; Kaufmann and Waters, 2004; LeDuc, 2003; Setala, 1999; Butler and
Ranney, 1978; Ranney and Butler, 1994). This is a gap in EU referendum scholarship, combined with Hobolt’s (2006) aforementioned argument about the lack of a theoretical model that the thesis addresses. Hence, this PhD endeavours to introduce the concept of an alternative school which is based on the empirical groundwork of Quattrone and Tversky’s (1986, 1988) initial adaptation of prospect theory to political science next to the existing EU referendum school of utilitarian expectations, as well as the substantive issues and second-order school, together with other EU referendum perspectives like EU referendum campaigns, cue-taking and identity politics.

### 2.9 The Leave result explained through the notion of risk

This PhD wasn’t the only research contemplating the notion of risk to explain the Leave outcome but there is also limited work on that (Carreras, 2019). Carreras (2019) specifically linked the leave vote to the domain of losses of residents of areas in economic decline but didn’t look at the overall adaptation of prospect theory’s principles as an alternative model to accommodate EU referendum voting. Moreover, there are two more papers particularly taking the risk route on Brexit (Clarke, Goodwin and Whiteley, 2017a, 2017b; Fisher and Renwick, 2018), which were published years after this PhD’s data collection. Both studies elaborated on “LeDuc’s Law” (LeDuc, 2003), according to which voters in EU referendums vote for the status quo to avoid risks. On the one hand, Clarke, Goodwin and Whiteley (2017a, 2017b) studied voting behaviour in the UK referendum as cost-benefit calculations. Their national survey found that Brexit is felt by the British electorate as a costly exercise for the economy, but beneficial to immigration. Also, they confirmed that voters who considered Brexit as a risky vote voted more for Remain. In addition, they asked voters to select positive/negative words felt about Britain’s membership in the EU and discovered that those choosing positive words reflecting the EU would vote more for Remain than those selecting negative words. Finally, they found that a positive image about two Leave
campaigners, Nigel Farage and Boris Johnson, was associated with a greater probability of voting for Leave. On the other hand, Fisher and Renwick (2018), three years after this PhD’s data collection, criticized the risk approach of Clarke and Goodwin and Whiteley (2017a, 2017b). They differentiated their study by focusing on the uncertainty felt for Brexit’s effects instead of the risk level. They thus discovered that voters who were uncertain about Brexit’s aftermath tended to vote for the status quo, Remain.

Carreras (2019) didn’t elaborate with models including acknowledged prospect theory principles as coefficients like the reference point nor did he accommodate turnout in the EU referendum, as this thesis does. Also, the aforementioned other two pertinent references of the Leave vote have only basic commonalities with the theory of this PhD. They used risk or uncertainty as a coefficient and not within a theoretical context of voting behaviour in the EU referendum. Instead, this research uses risk within a theory explained in the theory chapter, inspired by prospect theory and particularly Quattrone and Tversky’s (1886, 1988) initial work.

Overall, this study intends to address Hobolt’s (2006) witnessed lack in EU referendum scholarship regarding a parsimonious theoretical approach. Therefore, the aforementioned EU referendum studies weren’t influential for this PhD research because the thesis’ data had already been collected before the studies’ publication and the design was constructed well before that. In addition, they are distinctly different to this PhD regarding their risk approach to EU referendum voting.

2.10 Conclusion

This chapter provided an overview of EU referendum literature together with the criticism received. What is more, it discussed how the influential theory that this PhD uses, prospect theory,
can speak to each of the EU referendum schools contributing thus to EU referendum scholarship. The chapter started with the presentation of the second-order school, the substantive issues and the utilitarian expectations and continued with identity politics, EU referendum campaigns, cue-taking and institutional design. Thus, this chapter prepares the fertile ground for the next chapter of the thesis which will elaborate in detail on prospect theory, its application to voter’s choice and turnout but also the criticism it has received as theory in social sciences. As explored in this chapter, prospect theory may have the potential to contribute to the other EU referendum perspectives. Finally, this chapter also referred to scholarship that viewed voting behaviour in Britain’s EU referendum as a decision under risk.
CHAPTER III: PROSPECT THEORY IN VOTING BEHAVIOUR

“Decision-making is a risky enterprise. The outcome of a decision often depends on past or future states of nature that cannot be known with certainty. Because a decision may have a wonderful or a disastrous outcome depending on which state of nature obtains, it is reasonable for the decision-maker to weigh the possible outcomes of an action by the probability of the states on which the out-comes depend.” (Quattrone & Tversky, 1984)

3.1 Introduction

This chapter consists of six sections. The first is this introduction. The second one discusses prospect theory’s application to political science. The third section refers to the obstacles that researchers have been facing with applying prospect theory to voting behaviour. The fourth section presents the initial application of prospect theory to voting behaviour, meaning both voter’s choice and turnout. The research by Quattrone and Tversky (1986, 1988) has been very influential to this thesis and thus it is crucial to present it in detail in this chapter because the entire research design is based on it. The thesis’ research scope is to apply Quattrone and Tversky’s work outside its limited lab origins, onto survey experiments in cooperation with Ipsos Mori UK. The fifth section provides a criticism to prospect theory as a theory in social sciences in order to provide to the reader a balanced perspective of the theory’s strengths and weaknesses. Finally, the chapter ends with its conclusion section.

3.2 Prospect theory’s application to political science

Between 1979 and 2005, only 2000 citations of prospect theory were counted, among which 50% in the discipline of economics and business, 30% in psychology and the remaining 20% in a large array of disciplines from engineering to sociology, law and mathematics (Mercer, 2005). Most importantly, Mercer stressed that prospect theory’s references in political science during that
period account only for 5%. Indeed, there is little doubt that prospect theory has been scarcely adapted to political science (Vis, 2009; Boettcher, 2004; McDermott, 2004; Levy, 1997, 2003). There are a few studies though adapting prospect theory in political science (e.g. Quattrone and Tversky, 1988; Lau and Redlawsk, 2001; McDermott, 2004; Druckman, 2001). However, the biggest tranche of that research focuses on international relations, explaining risk-averse and risk-seeking behaviours of political leaders (e.g. Linde and Vis, 2017; Taliaferro, 1998; Tir, 2010; Stein and Pauly, 1993; Levy, 1992, 1994, 1997, 2000; McDermott, 1998, 2001, 2004; Jervis, 1994; 2004; Haas, 2001; Berejikian 1997, 2002; Faber, 1990; Sheafer and Dvir-Gvirsman, 2010; Davis, 2000; Fatas, Neugebauer and Tamborero, 2007). Instead, sub-disciplines of political science like Comparative Politics (e.g Steinacker, 2006; Weyland, 1996, 1998, 2002; Vis, 2009, 2010; Vis and Van Kersbergen, 2007) or International Political Economy (e.g. Elms, 2004, 2008) lag significantly behind regarding their influence by prospect theory (Vis, 2011).

Evidently, the most pertinent political science discipline for this PhD is voting behaviour. The question that arises then is whether there is scholarship applying prospect theory to voting behaviour. The answer is that in general there are limited citations about that. Among those I distinguished Quattrone and Tversky’s (1986, 1988) experimental adaptation of prospect theory to voter’s choice and turnout problems with Stanford university students. The reason I’m particularly inspired by Quattrone and Tversky’s work is because their study was the first structured attempt to adapt prospect theory to voting behaviour, choice and turnout (Levy, 2003). Apart from that, there are also a few studies focusing on politics (e.g. Peterson and Lawson, 1989; Stroh and Moskowitz, 1992; McDermott, 1998; Patty, 2006; O’Connell, 2011). Peterson and Lawson (1989) studied turnout based on their lab sample’s orientation towards risks and the preference for the status quo. Stroh and Moskowitz (1992) assessed candidate choice by manipulating information presented in the lab. McDermott (1998) examined political campaigning
and how it influences the election outcome by placing the electorate under uncertainty and towards risk-seeking or risk-averse behaviour. Patty’s (2006) experimental approach researched turnout in the US midterm elections finding that voters who experience losses related to the President’s damaging policies turn out significantly in the midterm elections. O’Connell (2011), who underlines the under-exploitation of prospect theory in campaigning, revisits presidential campaigns of the 1980s and describes them as “situational gamblers”, taking risks when facing losses and being risk-averse when winning.

I stressed above that literature on prospect theory’s application to voting behaviour is limited. As this PhD’s topic is EU referendum behaviour, another relevant question arises: has prospect theory ever been applied to referendums and particularly EU referendum voting? Despite the acknowledgement on the potential of prospect theory in political science (e.g. Mercer, 2005; Levy, 2003), there is limited reference of prospect theory in EU referendums (Carreras, 2019). Carreras (2019) attributed the leave vote in the Brexit referendum to those positioned in a domain of losses while remain to those in a domain of gains. Moreover, Hancock (2011) tried to apply a prospect theory syllogism to the referendum leading to the 1998 Good Friday agreement in Northern Ireland. Hancock found that during the 6-week referendum campaign the Yes side overstated the losses (violence and unrest) against the gains of an agreement (peace). According to him, the passage of the agreement is attributed to a campaign strategy based on prospect theory towards the unionists succeeding in focusing on the costs of the referendum’s non passage instead of the gains of the Yes vote. Hence, the existence of just a few references of prospect theory in EU referendum voting from 1979 to 2019, combined with the potential benefits of prospect theory for political science (e.g. Mercer, 2005; Levy, 2003), created the fertile ground in this thesis to apply prospect theory to EU referendum behaviour.
On Brexit, few scholars discussed Brexit as a risk-seeking behaviour of the left-behind from globalization, who were in a state of losses and took a risky decision of uncertain repercussions (e.g. Carreras, 2019; Kokotovic and Kurecic, 2017; Dos-Santos, Candeias and Diz, 2017; Hentiz, 2016). On the one hand, Carreras (2019) focused solely on Leave as the effect of the domain of losses/gains elicited by living areas of economic decline, instead of contemplating an in depth test of prospect theory principles (e.g. reference point) as a possible alternative model of EU referendum voting, which would cover both choice and turnout (i.e. voter’s illusion). The latter is endeavoured throughout this thesis instead. On the other hand, Kokotovic and Kurecic (2017) stressed that the Brexit campaign focused more on losses than gains, as Hancock had claimed for the Good Friday agreement. Although without specifying their own empirical model, the above scholars treated the 2016 referendum results and the Trump result in the US as a single case. They conceptualized them as risk-seeking votes of the left-behind electorate which was in a state of losses (Kokotovic and Kurecic, 2017; Dos-Santos, Candeias and Diz, 2017; Hentiz, 2016). Nonetheless, this PhD thesis goes deeper by testing the validity of prospect theory through the adaptation of Quattrone and Tversky’s (1986, 1988) structured benchmark work in this field, who first applied prospect theory to voting behaviour.

### 3.3 Issues with prospect theory’s adaptation to political science

Why is there a general lack of prospect theory’s application to political science (e.g. Vis, 2009; Levy 1997, 2003; McDermott, 2004; Boettcher, 2004; Mercer, 2005)? According to Levy (1997), the biggest problem in the adaptation of prospect theory to political science is mainly its laboratory origin. According to him, “the descriptive generalizations upon which prospect theory is based emerge from experimental research in highly structured laboratory settings which are very unlikely to be replicated in the complex world”. However, this PhD tackles this key problem of prospect
theory’s adaptability to political science by testing some of its core findings in survey experiments through representative samples of the UK population in cooperation with Ipsos Mori UK. Additionally, not only this generalization bias that Levy (1997) stressed is tested outside the lab, but also through the real political event of the 2016 EU referendum in Britain.

Another problem of the application of prospect theory in political science is what Levy (1997) and Vis (2011) called the “aggregation problem”. This lies in the fact that prospect theory was developed in the context of individual decision-making. Therefore, the theory cannot accommodate collective decision-making. This is another problem that this PhD addresses. Although voting is an individual decision, investigated outside the lab through representative samples with Ipsos Mori UK can produce results that can be generalized to the British electorate. Besides, Vis (2011) already argued that prospect theory is applicable to collective decision-making because groups show the same risk attitudes under prospect theory as individual decision-makers.

Finally, a possible “obstacle” preventing political scientists from applying prospect theory is the lack of a structured framing theory (Vis, 2011). Prospect theory was developed based on the power of framing (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Nevertheless, despite scholarship’s attention to framing (Tversky and Kahneman, 1981; DellaVigna, 2009; Kam and Simas, 2010; Kanner, 2005), there isn’t an established theory of framing per se. Vis (2011) also stresses this issue.

3.4 The initial application of prospect theory to voter’s choice and turnout

As previously said, the key influential work for the PhD’s research design was the empirical studies of Quattrone and Tversky (1986, 1988). In their pioneer work the rational theory of political choice and turnout (expected utility theory) was challenged due to major inconsistencies observed.
The researchers concluded that individual rationality in electoral behaviour isn’t necessarily intuitively compelling. While most attempts to adapt prospect theory to politics (e.g. Mercer, 2005; Levy, 2003; McDermott, Fowler and Smirnov, 2008) start from Kahneman and Tversky’s (1979) prospect theory, this PhD innovatively begins by reviewing Quattrone and Tversky’s first application of this theory to voting behaviour.

Quattrone and Tversky (1988) found first that expected utility theory (Bernoulli, 1738; Von Neumann and Morgenstern, 1944; Friedman & Savage, 1948), which prevailed in economics for explaining decision-making, is unable to effectively accommodate candidate preference (Vis and Kuijpers, 2018). Contrary to expected utility theory axioms, voters choose a “risky” candidate (for example a candidate who is more radical or about whom she has little information) when positioned in a frame of losses and avoid a “risky” candidate in a frame of gains. Additionally, Quattrone and Tversky’s (1986) work on turnout challenging Downs’ (1957) rational model is also presented in this chapter. Thus, Quattrone and Tversky’s (1986, 1988) experiments are outlined in detail below as this PhD endeavours to enrich their work through Britain’s EU referendum by transferring their laboratory study to survey experiments and representative samples of the UK population in cooperation with Ipsos Mori UK.

3.4.1 The “Reference Point”

Quattrone and Tversky (1986, 1988) using a subject pool of Stanford university undergraduates challenged the mere axioms of the rational voter provided by expected utility theory. This was accomplished by casting light on the principles of prospect theory. First, their studies revealed the “reference point”, an important finding in prospect theory. Kahnmenan and Tversky (1979) discovered that by altering the reference point, the decision-maker’s relative position to the environment, the decision’s outcomes vary significantly. The distance of the prospects from the
reference point, either higher or lower, will be regarded by the decision-maker as gains or losses, something that will lead to risk-seeking or risk-averse political choices respectively.

Quattrone and Tversky (1988) monitored the reference point in candidate preference by presenting voters with a hypothetical question. It is important to meticulously analyse their design here, as I adjust it in my methods by including hypothetical questions into survey experiments. The questions in their original study situated the voter in the dilemma of preference between two candidates depending on their projected political impact on the country. The impact was provided in numerical values via the “Standard of Living Index (SLI)” . The SLIs that the candidates would bring were the prospects in that voting decision. Given that the estimates of the political impact to the living standards are uncertain, since the candidates weren’t yet in power, there were different SLIs “estimated” by two hypothetical economists. Consequently, the “reference point” was triggered by presenting to subjects information of the SLI in similar “competitive” countries.

By changing the economists’ estimates about the SLI that candidates would bring, and by changing the SLI of the “competitive countries” (reference point), Quattrone and Tversky (1988) discussed results that didn’t agree with the rational model of voting. Below I present their pertinent studies, for the reader to comprehend their structure in detail. This is crucial and purposeful because I adjust the binary logic of their experiments to evolve it through EU referendum survey experiments.
Problem 1: Suppose that as a citizen of Alpha, you were asked to cast your vote for Brown or Green. On the basis of the information received, whom would you vote for?

Table 3.1: Presented alternative choices of Problem 1 (N=89)

<table>
<thead>
<tr>
<th></th>
<th>Other Four Nations</th>
<th>Brown’s Policy</th>
<th>Green’s Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economist 1</td>
<td>$43,000</td>
<td>$65,000</td>
<td>$51,000</td>
</tr>
<tr>
<td>Economist 2</td>
<td>$45,000</td>
<td>$43,000</td>
<td>$53,000</td>
</tr>
</tbody>
</table>

Problem 2: Suppose that as a citizen of Alpha, you were asked to cast your vote for Brown or Green. On the basis of the information received, whom would you vote for?

Table 3.2: Presented alternative choices of Problem 2 (N=96)

<table>
<thead>
<tr>
<th></th>
<th>Other Four Nations</th>
<th>Brown’s Policy</th>
<th>Green’s Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economist 1</td>
<td>$63,000</td>
<td>$65,000</td>
<td>$51,000</td>
</tr>
<tr>
<td>Economist 2</td>
<td>$65,000</td>
<td>$43,000</td>
<td>$53,000</td>
</tr>
</tbody>
</table>

In problem 1 the Green candidate won. The average point of reference, SLI of comparable countries, is $44,000. This is less than the average SLI of both Brown and Green candidate, who give similar average SLIs, $54,000 and $52,000 respectively. This places the voter in a state of gains and thus, according to prospect theory he should be risk-averse. Indeed, the voter prefers the Green candidate, who had a more “conservative” policy. Contra, in problem 2 candidate Brown won. This happened because the frame was turned opposite, positioning the voter in a state of losses, as the average SLI of other countries is higher than the average SLI both of the Green and
Brown candidate. Consequently, the voter in a state of losses, being risk-seeking, voted for the riskier choice (greater spread of SLI estimates) of candidate Brown. Therefore, these scholars concluded that the “riskier” candidate, Brown, received significantly more votes (p<0.01 by chi-square) in problem 2 than in problem 1, although both Brown and Green offered equal policies (average SLIs).

Quattrone and Tversky (1988) expanded the validity of prospect theory in explaining electoral behaviour, not only by placing monetary benefits (SLI measured in dollars) but also macro-economic terms like inflation. The results were identical, following prospect theory’s principles:

**Problem 3:** Suppose that as a citizen of Alpha, you were asked to cast your vote for Frank or Carl. On the basis of the information provided, whom would you vote for?

**Table 3.3:** Presented alternative choices of Problem 3 (N=76)

<table>
<thead>
<tr>
<th>Projected Rate of Inflation (%)</th>
<th>Other Four Nations</th>
<th>Frank’s Policy</th>
<th>Carl’s Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economist 1</td>
<td>24</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Economist 2</td>
<td>26</td>
<td>14</td>
<td>26</td>
</tr>
</tbody>
</table>
**Problem 4:** Suppose that as a citizen of Alpha, you were asked to cast your vote for Frank or Carl.

*On the basis of the information provided, whom would you vote for?*

### Table 3.4: Presented alternative choices of Problem 4 (N=75)

<table>
<thead>
<tr>
<th>Projected Rate of Inflation (%)</th>
<th>Other Four Nations</th>
<th>Frank’s Policy</th>
<th>Carl’s Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economist 1</td>
<td>4</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Economist 2</td>
<td>6</td>
<td>14</td>
<td>26</td>
</tr>
</tbody>
</table>

A similar explanation is valid for problems 3 and 4. While the expected rate of inflation is the same for both candidates, 15 (average projected rate of inflation), the mere change of the reference point (Other Four Nations’ Inflation) results in a different voting decision. In problem 3 Frank is voted the most, as the voter is positioned in a frame of gains (higher inflation in competitive countries) and thus is risk-averse. In problem 4 though, when the voter is placed in a frame of losses (lower inflation in competitive countries), he chooses Carl, the risk-seeking vote choice (riskier=greater spread in the estimations for his policy’s impact on inflation). Consequently, Carl collects significantly more votes in problem 4 than problem 3 (p<0.01 by chi-square), despite the expected value of Carl’s and Frank’s policies being the same.

3.4.2 “Loss Aversion”

While I adjust the reference point logic of the above problems in my research design of Britain’s EU referendum of 2016, there are two more problems in Quattrone and Tversky’s (1988) study that shed light on another major principle of prospect theory, loss aversion. According to prospect theory, losses are more important in value than gains and have greater influence on the decision’s outcome.
**Figure 3.1:** The hypothetical value function of prospect theory.

![Value Function Diagram]

Source: Prospect theory: an analysis of decision under risk (Kahneman and Tversky, 1979)

In the above formula, \((v)\) equals the value of prospects, \((x)\) equals gains and \((-x)\) equals losses. The formula depicts that losses are more important than gains. Hence, the downside in the figure is steeper in losses than gains (Kahneman and Tversky, 1979).

While this concavity of losses is also witnessed in expected utility theory, there is one paradox in candidate preference decision that can be explained only through prospect theory, which is that risk aversion is also monitored in risk-less prospects (Quattrone and Tversky, 1988). This means that the voter prefers the status quo or else takes no risk by not voting for an unknown or little known candidate, even if the expected value of the risky choice is higher than 0 (value of riskless choice). These researchers performed the following experiment on the “status quo paradox” which moves away from the rational model of voting:

**Problem 5 (N=91):** Imagine there was a presidential contest between two candidates, Frank and Carl. Frank wishes to keep the level of inflation and unemployment at current levels. The rate of inflation is currently at 42% and the rate of unemployment at 15%. Carl proposes a policy that would decrease the rate of inflation by 19% and increase the rate of unemployment
by 7%. Suppose that as a citizen of Alpha you were asked to vote for either Frank or Carl. Please indicate your vote.

**Problem 6 (N=89):** Imagine there was a presidential contest between two candidates, Frank and Carl. Frank wishes to keep the level of inflation and unemployment at current levels. The rate of inflation is currently at 23% and the rate of unemployment at 22%. Carl proposes a policy that would decrease the rate of inflation by 19% and increase the rate of unemployment by 7%. Suppose that as a citizen of Alpha you were asked to vote for either Frank or Carl. Please indicate your vote.

In both problems the candidate who maintains the status quo is preferred (p<0.01 by chi-square). The voter prefers the incumbent (status quo), avoiding the “risky” choice of a candidate that could make things either worse or better. I adapt these finding in my design, as my hypotheses include the political choice between Yes (UK to remain in the EU=status quo) and No (UK to exit the EU/Brexit=risky choice).

Most importantly, in their focus on loss aversion, Quattrone and Tversky found that the mere wording of the information presented to the voter frames him in a position of losses or gains. Negative framing will be more influential than positive framing and thus the voter’s choice can be accommodated only by prospect theory. They conducted the following experiment on that:

**Problem 7 (N=149):** As you know, the Equal Rights Amendment (ERA) to the Constitution is currently being debated across the country. It says, “Equality of rights under law shall not be denied or abridged by the United States or by any state on account of sex”. Supporters of the amendment say it will **Frame A: help eliminate discrimination against women**/ **Frame B: improve
the rights of women in job opportunities, salary and social security benefits]. Opponents of the amendment say it will have a negative effect by denying women’s protection offered by special laws. Do you favour or oppose the Equal Rights Amendment?

Problem 8 (N=421): The status and rights of women have been addressed in two different ways, which have different social and legal implications. Some people view it primarily as a problem of eliminating inequality and discrimination against women in jobs, salary, etc. Others primarily as a problem of improving or strengthening the rights of women in different areas of modern society. How do you see the problem of women’s rights?

These problems describe a constitution amendment for equal rights between women and men. Despite voters being presented with the same content and prospect value, in problem 7 the respondents are more in favour of ERA when it is framed about “elimination of discrimination” (78%) than when framed about “improvement of women’s rights” (69%). Also, in problem 8 out of those who were in support of ERA 72% chose to regard this as “eliminating inequality” while among those who opposed it only 60% viewed it as eliminating inequality. Hence, Quattrone and Tversky found that the same content is judged as more impactful when the problem is presented through the negative “elimination frame”. This can be explained by the prevalence of the negative prospects or losses compared to gains in prospect theory. It is inferred that if the voter is presented with the same candidate information in different wording/frames, vote choice will be different too. I thus incorporate this powerful change of frame impact in the thesis’ research design to explain voter’s choice in the EU referendum through prospect theory.
3.4.3 The “Ratio-Difference Principle”

An important principle of the “rational voter” is invariance (Quattrone and Tversky, 1988). This means that provided the expected values remain constant, the frames’ order shouldn't be able to change the decision’s outcome. What is normatively impossible for utility theory to explain though is achievable through prospect theory, particularly framing. Kahneman and Tversky (1984) argued that “invariance is normatively essential, intuitively compelling, and psychologically unfeasible”.

As previously said, Quattrone and Tversky's findings in problems 7 and 8 challenged the principle of invariance in voter’s choice. It was there that the same equivalent prospects in two problems, framed with different wording, placed the voter in a state of losses or gains and thus led her to different decisions. This finding was elaborated with two more experiments where the power of framing was further revealed:

**Problem 9:** Imagine you were faced with the decision of adopting program J or program K. Which would you select?

**Table 3.5:** Presented alternative choices of Problem 9 (N=126)

<table>
<thead>
<tr>
<th>Policy</th>
<th>Work Force Unemployed (%)</th>
<th>Rate of Inflation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program J</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Program K</td>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>
**Problem 10**: Imagine you were faced with the decision of adopting program J or program K.

*Which would you select?*

**Table 3.6**: Presented alternative choices of Problem 10 (N=133)

<table>
<thead>
<tr>
<th>Policy</th>
<th>Work Force Employed (%)</th>
<th>Rate of Inflation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program J</td>
<td>90</td>
<td>12</td>
</tr>
<tr>
<td>Program K</td>
<td>95</td>
<td>17</td>
</tr>
</tbody>
</table>

These scholars asked the voter to choose between a policy program J or K. In both problems the expected value was exactly the same. However, the mere framing of the policy’s impact on society as “unemployment” or “employment” switched voter’s decision. Thus, policy K was preferred in problem 9 but J in problem 10 (p<0.01 by chi-square), despite being of the same value.

This result about the power of framing was labelled by the two scholars as the “ratio-difference principle”. This descriptive principle relies on the psychological effect of framing, which will be analysed in the following sections. According to the “ratio-difference principle”, gains from 100 euros to 200 euros are more important than gains from 300 euros to 400 euros although the absolute value increase is the same, 100 euros. The source for this “logical paradox” is that the ratio 200:100 is bigger (2) than the ratio 400:300 (1.3).

Quattrone and Tversky transferred the “ratio-difference principle” to political behaviour. They conducted two studies to monitor the psychological effect of framing’s impact. The voter had to choose between policy J and K which is about how to distribute a $100 million fund for crime prevention in two communities, Alpha and Beta. In the first problem the following information was presented:
Problem 11: “Statistics have shown that by the age of 27, 3.7% of all Alphans have a criminal record, whereas 1.2% of all Betans have a criminal record. In light of the available crime statistics, which program would you select?”

Table 3.7: Presented alternative choices of Problem 11 (N=125)

<table>
<thead>
<tr>
<th>Program</th>
<th>To Alphan Community</th>
<th>To Betan Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program J</td>
<td>$55M</td>
<td>$45M</td>
</tr>
<tr>
<td>Program K</td>
<td>$65M</td>
<td>$35M</td>
</tr>
</tbody>
</table>

At the second problem the same value of information was given, only that this time framed differently.

Problem 12: “Statistics have shown that by the age of 27, 96.3% of all Alphans have no criminal record whereas 98.8% of all Betans have no criminal record. In light of the available crime statistics, which program would you select?”

Policy K was chosen in the first problem but J in the second (p<0.001 by chi-square). This despite the fact that it’s the same information (prospect value), labelled as criminality and non-criminality. As per the ratio-difference principle, in the (negative) frame “criminality” the ratio from 3.7% to 1.2% (3.08) is more consequential for the voter than the ratio between 96.3% to 98.8% (1.02) in the (positive) no criminality frame. In fact, in the criminality frame the ratio is three times bigger. Due to the ratio-difference principle the voter perceives the difference between 3.7% and 1.2% (criminality frame) as higher than the difference between 96.3% and 98.8% (no criminality frame), albeit equal (2.5%). Therefore, in the former frame voters prefer policy K that will contribute more to the “criminal” community and combat the problem more effectively. Contra, in the no criminality frame they choose the more balanced J policy considering the criminality difference as minor, although the same. Overall, the “ratio-difference” finding is
relevant to political psychology but remains underexplored in the field. In my research design I implement this logic to monitor framing effects in the voting behaviour of the Brexit referendum.

3.4.4 The “turnout flaw” of expected utility theory: “voter’s illusion”

There are few topics in political science studied as much as turnout. Scholars have discussed numerous models accommodating turnout behaviour, from the rational voter’s model where the voter votes to maximise utility (Downs, 1957) to the consumption model (Riker and Ordeshook, 1968), the ethical voter (Gooding and Roberts, 1975; Jankowski, 2004; Fowler, 2005; Coate and Conlin, 2004), the minimax regret (Ferejohn and Fiorina, 1974; Tideman, 1985), the game-theoretic approach (Ledyard, 1984; Palfrey and Rosenthal, 1983, 1985), the group-based (Filer, Kenny and Morton, 1993; Grossman and Helpman, 2001), the ego-centric models with individualistic reference towards voting (Avecedo and Krueger, 2004) and the learning theory models (Fowler, 2006; Plutzer, 2002; Gerber, Green and Shachar, 2003). Despite the vast turnout literature, it is particularly purposeful in this literature review to discuss the rational voter’s turnout model, which derives from expected utility theory, because as previously stipulated, prospect theory is positioned as a remedy to expected utility theory’s flaws in voting behaviour.

Kahneman and Tversky’s prospect theory stood as a sound alternative against expected utility theory. The former section provided a detailed review of Quattrone and Tversky’s (1988) experiments demonstrating cases where utility theory cannot accommodate voter’s choice. Presently, since this thesis addresses the puzzle of electoral behaviour by also investigating voter's turnout, it is purposeful that I present here the rational theory of voter’s turnout. I then elaborate on the turnout finding of Quattrone and Tversky’s (1986) work called “voter’s illusion” which refers to the failure of the rational voter’s model to accommodate turnout behaviour under expected utility.
Downs (1957) brought to light the rational turnout model. In his work “An Economic Theory of Democracy” he outlined the following decision model that the rational voter follows to measure the utility of his decision to vote or abstain, making a decision that has bigger gains than costs:

\[ R = PB - C > 0 \]

R is the overall utility of voting, while PB are the voting benefits. B derives from subtracting the value of the utility of two candidates, P is the probability that the vote makes a difference in the election result while C the cost that going to the polling station entails. Obviously, given that P will be close to 0 (Mulligan and Hunter, 2003) and the gains of voting will be “collective goods” (Whiteley and Seyd, 1996), it is expected that the costs of turning out will always be greater. Hence, any costs will constitute voting as an economically unsustainable project. Turnout’s costs can be the voter’s time to search for candidate information before the ballots open. It is said that given the scarce resources of the electorate to process candidate information accurately (Converse, 2000), costs in this equation are elevated. Voters see as cost the registration process in catalogues (Highton, 2004). C in this formula can be also the cost to actually go to the polling station on that day, which entails financial or opportunity costs like the time spent there (Palfrey and Rosenthal, 1985). According to the expected utility theory model of voter’s turnout, since the probability of an individual vote to influence the election outcome is too low, it is expected that voters should by default choose abstention. Nonetheless, it is naturally argued that the electorate exercises its democratic right in great majorities for various reasons.

Having presented Downs’ model of the rational voter, I proceed with the pertinent “voter’s illusion” phenomenon of turnout, which Quattrone and Tversky (1986) uncovered in the lab, which deviates from the rational voter. Next to the reference point and ratio-difference principle I will also test voter’s illusion in the context of the 2016 EU referendum. Quattrone and Tversky (1986) added “a less rational diagnostic aspect” of turnout. These researchers, influenced by prospect
theory, argued that there is a strong link between political orientation and turnout. This is based on their confirmed assumption that if a partisan turns out, he’ll expect his fellow partisans in the electorate to do the same. Instead, if a partisan abstains, he’ll anticipate partisans to abstain too. Overall, their study that inspired this thesis to look at voter’s turnout holds that voters tend to see their vote as “diagnostic of millions of votes”. Thus, the preferred candidate wins if all like-minded voters go to the polling station.

Quattrone and Tversky confirmed their voter’s illusion hypothesis with 315 undergraduate students in the lab. Although I transfer this to a survey experiment by inserting questions in Ipsos Mori polls about the Brexit referendum, I find it important to discuss here their methods and results. My research adapts their idea but is differentiated as it tests voter’s illusion in a survey experiment within the actual 2016 UK referendum environment. Quattrone and Tversky’s finding of “diagnostic voting” for turnout had a hypothetical essence, as did their studies on candidate preference. According to their diagnostic voting design, there was a fictitious country called Delta consisting of 4 million voters of party A, 4 million of party B and 4 million non-partisans. Subjects were placed under two conditions: “Party Supporters Theory” and “Non-aligned Voters Theory”. They were then asked whether they would vote or not in the elections of country Delta. In the former condition subjects were informed that non-partisans will equally split their vote between party A and B and therefore the result of the elections will be determined by partisans’ vote. Contrastingly, voters exposed to the latter condition found out that partisans will split equally between the two parties and the result would be influenced by the “non-aligned voters” (non-partisans).
**Figure 3.2:** The voter’s illusion problem with the options presented to subjects

![Diagram](image)

Source: Self-deception and the voter’s illusion (Quattrone and Tversky, 1986)

According to this figure, Quattrone and Tversky (1986) conditioned subjects in the partisan condition A>B or A<B and in the non-partisan condition A=B. The “diagnostic vote” would materialise only in the party supporters theory, because there the voter would be able to regard her vote as diagnostic of millions of others (A>B or A<B). In that condition she was expected to turn out more than in the non-aligned voters theory. Each subject was asked three questions: whether she thinks that partisans A or B would vote more if she would abstain, what would be the probability of party A winning party B, if she would abstain and finally whether she would vote if voting incurred costs.

Quattrone and Tversky (1986) had three research hypotheses:


b) Subjects in the condition Voter Supporters Theory will be willing to vote more than subjects in the Non-aligned Voters Theory condition.
c) The bigger the probability difference in the first hypothesis, the larger the willingness of the partisan voter to vote, due to the “diagnostic vote theory”.

**Table 3.8:** The results from the answers to the voter’s illusion problem (N=315)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Subjects’ Decision</th>
<th>Party A votes in greater numbers than Party B</th>
<th>Party A defeats Party B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party Supporters Theory</td>
<td>vote</td>
<td>5.81</td>
<td>6.06</td>
</tr>
<tr>
<td></td>
<td>abstain</td>
<td>4.13</td>
<td>4.09</td>
</tr>
<tr>
<td></td>
<td>difference</td>
<td>1.68</td>
<td>1.97</td>
</tr>
<tr>
<td>Non-aligned Voters Theory</td>
<td>vote</td>
<td>4.20</td>
<td>5.12</td>
</tr>
<tr>
<td></td>
<td>abstain</td>
<td>3.87</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>difference</td>
<td>0.33</td>
<td>0.52</td>
</tr>
</tbody>
</table>

The above table depicts the means of the answers recorded regarding the inferred probabilities. One can see that, as hypothesised, the difference \((P(A>B/V) - P(A>B/not V))\) is bigger for subjects in the “Party Supporters Theory” condition than in the “Non-aligned Voters Theory”, in the question if party A would vote more than party B, \(F(1,313)=35.79, p<.001\), and in the question if party A would win party B, \(F(1,313)=40.18, p<.001\). Consequently, voters exposed to the Non-aligned Voters Theory recorded smaller turnout intent (M=6.43) than voters in the partisan condition (M=7.17, \(F(1,313)=7.85, p<.05\)). Quattrone and Tversky tested through correlations their hypothesis that the turnout intent and the “diagnostic” value of the vote are intertwined. They discovered that turnout is “diagnostic” of the answer to the question if Party A voters will vote more than Party B voters, \((P(A>B/V) - P(A>B/not V)), r=.27, p<.001\) and if Party A will beat Party B in the race, \((P(A defeats B/V)-P(A defeats B/not V)), r=.32, p<.001\). In the non-partisan condition however correlations were weaker, \((P(A>B/V) - P(A>B/not V)), r=.07, p<.01\) and \((P(A defeats B/V)-P(A defeats B/not V)), r=.17, p<.01.\)
Given that Quattrone and Tversky’s study provided key insights to voter’s turnout, I will test the “diagnostic vote” of turnout hypothesis in this thesis, having explored voter’s choice explained by prospect theory in EU referendums. In a research strategy that transcends theories and methods from the lab to survey experiments I will be able to reach my methodological goal, to bring prospect theory closer to voting behaviour in EU referendums, by bridging the distance between a lab experiment and a survey experiment.

In the following section I continue with the criticism that prospect theory has received in social sciences, in order to acknowledge that this theory is not a panacea but has limitations that scholarship has stressed. Besides, the intent of this thesis is not to claim a theory that can be applied to all EU referendums but instead to contribute to EU referendum literature by suggesting an alternative to the various EU referendum schools based on the premises of a widely influential theory.

3.5 General critique of prospect theory as a theory in social sciences

Apart from the formerly discussed critique on the application of prospect theory to political science, it should be noted that prospect theory has also received a broader critique as a theory in social sciences. First of all, scholars argue that prospect theory lacks originality due to its reliance on knowledge from psychology (Rossiter, 2018). While Kahneman and Tversky (1979) describe loss-aversion as an invention of prospect theory, in perception literature it had been earlier discussed as “negativity bias” (Anderson, 1965; Carlson, 1966; Baumeister et al., 2001; Czapinski, 1985; Brickman, Coates and Janoff-Bulman, 1978; March, Gaertner and Olson, 2017). In addition, loss aversion has been criticized to assimilate to psychology’s earlier conclusion that punishment has a bigger impact than reward (e.g. Estes, 1944). Moreover, the second criticism of prospect theory lies with the high mathematical ability that is requested by Kahneman and Tversky’s
subjects in order to process their problems (Rossiter, 2018), a skill that shouldn’t be always anticipated that all decision-makers can meet. What is more, Kahneman and Tversky’s prospect theory has been criticized because it doesn’t cast light on the mechanisms used by subjects to process the information presented with but instead prospect theory makes inferences about their decision’s outcome (Johnson, Shulte-Mecklenbeck and Willemsen, 2008). Besides, Nwogugu (2006) describes prospect theory models as inaccurate, deriving from improper methods and calculations. The same scholar argues that decision-making is more complex than what Kahneman and Tversky’s (1979) prospect theory suggests. In fact, Nwogugu (2006) maintains that decision-making is a process that operates with many criteria being considered and prospect theory doesn’t adopt the various “psychological, legal, biological, knowledge, and situational price-dynamics factors”. This scholar adds that research in neurobiology already argues that decision-making cannot be accommodated by prospect theory.

Furthermore, critics have also referred to the inability of prospect theory to apply to real life decisions, other than the fictitious mathematical problems (Rossiter, 2018). Also, Slovic (1995), a colleague of Kahneman and Tversky who has exerted criticism on their work, discussed the issue of “preference reversal” reflecting on prospect theory’s structure of binary dilemma between two prospects, whilst in life problems are often more complicated than that. Hsee et al. (1999) agree with Slovic’s view saying that Kahneman and Tversky’s problems can lead to different decisions if seen as a single evaluation of a prospect or joint evaluation of a pair of prospects. Another “real world issue” of prospect theory has been discussed to be the certainty of a prospect in Kahneman and Tversky’s theory whereas in decisions in real life only a probabilistic approach can be attributed to the various alternatives (Juslin, Nilsson and Winman, 2009). To continue with, one more criticism of prospect theory focuses on the social dilemmas that Kahneman and Tversky’s laboratory problems touch, like life and death (Rossiter, 2018). According to Fischhoff et al.
(1978) those issues are extremely complex with more than two alternative decision routes and cannot be attributed so easily to monetary values. Finally, Rossiter (2018) refers to the issue of prospect theory in accommodating consumer decisions at a time that there is always a broad range of alternative options, which is often more than the two that Kahneman and Tversky used to refer to.

What is more, scholars have also criticized framing, a concept that Kahneman and Tversky (1981) introduced through prospect theory. First of all, the way framing is presented in prospect theory has been described as unoriginal (Rossiter, 2018). In particular, Hovland, Janis and Kelley (1953) have criticized the description of framing as losses or gains to be “one-sided” without further elaboration on framing from psychology. Rossiter (2018) criticizes Kahneman and Tversky as “poor experimenters” through an analysis of the well-known “Asian-Disease Problem” (Tversky and Kahneman, 1981). To understand The Asian-Disease problem it is presented below:

Imagine that the US is preparing for the outbreak of a usual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimate of the consequences of the programs are as follows:

**Problem 1 (gain frame)**

If Program A is adopted, 200 people will be saved

If Program B is adopted, there is 1/3 probability that 600 people will be saved and 2/3 probability that no people will be saved.

Which of the two programs would you favour?

**Problem 2 (loss frame)**

If Program C is adopted, 400 people will die.

If Program D is adopted, there is 1/3 probability that nobody will die and 2/3 probability that 600 people will die.
Tversky and Kahneman’s “Asian disease problem” has been criticized for not being balanced (Rossiter, 2018). For instance, in Problem 1 the reader is informed about program A solely as a gain but about program B as a gain and loss too. Similarly in Problem 2 program C is framed as a loss only while D as both a gain and loss. Besides, this lack of balance in Tversky and Kahneman’s framing has been criticized by Druckman (2002) too. Another critique (Rossiter, 2018) of the “Asian disease problem” is that Tversky and Kahneman force an answer by asking the respondents to choose between the two programs, which is something that might prevent them from making a rational decision. In addition, Tversky and Kahneman’s experiment was judged as being purely hypothetical and thus having little external validity (Rossiter, 2018). Rossiter (2018) suggests that their experiment relies on a specific attitude by some respondents who can be tricked for not seeing that the value of the prospects is equal and thus it cannot speak to broader populations.

Moreover, according to Rossiter (2018) another argument against the importance of prospect theory is the fact that subsequent experimenters of prospect theory’s framing didn’t adopt Tversky and Kahneman’s idea of measuring the impact of a sure gain against a probabilistic gain. Instead, they measured the difference between positive and negative framing. Naturally, the latter is based on the premises that losses have a more consequential effect than gains. However, as stipulated earlier in this critique for prospect theory, the prevalence of losses over gains wasn’t invented by Kahneman and Tversky’s (1979) prospect theory but it existed before them in the area of psychology (e.g. Baumeister et al., 2001; March, Gaertner and Olson, 2017; Vaish, Grossman and Woodward, 2008).

Finally, prospect theory has been criticized for heavily relying on the power of framing, which has been considered as an unethical practice (Rossiter, 2018). Rossiter exerts a very strict criticism
on prospect theory’s framing by stipulating that it constitutes “deception”. He elaborates on that by saying that providing one-sided information, omitting pieces of information or prioritizing negative information to have bigger impact on the public deviates from what is morally acceptable. He acknowledges that politics, marketing and advertising rely on framing in order to influence the public’s behaviour. Rossiter, Percy and Bergkvist (2018) add that governments and marketers often use one-sided negative information to convince people, something that is clearly according to him an “illegal deception”.

3.6 Conclusion

This chapter discussed first the limited application of prospect theory to political science and the even more scarce application of the theory to voting behaviour and particularly EU referendum voting. It also outlined the issues that the attempts to apply prospect theory to political science have been facing in scholarship. Later the chapter continued with the detailed presentation of the influential work by Quattrone and Tversky (1986, 1988), which has been an inspiration for this PhD research to build its research design upon. Finally, the chapter ended with an outline of the criticism that prospect theory has received as a theory in social sciences, with the scope to provide a balanced perspective to the reader by acknowledging the theory’s flaws. The thesis continues with its theory chapter outlining relevant assumptions and hypotheses about how prospect theory could explain EU referendum behaviour in Britain’s 2016 referendum, referring to both voter’s choice and turnout.
CHAPTER IV: THEORY

4.1 Introduction

Given the discussed scarce application of prospect theory in political science (Mercer, 2005; Vis, 2009; Boettcher, 2004; McDermott, 2004; Levy, 1997, 2003), the PhD’s theory was developed with the scope to introduce an alternative mainly to Hobolt’s (2005) utilitarian expectations EU referendum school, a theory based on what the thesis previously discussed as flawed expected utility theory. Moreover, as this thesis explored in detail at its second chapter, prospect theory could also speak to other EU referendum perspectives like substantive issues, second-order elections, identity politics, EU referendum campaigns, cue-taking and institutional design, the following theory aspires to simultaneously contribute to a wider EU referendum scholarship. This is intended to be achieved by providing a different angle of EU referendum voting based on the premises of a renowned theory from psychology.

Overall, the PhD’s theory aims to contribute to what Hobolt (2006) had stressed as lack of a parsimonious theoretical model accommodating both EU referendum choice and turnout. This was accomplished by revisiting the first attempt of scholarship to apply prospect theory to political science, which was authored by Quattrone and Tversky (1986, 1988) and was discussed in the previous chapter. This PhD differentiated itself though from that influential research by investigating its importance and relevance to EU referendum voting through the thesis’ tests for the validity of the reference point and ratio-difference principle for voter’s choice as well as voter’s illusion for turnout. What is more, while Quattrone and Tversky had used hypothetical cases for their study that challenged the validity of the rational voter model (Downs, 1957), which was ruled by expected utility theory, this PhD adapts their prospect theory syllogism to the actual Brexit referendum event, which took place on 23 June 2016. In addition, while Quattrone and Tversky had discovered their findings in the lab, this PhD research will broaden the external validity of
their findings through three survey experiments composed by representative samples of the UK population in cooperation with Ipsos Mori UK.

In connection with the previous chapter discussing Quattrone and Tversky’s work (1986, 1988), the upcoming sections of this chapter provide the theoretical base and pertinent hypotheses for three pieces of the same theoretical puzzle, EU referendum voting. The first piece/part of the theory reflects on voter’s choice in Britain’s in or out of the EU referendum in 2016 and discusses that it should be regarded as voting under risk which induces prospect theory’s risk-averse and risk-seeking principles. Moreover, it adapts Quattrone and Tverky’s (1988) reference point and ratio-difference principle in two separate survey experiments on voter’s choice. The second part of the theory focuses on turnout and assesses turnout behaviour in the EU referendum examined through Quattrone and Tversky’s (1986) voter’s illusion. Finally, the chapter expands its discussion by integrating the scholarship’s extensively cited moderating importance of demographics in the EU referendum (Hobolt, 2016; Kaufmann, 2016; Barslund and Ludolph, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2016; Antonucci, Howarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017). It thus explores the heterogeneous treatment effects on the reference point, ratio-difference principle and voter’s illusion of the understudied demographics of marital status, employment, parenthood and gender.

Later in the thesis the two first parts of this theory will be tested in two separate empirical chapters respectively while the third part on demographics will be integrated within those two empirical chapters. Hence, the PhD’s theory was developed to introduce an alternative mainly to the third school of EU referendum voting which had been based on expected utility theory, provided here through the prism of prospect theory. It is thus aspired to contribute to the lack of a solid theoretical model in EU Referendum voting (Hobolt, 2006) and as a result provide research
stimuli for the conceptualization of a possible basis of another school in voting behaviour in EU referendums governed by prospect theory.
4.2 Part I: Voter’s choice in Britain’s EU referendum seen through prospect theory

The lack of an established theoretical model of voting behaviour in EU referendums was already discussed previously (Hobolt, 2006). Viewing EU referendum voting through prospect theory aims to provide a new perspective to this political behaviour conundrum and present a new possible theoretical platform to accommodate voter’s choice in risky EU referendums. Prior to discussing the theoretical implications of prospect theory in this PhD, it is first assessed whether voting behaviour in the 2016 EU referendum in the UK should be perceived as risky voting and decision-making in the first place. The latter is purposeful for the PhD’s theory to unfold, since, as explained in the preceding chapter, risk is of crucial importance to prospect theory (Kahneman and Tversky, 1979).

Previously, Nadeau, Martin and Blais (1999) had confirmed that voters are often called to make decisions that entail risk like important elections or referendums. Moreover, these researchers claim that the attitude towards risk is a stable variable to distinguish individual behaviour and thus voting behaviour too. Particularly, Nadeau, Martin and Blais referring to the Quebec referendum of 1995 showed that voters’ general tendency towards risk was crucial in the voting decision for the fundamental referendum stake of Quebec’s sovereignty. They specifically found risk reluctant Canadian voters to vote more than risk takers for “No”, which was equivalent to maintaining the status quo. Most importantly, they underlined that the impact of risk propensity on voting behaviour is underexplored in scholarship. Therefore, Nadeau, Martin and Blais (1999) called scholars to use risk to explain voting decisions with consequential repercussions like important elections or referendums. Besides, Clarke, Kornberg and Stewart (2004) commend the risky decision-making approach towards important political events in democracies.

That the stakes and risks were high in the 2016 EU referendum in the UK was already established in the thesis’ introduction. Those stakes referred not only to the big changes and looming dangers to the UK polity, ranging from the economy and migration to international affairs
and trade (e.g. Bennett, 2016; Begg and Mushovel, 2016; Evans and Menon, 2017; Dhingra et al., 2016; MacMillan, 2016; Ebell and Warren, 2016; MacDonald, 2016; Shipman, 2016; Obstfeld, 2016; Ford, 2016; Schiereck, Kiesel and Kolaric, 2016; Cumming and Zahra, 2016; Oliver and Williams, 2016; Franks, 2016; Masouros and Papadopoulos, 2016) but also to the sustainability of the European Union as a political and economic union (e.g. Nunez-Ferrer and Rinaldi, 2016; Wright, 2016; Blockmans and Emerson, 2016; Lawless and Morgenroth, 2016; Bergin, Rodriguez and McInerney, 2016; Matthews, 2016; Van der Loo and Blockmans, 2016; Schroeter and Nemeczek, 2016; Van Ham, 2016; Oliver, 2016; Koenig, 2016; Currie, 2016). Consequently, inspired by the study of Nadeau, Martin and Blais (1999) the PhD’s theory first explores the effect of risk propensity on voter’s behaviour for the case of the historic 2016 EU referendum in Britain.

Hence, in line with Nadeau, Martin and Blais’ research about Quebec’s referendum, it was expected in this PhD that general risk-takers who enjoy risk in their lives will tend to vote more for the risky and uncertain Leave while risk-avoiders who prefer a more stable and risk-averse approach will vote more for the status quo, Remain. This thesis will thus assess within a lab experiment whether voting in the Brexit referendum should be regarded as risky voting behaviour, which may set the grounds for the prospect theory viewpoint of the risk-seeking and risk-averse (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) voting behaviour of the British electorate. The above assumption is expressed through the first hypothesis of this PhD:

**Hypothesis 1 (H1): Voters who generally take risks in their lives will tend to vote more for Leave than voters who don’t generally take risks.**

Having theorized voting behaviour in the EU referendum in Britain as decision-making under risk, the PhD’s theory moves on to the implications of prospect theory on the electorate’s voting behaviour. Thus, the thesis explores voting in the risky EU referendum moderated by framing that results in a voting behaviour deviating from rationality. Quattrone and Tverky’s (1988) lab
research is transferred here to survey experiments, which aim to introduce prospect theory as a theory that accommodates EU referendum voting behaviour. As explained in the thesis’ third chapter, on the one hand Quattrone and Tversky (1988) challenged the rational voter under expected utility theory (Friedman & Savage, 1948) by showing that prospect theory’s reference point and the disproved frame invariance of expected utility’s theory (ratio-difference principle) lead to voters’ risk-seeking or risk-averse political choice and not to a vote of rational utility maximization. On the other hand, Quattrone and Tversky (1986) showed that framing about the projection of the voting behaviour of think alike voters leads to turnout behaviour (voter’s illusion) that contradicts Downs’ (1957) rational model.

Particularly on referendums, the thesis’ second chapter discussed Hobolt’s (2006) rational voter model called “proximity model of referendum voting”, which applied expected utility theory. According to Hobolt’s model, the utility of the EU treaty depends on the distance between the perceived benefit of voting Yes and the “ideal or most preferred” point of the voter regarding the issue. What is more, Hobolt introduced the “voter’s uncertainty” module in her model, accounting for a probability distribution. However, if in her model the uncertainty of the voter regarding the EU treaty is high, then the voter is bound to always vote for the option that will maintain the status quo, although that is neither the case in the history of EU referendums nor it was the case for the UK’s referendum Leave result of 2016, which was the opposite of the status quo. Consequently, this thesis argues that prospect theory may introduce a new route to voting behaviour in EU referendums, evading from the previously cited as flawed expected utility theory and adapting prospect theory’s principles. The thesis discusses voting behaviour in the risky EU referendum, reflecting on both choice and turnout, and thus tests in survey experiments prospect theory’s reference point, ratio-difference principle and Quattrone and Tverky’s argument against Downs’ (1957) rational voter on turnout, voter’s illusion.

On the one hand, the first empirical chapter will test the following hypotheses on voter’s choice and discuss in its discussion section how the results can speak to other EU referendum schools like
utilitarian expectations, EU referendum campaigns, substantive issues and identity politics. On the other hand, the second empirical chapter will test the hypotheses which are relevant to voter’s turnout.

Presently, in the first part of the PhD’s theory, which focuses on voter’s choice in the EU referendum, the thesis discusses the effect of prospect theory’s reference point and ratio-difference principle on the explanation of the Leave vote. The core theoretical assumption is that the British voters didn’t vote rationally in 2016 as per expected utility theory in order to maximize their vote’s utility. Instead, they voted following a risk-seeking and risk-averse behaviour in order to maximize gains and minimize losses in view of Brexit’s prospects, in line with Kahneman and Tversky’s (1979) prospect theory.

4.2.1 The reference point in the EU referendum

The importance of the reference point in prospect theory and candidate choice was analysed in detail at the thesis’ third chapter (Quattrone and Tversky, 1988). Prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) holds that with the prospects remaining constant the value change of the reference point can shape decisions under risk. Thus, the reference point positions the decision-maker in a domain of gains if his current position is higher than the value of the reference point and in a domain of losses if the current position is smaller than the value of the reference point. Consequently, according to Kahneman and Tversky's (1979) prospect theory, the decision-maker in the domain of gains will make a risk-averse decision to maximize gains, while in the domain of losses will make a risk-seeking decision to minimize losses.

In Quattrone and Tversky’s (1988) laboratory work risky decisions under Kahneman and Tversky’s prospect theory had remarkable applicability to their candidate choice problems. The reference point in Quattrone and Tversky’s study had taken the form of the “SLI (Standard Living Index)” of competitive countries to the participant’s country. Quattrone and Tversky found that the mere change of the living standards of a competitive country determined the risk-seeking or
risk-averse candidate choice, despite the expected utility from candidates being the same. Hence, this PhD’s first survey experiment adapted Quattrone and Tversky’s syllogism to the context of Britain’s EU referendum by framing the competitive country item as future projection about EU’s growth following the referendum result. The high reference point was created with the frame of the EU growing more than the UK and the low reference point with the frame of the EU growing less. Naturally, the objectively risk-seeking decision is the uncertain Leave vote whose specific repercussions to the polity were unknown, while risk-aversion is the maintenance of the status quo, Remain (e.g. Begg and Mushovel, 2016; Dhingra et al., 2016; Macmillan, 2016; Ebell and Warren, 2016; MacDonald, 2016; Obstfeld, 2016; Ford, 2016; Schiereck, Kiesel and Kolaric, 2016; Cumming and Zahra, 2016; Oliver and Williams, 2016; Franks, 2016; Masouros and Papadopoulos, 2016). Hence, it was anticipated in a survey experiment that when EU’s growth is projected to be smaller than the British one, the UK voter will be positioned in a domain of gains making a risk-averse decision, which would be the UK to remain in the EU. According to prospect theory, this should have been the preferred decision for the voter in order to maximize his gains. On the contrary, when the EU growth is greater than the British one, the voter will be positioned in a domain of losses and thus should make a more risk-seeking decision, which would be to vote for Leave. According to prospect theory, this should have been the preferred decision of the voter in order to minimize his losses.

**Hypothesis 2 (H2):** When EU growth is projected to be lower than the UK, voters will vote more for risk-averse Remain than in the frame the EU growth is projected to be higher than the UK.

### 4.2.2 The ratio-difference principle in the EU referendum

The ratio-difference principle finding of Quattrone and Tversky’s (1988) adaptation of prospect theory to political science was also presented in the third chapter of this thesis. Their work in this area challenged once more expected utility theory. They revealed that the mere positive or negative
wording of prospects, despite their value being exactly the same, can reverse voters’ candidate choice. Their finding challenged utility theory’s frame invariance axiom, which is one of its core flaws as scholars argue (Quattrone and Tversky, 1988). The “frame invariance” axiom of utility theory refers to the fact that a change in the order or wording of the frames shouldn’t affect the decision’s outcome if the value of the frames remains the same (Quattrone and Tversky, 1988).

However, Quattrone and Tversky (1988) discovered that the change in the wording or order of the prospects does shape candidate choice. In their pertinent voting behaviour paradigm, Quattrone and Tversky described this phenomenon as the ratio-difference principle. They went on by explaining it with the example of a gain from 100 to 200 dollars which should be considered as more important than a gain from 200 to 300 dollars, despite being of equal value (100 dollars). They justified this by casting light on the greater difference in the ratio of those prospects: 200/100 (2) against 300/200 (1.5).

Therefore, the PhD’s next research hypothesis investigates within the second survey experiment the validity of the ratio-difference principle for the EU referendum. The frames of the prospects used here are unemployment and employment, in line with Quattrone and Tversky’s (1988) lab experiment. Particularly, in the test of the ratio-difference principle the frame is about the projected unemployment/employment in the UK in the scenario that Brexit would take place. It informs that Brexit would bring 9% unemployment (employment 91%) while Remain would result in 4% unemployment (employment 96%). As the ratio of unemployment prospects is greater (9/4=2.25) than the employment one (91/96=.95), despite of the same essence, it was anticipated that in the unemployment-negatively valued, and thus stronger frame, voters will opt more than the positively framed employment frame for the risk-averse decision, that is for the UK to remain in the EU in order to avoid high unemployment rates caused by Brexit. The reason for that is that according to prospect theory the negative frame should be more powerful and thus more influential (Kahneman and Tversky, 1979). The latter phenomenon which challenges expected utility theory’s frame invariance axiom was expected to take place in the second survey experiment. In line with Quattrone and Tversky (1988), voters would be more influenced towards risk aversion against the
Brexit’s unemployment prospects in the higher ratio unemployment frame than the employment frame. The above expectation is expressed through the thesis’ third hypothesis and tested through a survey experiment:

*Hypothesis 3 (H3): In the unemployment frame, voters will vote more for the UK to remain in the EU than in the employment frame.*

### 4.3 Part II: Voter’s illusion in the EU referendum’s turnout

The first part of the theory discussed Quattrone and Tversky’s (1988) reference point and ratio difference as a plausible theoretical framework to accommodate voter’s choice in the EU referendum through two survey experiments that endeavour to challenge utility theory’s rational voter model. That section focused on the reference point and ratio-difference principle which should have led accordingly to the risk-seeking Leave or the risk-averse Remain vote, in line with prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Moreover, the current section of the theory chapter focuses on turnout and intends to challenge Downs’ (1957) rational model of turnout by testing Quattrone and Tversky’s (1986) voter’s illusion, which was previously presented in the thesis’ third chapter. Quattrone and Tversky had originally challenged Downs’ rationality which was based on expected utility theory, for failing to effectively explain paradoxical turnout behaviour.

Quattrone and Tversky’s (1986) voter’s illusion holds that the voter sees his vote as diagnostic of millions of other votes when informed that fellow think alike/partisan voters will shape the result. In that case he tends to cast his vote. On the contrary, when informed that voters who aren’t think alike/partisan will prevail in moulding the result, he will be less inclined to turn out. Hence, next to voter’s choice, by testing voter’s illusion through the PhD’s third survey experiment the turnout component is added to the PhD’s theory of EU referendum voting under prospect theory.
It was thus assumed that not only the British voters didn’t vote for Leave as per utility theory’s rational model, tested through H2 and H3, but they also fell for voter’s illusion regarding turnout.

In the context of the EU referendum though, adapting voter’s illusion lab structure (Quattrone and Tversky, 1986) to the UK polity required substantive modifications, especially for the environment of a survey experiment. First of all, partisanship, which was reflected in Quattrone and Tversky’s research as the affiliation to imaginary Party A and B, wasn’t found to be a determining factor of the Leave result (Swales, 2016; Vasilopoulou, 2016; Birch, 2016). Besides, a thorough study of Quattrone and Tversky’s work in the thesis’ second chapter shows that with imaginary affiliation to party A and B these researchers mainly conceptualized think alike voters in their lab research. Hence, to test voter’s illusion in a representative sample of the UK population for the purpose of the Bexit referendum, in lieu of partisanship voters were presented with information about subscribed followers to Vote Leave and Vote Remain campaigns. The logical assumption holds that subscribers to Vote Leave campaign were the think alike voters who were prone to vote for Leave and that Vote Remain subscribers tended to vote for Remain. Besides, the decision of the substitution of Quattrone and Tversky’s Party A and Party B with the two referendum campaigns is also justified by The Electoral Commission (2016) which designated to “The In Campaign LTD” and “Vote Leave LTD” similar rights to political parties prior to elections e.g. higher spending limits, use of certain public rooms, referendum campaign podcasts and a sizeable campaign grant. To be noted that Vote Leave and Vote Remain divided the UK public opinion and polarized the UK electorate (Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016), something that substantively served Quattrone and Tversky’s “partisan” essence in the voter’s illusion design of this thesis.

Most importantly, on top of the intense campaign polarization one should take into consideration a very large proportion of undecided voters prior to the EU referendum (Fenner, Leven and Loizou, 2018; Howard and Kollanyi, 2016; Vasilopoulou, 2016), equivalent to millions
of UK voters who hadn’t made up their minds. The latter led this PhD candidate to assume that in Britain’s EU referendum context the think alike voters of Quattrone and Tversky’s voter’s illusion shouldn’t be the polarized subscribers to the Vote Leave/Remain campaigns but the undecided voters. Not to omit here that in order to induce an unbiased vote intent to voters, they were a priori primed to answer the research questions as undecided voters, something that by default motivated them to consider the undecided voter’s turnout behaviour as think alike voters (Appendix D presents the effectiveness of this priming technique). Consequently, it was assumed that information about the behaviour of voters belonging to each of the two poles of the Leave and Remain campaign should constitute one’s vote as less important in order to make a difference in the referendum’s result.

As per Downs’ (1957) model, the mathematical contribution of one single vote is bound to be negligible. Contra, the information that numerous undecided followers will go to the polling stations and shape the result should make the voter’s vote more “worthwhile”, or “diagnostic of millions of others” as Quattrone and Tversky (1986) had claimed for the think alike voters. At the same time, the PhD’s research construct avoided the collusion of specific actual partisan feelings or past vote or affiliation that voters would show to any of the British parties. Besides, scholars had confirmed that this referendum went beyond partisanship and deviated from standard partisanship norms (e.g. Swales, 2016; Vasilopoulou, 2016; Birch, 2016). Hence, it was considered as the appropriate research vehicle for this PhD to test within a survey experiment the lab rooted voter’s illusion, where the think alike voters were undecided and the Vote Leave/Vote Remain campaign followers were the determined partisans.

Overall, based on voter’s illusion it was anticipated to discover in a representative sample of the UK population in cooperation with Ipsos Mori UK that when the electorate is informed that undecided voters will determine the result, they would be inclined to turn out more than in the case they are presented with information that Vote Leave/Remain campaign subscribers will shape the
result. Given the discussed sizeable undecidedness days before the referendum (the survey experiments also took place days before the referendum as the methods chapter outlines), the cited small impact of partisanship in the referendum’s outcome as well as the pertinent priming to answer as undecided voters, it was expected that the voter in the “undecided voters frame” would regard his vote as diagnostic of millions of votes in the EU referendum, as per voter’s illusion theory of Quattrone and Tversky (1986). This led to the following hypothesis:

*Hypothesis 4 (H4): When voters are informed that the undecided will shape the referendum’s outcome, they will turn out more than when they are informed that followers of “Vote Remain” or “Vote Leave” campaigns will define the result.*
Voter’s illusion, the turnout component of Quattrone and Tversky’s (1986) work, had contradicted the voter’s rational model (Downs, 1957), or else “instrumental view” as presented in the literature review. According to that, the probability that a voter’s single vote will make a substantial difference in the EU referendum outcome is close to zero and thus the utility of going to the polling station will bring no benefit but only costs (e.g. opportunity costs or registrations costs or cost of showing up at the ballot). Nevertheless, voter’s illusion challenges the rational model and shows that voters will outweigh the costs by overestimating their vote’s power as diagnostic of millions of votes. The third survey experiment of this PhD aims to unleash through framing voter’s illusion outside the lab in a representative sample of the UK electorate. To the best of my knowledge this hasn’t been attempted so far in scholarship and it is hoped to contribute to literature discussing turnout in EU referendum voting.

4.4 Part III: The moderating effect of demographics on EU referendum voting

The first two parts of this theory set the theoretical background for the PhD’s four main research hypotheses. These hypotheses contemplate first of all the thesis’ overarching question: whether voting behaviour in EU referendums can be seen as a decision under risk where risk-seeking and risk-averse voting behaviour can be a result of prospect theory’s framing. This thesis covers a gap in the EU referendum voting scholarship by providing an alternative theoretical model that can accommodate choice and turnout in EU referendums. This is presented mainly as an alternative to the third EU referendum school of utilitarian expectations. In part I and II the PhD’s theory discussed voting under prospect theory in relevance to Quattrone and Tversky’s (1986, 1988) original work in politics about the reference point, ratio-difference principle as well as voter’s illusion.

Apart from the four main hypotheses of this PhD research explained previously, the third part of the PhD’s theory discusses additional hypotheses originating from the heterogeneous treatment effects of certain demographics. These heterogeneous treatment effects are based on scholarship
that links demographics either to risk-seeking, risk-taking decisions and turnout or political inclination towards conservatism and liberalism. The theoretical framework of the expectations regarding the effects of demographics on risky EU referendum voting is discussed in the current third part of this theory. Subsequently, there are 10 additional hypotheses reflecting on the heterogeneous effects of demographics in EU referendum voting through prospect theory. The demographics theorized to moderate EU referendum voting behaviour under risk are: marital status, parenthood, employment and gender.

First of all, the reason this research focuses on these specific demographics is because they were underexplored in UK referendum scholarship examining the demographics of the Leave result compared to extensively researched demographics like education, age, income and ethnicity (e.g. Ansell and Adler, 2019; Hobolt, 2016; Kaufmann, 2016; Barslund and Ludolph, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Amorsson and Zoega, 2016; Antonucci, Howarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017). Second, this research focuses on marital status, parenthood, employment and gender because of their particular relevance to this research of voting behaviour in the EU referendum seen through prospect theory. In short, scholars consider the married to be conservative who turn out and don’t take risks, parents to be conservative and risk-averse who abstain, the employed to be also risk-averse who turn out while women are said to have remained undecided until the very last moment before the EU referendum’s ballots. Overall, the scope of the addition of the heterogeneous treatment effects in this research is to present through this thesis a more complete theoretical model inspired by the acknowledged role of demographics in Britain’s EU referendum which has been also discussed by the EU referendum perspective of identity politics, which had been previously presented in detail in the thesis’ second chapter.
4.4.1 Marital status and parenthood in EU referendum voting under prospect theory

Marital status is an important factor of both choice and turnout in voting behaviour literature. Scholars view the married as more conservative than the unmarried. Weisberg (1987) found the first traces of the “marriage gap” in the American polity. In the 1972 and 1984 presidential elections married voters voted more for Republicans than the unmarried. Hayes (1993) maintains that this marriage gap is a more important determinant of partisanship than gender and religion. Research by Plissner (1983) strengthens the role of marital status as predictor of partisanship results in US presidential elections. Thus, existing literature in Britain and the US reaffirms that married voters lean more towards conservative parties than the unmarried (Welch and Thomas, 1988; Deitch, 1988; Poole and Zeigler, 1985, Carroll, 1988). Kingston and Finkel (1987) confirm that married voters were more likely to vote for Republicans. Specifically, Chapman’s (1985) study of the British Election Survey revealed that married British voters were less inclined to support welfare redistribution or other major changes implemented by the government, compared to the unmarried. Hayes (1993) attributed the conservatism of the married to the conventional and stable form of living that married voters seek to maintain. She explains this association through the strong partisan cues and symbols that western conservative parties prime married voters with, especially the one of the “nuclear bourgeois family”. Hence, scholarship views the married voter as more conservative voter.

Nevertheless, in the PhD’s theory another dimension is presented to the effect of marital status on voting behaviour, risk. Indeed, there is literature that stipulates that the married take less risks than the unmarried (Grabble and Lytton, 1998; Roussanov and Savor, 2014). Chaulk (2000) refers to the Family Development Theory (Klein and White, 1996) to discover that the transition from the single status to marriage makes the individual more risk-averse in financial risks, in order to fulfil the need of family stability.

The above scholarship creates some concrete expectations in the thesis’ theory that the unmarried are risk-seeking, more liberal voters, who are more eager than the married to make
changes in the political system against the status quo. By making changes this thesis refers to Leave while maintaining the status quo refers to Remain. It needs to be reminded here that this research views Leave as the risky vote and Remain as the risk-averse one (H1). Consequently, in line with the first part of the PhD’s theory testing the reference point principle of prospect theory in a survey experiment (H2), an expectation was created that the formerly referenced as risk-seeking unmarried voters would vote more for Leave at the High Reference frame than the Low Reference frame. The reason is that according to H2, at the high reference frame of the highly growing competitive EU economy compared to the lagging behind UK economy, in the event of Brexit the risk-enthusiast unmarried voter would feel a greater domain of losses than the generally risk-averse married voter. That should make the unmarried voter even more risk-seeking in order to minimize losses in the frame that the UK grows more than the EU. On the other hand, at the low reference frame where the EU economy doesn’t grow more than the UK, the “risk-enthusiast” unmarried voter should be less risk-seeking and thus vote more for the status quo (Remain) to maximize gains.

**H5: The unmarried British voters tend to vote more for Leave in the High Reference frame than the Low Reference one.**

A similar hypothesis is forged for the test of the ratio-difference principle (H3). To be reiterated that in H3 it was theorized that the higher ratio unemployment frame should push voters more towards the risk-averse Remain than the employment one, because the unemployment frame is more powerful than the employment one. Hence, the unemployment frame should elicit greater risk-aversion sentiments against the stark consequences of unemployment compared to the employment frame. It was previously cited though that the married are more risk-averse than the unmarried. Consequently, this created the expectation that the risk-averse married voter will vote
more for Remain in the more influential higher ratio unemployment frame than the employment one. This is expressed through the following hypothesis:

\[ \text{H6: Married voters in the Unemployment frame vote more for Remain than the Employment frame.} \]

Additionally, regarding turnout Wilensky (1961) introduced the “life cycle theory of participation” (Wolfinger and Wolfinger, 2008). He found that the married demonstrate higher turnout. Miller, Shanks and Shapiro (1996) confirmed a strong link between marriage and high turnout and so did other researchers (Wolfinger, Rosenstone and Rosenstone, 1980; Strate et al., 1989; Timpone, 1998; Plutzer, 1998, 2002; Plutzer and Wiefek, 2006). As Wolfinger and Wolfinger (2008) claim, pertinent research discusses even more specific topics like the divorce’s effect on turnout (Bramlett and Mosher, 2001; Squire, Wolfinger and Glass, 1987; Stoker and Jennings, 1995), discovering that it suppresses political participation. Overall, the majority of scholars conclude that the married voters vote more than the unmarried.

Especially in the UK polity, Denver (2008) specifies a robust link between marital status and turnout. This scholar notes that there has been a substantial drop in marriage during the past 30 years in the UK. He also uncovers a strong correlation between turnout and marriage in Britain. Crewe et al., (1977) were the first researchers finding that married UK voters from 1966 to 1974 were more prone to vote. Swaddle and Heath (1989) analysing turnout in the 1987 general election corroborated that. Denver (2008) showcases that married British voters turned out more than the unmarried in the 1987, 1992, 1997, 2001 and 2005 general elections. Crewe et al., (1977) outlined three reasons explaining the strong association between marriage and British turnout: engagement with politics, access to networks and civic duty. Engagement with politics refers to their finding that married voters are more likely to be partisan than the unmarried. Provided that the married electorate is more engaged and interested in the election’s outcome, they tend to vote more than
the unmarried. Second, access to networks means that the unmarried are more likely to live alone and receive little mobilization from their partner to vote. Last, the sociological explanation of civic duty is about the fact that the married voters are more keen to abide by traditional and conservative norms like family or political participation, than the unmarried.

Consequently, according to the discussed “life cycle theory of participation” (Wilensky, 1961), the married are considered to turn out more than the unmarried. Further, the married were previously cited as more politically conservative. Notwithstanding, in the voter’s illusion environment of the third survey experiment investigating turnout (H4) a different angle is presented. As discussed in H4, voters are placed in two frames: one where the campaign subscribers of Vote Leave and the Vote Remain determine the referendum result and another where undecided voters define the outcome. Considering the existing knowledge about marital status and turnout, one would expect that in both frames the married by default feel the urge to turn out more than the unmarried. However, as per H4 and Quattrone and Tversky’s voter’s illusion, the key to turnout behaviour is how much diagnostic one’s vote is perceived to be. Provided that the unmarried are considered to be liberal voters craving to make changes (e.g. relations with the EU, welfare redistribution, taxation), this theory assumes that they will be more influenced by the “versatile” dynamics in the behaviour of undecided voters than the “solid” partisans who have already set their minds and subscribed to the campaign Vote Leave or Vote Remain. It is thus hypothesized that for the unmarried the think alike voters who lead them to fall for voter’s illusion should be the “unpredictable” undecided voters. Hence, the unmarried should turn out more when informed that the undecided voters shape the result. The latter is expressed through the following hypothesis:

*Hypothesis 7 (H7): Unmarried voters turn out more in the undecided voters frame than in the campaign followers’ frame.*
Next to the conservative tone of the married who enjoy the stability of no political changes, research on parenthood adds some insightful findings. Stalsburg’s (2014) review of Elder and Greene’s (2012) book titled “the politics of parenthood” stresses that parenthood is positively correlated with family values, social welfare and security but isn’t entirely associated with political ideology, voter’s choice or partisanship. She continues by stating that male parents tend to be more conservative. Elder and Green (2012) claim that female parents are more liberal with military issues. Elder and Green find that parenthood makes women more liberal and men more conservative. Also, Arnold and Weisberg (1996) in their analysis of the 1992 presidential elections posit that parents leaned more towards Bush (Republicans) than Clinton (Democrats). Moreover, parents are cited in scholarship as socially and morally conservative individuals (Jost et al., 2003; Kerry and Murray, 2018; Weeden and Kurzban, 2014; Eibach, Libby and Ehrlinger, 2009; Buckels et al., 2015). Kerry and Murray (2018) regard parents as socially conservative because they engage into child caring behaviour, protecting children against threat.

Most importantly, regarding prospect theory’s perennial risk-seeking and risk-averse attitudes, parenthood is consistently associated with greater risk aversion than non-parents, given the increased care for the offspring which seeks for stability and absence of risk (Allman et al., 1998; Chaulk, Johnson and Bulcroft, 2003; Warner and Cramer, 1995; Eibach and Mock, 2011; Wang, Kruger and Wilke, 2009; Cameron, DeShazo and Johnson, 2010; Spivey, 2010). In the prospect theory context of the tests of the reference point (H2) and the ratio-difference principle (H3), the risk aversion of parents forges two relevant hypotheses, H8 and H9.

On the one hand, the natural inclination towards risk aversion (aka Remain) that parents share should influence them more than non-parents in the low reference frame, whereby they are already positioned in gains since the EU is growing less than the UK post Brexit. The latter is expressed through the following hypothesis:

*Hypothesis 8 (H8): Parents vote more for Remain in the low reference frame than the high reference one.*
On the other hand, the same natural tendency towards risk aversion (aka Remain) that parents share should influence them more than non-parents in the high ratio (unemployment) frame, whereby they are positioned more in a greater domain of losses than in the low ratio (employment) frame that induces less losses given the wording and the frame’s smaller ration. The latter is expressed through the following hypothesis:

**Hypothesis 9 (H9): Parents vote more for Remain in the unemployment frame than the employment one.**

On the relationship between parenthood and turnout, the majority of past research holds that parenthood reduces turnout, irrespectively of voters’ marital status (Wolfinger and Wolfinger, 2008). Jennings (1979) claimed that being a parent is bad for participation in “national politics”. Sandell and Plutzer (2005) specified that turnout for white parents is reduced. Wolfinger and Wolfinger (2008) explain this phenomenon by arguing that parents (especially single parents) tend to be busy caring for their offspring and they thus tend to abstain. Van Ham and Smets (2012) describe parenthood as a “distraction” for voters to actively engage with politics. In addition, Sandell and Plutzer (2005) discover that divorce diminishes voter’s turnout by 10%. Kern (2010) adds that divorce and widowhood reduce turnout.

On the one hand, one would anticipate parents to turn out less while simultaneously parents are considered to be more politically conservative than non-parents. As previously said, H7 anticipated the liberal unmarried who are eager to make political changes to be more influenced by the information about the undecided voters determining the referendum’s result than the determined followers of Vote Leave and Vote Remain. Similar to H7, at the next hypothesis of the PhD’s theory it is expected that the voters who are not parents will be more motivated to vote when informed about the undecided voters’ defining vote than the determined Vote Leave/Remain
campaign followers. Besides, parenthood reduces turnout as it was previously cited, which is in line with the below hypothesis:

\[Hypothesis\ \text{10 (H10):} \text{ Non parent voters will turn out more in the undecided voters frame than in the campaign followers’ one.}\]

4.4.2 Unemployment in EU referendum voting under risk

Another heterogeneous treatment effect in the third part of the PhD’s theory reflects on how employment influences EU referendum voting through the lens of prospect theory. First of all, Crescenzi, Cataldo and Faggian (2017) held that being unemployed was the “single most important factor” of voting for leave, since they found a link between unemployment and “anti-globalization” or protest against the government. They discovered that UK areas with high unemployment were areas where voters voted most for Leave. Overall, the unemployed tended to vote more for Leave than the employed (Arnorsson and Zoega, 2018; Becker, Fetzer and Novy, 2017; Clarke and Whittaker, 2016; Barber, 2016). Furthermore, there is research showing a positive correlation between loss aversion and income whereby high income voters are risk-averse, for fear of losing their fortune (Gachter, Johnson and Herrmann, 2010). Instead, poor and unemployed people take greater risks (e.g. lottery) to escape their current situation (Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004). The PhD’ theory is influenced by the former which is close to prospect theory’s risk aversion, reflecting the fear of losing the status quo that the wealthy UK citizens ought to have been feeling prior to the EU referendum, which entailed large uncertainty (H1). Simultaneously, this income strand of risk literature (Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004) combined with prospect theory’s risk-seeking/averse principles should also describe the sentiment of the poorer segments of the British society like the unemployed, or the so called “left behind” voters (Goodwin and Heath, 2016; Antonucci et al.,
2017; Hobolt, 2016; Watson, 2018). Those should be keen to take the large risk of voting for Leave in the same way they would gamble with lottery, in order to minimize their losses from a globalized and advanced paced society.

In addition, Halek and Eisenhauer (2001) discuss a distinction between two types of risk, “pure risk” and “speculative risk”. The former is a risk with imminent and unwanted consequences to the decision-maker which provides only losses e.g. car theft. The best deal in pure risks is the status quo (Williams, 1966). Contra, a speculative risk instead is a risk whereby the decision-maker undergoes speculation to assess gains and losses. Moreover, gains are possible in speculative risks (Williams, 1966). Halek and Eisenhauer (2001) also claim that, in pure risks, risk aversion increases at higher income strata. Given Halek and Eisenhouer’s risk classification, it was anticipated that for the poor and unemployed part of the UK electorate the EU referendum was a speculative risk. Seeing Brexit as a speculative risk would constitute unemployed citizens as risk-seeking voters, which means they would vote more for the risky option of Leave to minimize their losses.

Applying to the prospect theory environment of EU referendum behaviour the link between risk-seeking and unemployment led this PhD candidate to forge a connection with prospect theory’s reference point (H2). It was thus anticipated that the unemployed British voters in the high reference frame, where the UK lags behind the EU economy in the event of Brexit, would be placed in a greater domain of losses than in the low reference frame where the EU doesn’t advance more than the UK. Consequently, in the riskier high reference frame the cited as risk-seeking unemployed voters should vote more for the risky option of Leave in order to minimize losses compared to the low reference frame. The latter is expressed through the following hypothesis:

*Hypothesis 11 (H11): Britain’s unemployed at the high reference frame vote more for Leave than the low reference frame.*
Further, employment’s heterogeneous treatment effect is also examined in another finding of Quattrone and Tversky’s work, the ratio-difference principle (H3). It is expected that the ratio-difference principle is particularly moderated by employment as it is the case for the reference point in H11. As per H3, the unemployment frame is higher in ratio and thus more influential than the employment frame. This constitutes the unemployment frame more impactful compared to the employment frame, in spite of the fact that both frames convey the same value of information but framed positively (employment) and negatively (unemployment). The ratio difference’s impact on decisions under risk challenges rational voters’ frame invariance, as Quattrone and Tversky (1988) maintain. Also, unemployed people with low income are risk-seeking while employed of high income are risk-averse (Gachter, Johnson and Herrmann, 2010; Bernheim et al., 2001; Bowman, 1982; Hallahan, Faff and McKenzie, 2004). In prospect theory terms, it is logical that the unemployed will vote for Leave to minimise their losses while the employed will be risk-averse voting for Remain to maximize their gains (e.g. income). At the ratio-difference principle though the unemployment frame of the higher than the employment frame ratio should lead more towards a risk-averse vote to avoid the stark consequences of unemployment in the scenario of Brexit. Hence, the by default risk-averse employed should express a greater risk-aversion in the unemployment frame than the employment frame. The above is expressed through the following hypothesis:

*Hypothesis 12 (H12): Employed voters in the Unemployment frame vote more for Remain than the employment frame.*

Concerning the relationship between income and turnout, “power theory” uncovers a clear inverse relationship. Researchers hold that the larger the income inequality the less the turnout (Stockemer and Scruggs, 2012; Anderson and Beramendi, 2008; Dahl, 2006; Galbraith and Travis, 2009; Goodin and Dryzek, 1980; Lister, 2007; Mahler, 2002; Merrifield, 1993; Nguyen and
Garand, 2007; Schattschneider, 1960; Solt, 2008). According to Stockemer and Scruggs (2012), the most solid theoretical foundation of power theory was introduced by Goodin and Dryzek (1980). They showed that the poor and unemployed are less likely to have a substantial political participation because they have small chances that the topics interested in are treated by the political system.

Moreover, power theory has been examined both from a micro and macro level (Stockemer and Scruggs, 2012). At the micro-level, scholars found that in the US the poor have less chances of turnout and that an increase in income inequality at the state where the voter lives reduces political participation (Verba, Schlozman and Brady, 1995; Nguyen and Garand, 2007). However, power theory transcends the American polity. Anderson and Beramendi (2008) conducted research on the income-turnout relationship in 18 OECD member states and found inequality to reduce turnout, something characterizing particularly the poor electorate. Solt (2008) also studied the relationship between income and turnout in 22 countries and agreed that inequality diminishes participation. From a macro-economic viewpoint, Merrifield (1993) revealed that in the 1982 US midterm elections the states with higher proportion of low income households were the ones with the lowest turnout. Lister (2007) in an analysis of turnout in 15 countries between 1963 and 1993 found data corroborating the strong relationship between inequality and turnout.

Another theory studying the income-turnout association is called “conflict theory” (Meltzer and Richard, 1981). According to that, significant inequalities provide more motivation for redistribution to both the poor and the rich and thus turnout rises. Brady (2004) and Oliver (2001) support conflict theory’s results. However, most recent scholarship argues that power theory prevails and enriches it with detailed insights. Jaime-Castillo’s (2009) research throughout two dozens of OECD members finds that turnout is more sensitive to the income gaps of high and middle class than middle and poor class. Horn (2011) agrees with Jaime-Castillo and reveals that power theory is even more visible among middle class and poor voters. Steinbrecher and Seeber’s
(2011) work in EU countries reaffirms power theory’s negative link between inequality and turnout.

Most importantly, McCarty et al. (2006) introduced the self-interest theory, which argues that there is a strong tie between income and partisanship due to self-interest motives. In the US high earners are inclined to be Republicans while low income holders vote for the Democratic Party (Gallup, 1936; Lazarsfeld et al. 1944, McCarty et al. 2006, Peterson, 2015). Those self-interest motives are expressed through preferences for taxation and policies. In a relevant study about the self-interest knot between partisanship and income Doherty et al (2006) found that winners of large sums in a lottery tend to be more conservative over their political orientation and decisions. Regarding the relevance of the self-interest theory to Brexit, research discovered a clear negative relationship between high income earners and Leave (Hobolt, 2016; Zoega, 2016; Outhwaite, 2017; Lee, Morris and Kemeny, 2017; Açiksöz and Yildirim, 2016).

Is it power theory, conflict theory or self-interest theory that best explains voting behaviour in the UK political system? Apparently, this country had experienced decades of deindustrialization, inequality and austerity (Onaran and Guschanski, 2016). Onaran and Guschanski (2016) attribute Leave to inequalities that made those left behind from globalization protest and claim for a redistribution of wealth. However, according to power theory high income voters should turn out more in the UK referendum than the poor. However, at the voter’s illusion hypothesis of the second part of the PhD’s theory the research edifice is considerably differentiated from power theory. While one would anticipate employed voters to turn out more than the unemployed poor as per power theory, the PhD’s theoretical framework of voter’s illusion is specifically built around the ability of the employed/unemployed voters to regard their vote as “diagnostic” of millions of other undecided voters or Vote Leave/Vote Remain campaign followers.

Consequently, it is the self-interest theory which best fits Quattrone and Tversky’s voter’s illusion scope (H4), anticipating that employed voters, when informed that the undecided voters will take control of the referendum’s result, they are pushed to turn out significantly to protect
their self-interests from that unpredictable undecided vote. Instead, at the frame where they are informed that subscribers of Vote Leave/Vote Remain campaigns will shape the referendum result they feel that their self-interests will be already “accommodated” at the ballots by millions of decided voters, either for Leave or Remain, who had subscribed to either of the poles of the referendum’s campaign. As a result, the thesis’ syllogism is located at the intersection of power with self-interest theory and Quattrone and Tversky’s voter’s illusion theory. It assumes that employed wealthy voters will be mostly mobilized to turn out by the “unpredictable” undecided voter out of self-interest. The latter is expressed through the following hypothesis:

Hypothesis 13 (H13): Employed voters turn out more in the frame they are informed about undecided voters shaping the referendum’s result than when informed that campaign subscribers to Vote Leave/Vote Remain will determine the result.
4.4.3 Gender in voter’s illusion at the EU referendum’s turnout

Gender is another heterogeneous treatment effect in this thesis, focusing on its moderating impact on turnout and particularly voter’s illusion (H4). Besides, gender politics is “one of the core dividing lines defining the identity of politicians, parties, issues, and voters in America, one of the primary fault-lines running through contemporary American politics” (Norris, 1997). A relevant notion is the “gender gap”, which is according to Burrel (2005) a set of differences among male and female voters on their views about the political system which lead to diverse political behaviour.

Norris (1991) clusters the gender gap scholarship into three eras. Research in the 1950s and 1960s claimed that there is a substantial difference in the participation of men and women based on political interest. Women were seen to be more passive (Duverger, 1955) and thus to turn out less than men. That school was based on the diverse social roles of the two genders. The second wave of scholars investigating the relationship between turnout and gender gap criticized the first approach as too “androcentric” (Engeli, Ballmer-Cao and Giugni, 2006) and focused on alternative routes where women participate in public life through non-political associations (Sapiro, 1983). Norris (1991) concluded with a last school of theories, “the revisionist account”. This examines the lack of gender differences in turnout at modern political systems. This tranche of literature is based on the fact that women are increasingly emancipated, with equal rights to education and employment. Particularly in Europe and the US of the 1980s and 1990s, turnout difference between the two genders was negligible (Norris 2003; Conway, Steuernagel and Ahern, 2005; Christy 1987).

Especially in the US, the classic approach of women lacking political interest which leads them to abstain is rather obsolete. Burrell (2005a, 2005b) studied turnout by gender in the 1990-2000 US elections and found that women voted more than men. Pertinent research by Coffé and Bolzendahl (2010), Uhlaner (1989) and Verba, Schlozman and Brady (1995) strengthens the acknowledgement that gender difference in turnout is substantially reduced. Recent studies though
find men to engage more in diverse political activities, activism, strikes etc. (Coffé and Bolzendahl, 2010; Inglehart and Norris, 2003; Marien, Hooghe and Quintelier, 2010). Wang (2013) groups literature about the sources of gender difference in political participation into four theories: one focusing on the political socialization, another related to the female emancipation and the rise of divorces, a third drawing attention to the rise of “feminist consciousness” and a last one on women’s share in employment opportunities. Nevertheless, particularly in the UK, which is the polity of focus in this thesis, already the 2004 study by the Electoral Commission was adamant (Childs, 2004): the gender gap in turnout for national, regional and local elections is non-existent.

On the relationship between gender and partisanship, scholars attributed liberalism to being a female Democrat, while conservatism to being a Republican male (Elder, 2008; Winter, 2010). In the UK polity, young women are considered to be more prone to the left than male voters while older women are thought to be more conservative than men (Katwala and Ballinger, 2016). Further, research by Pyeatt and Yanus (2016) argues that when partisanship and gender send congruent cues (Democratic women-Republican men) voters are more convinced by the campaign. Contra, when the gender/partisan cues are mixed (e.g. Democratic men-Republican women) then voters need to assess which cue is more powerful.

What is particularly relevant to the thesis’s theory though is that scholars claimed that before the EU referendum women remained undecided voters, due to the failure of Vote Leave/Vote Remain campaigns to engage them successfully (Haastrup, Wright and Guerrina, 2016; Katwala and Ballinger, 2016). Katwala and Ballinger (2016) cite the following graph picturing British women to be consistently more undecided than men in a series of 2015 opinion polls about Brexit:
Figure 4.1: Women’s undecidedness in 2015 Brexit polls

![Graph showing percentages saying 'don’t know' in major polls of EU referendum voting intention, by gender over time]

Source: How (not) to talk about Europe. British Future. (Katwala and Ballinger, 2016)

This graph shows that the undecidedness of female British voters was two times that of men in 2015. Research attributes that to the failure of Vote Leave/Vote Remain campaigns to persuade them effectively (Haastrup, Wright and Guerrina, 2016; Katwala and Ballinger, 2016). Particularly, Hasstrup, Guerrina and Wright (2016) find the campaigns to be confined to engaging women with issues like gender equality, maternity leave rights or else “low politics”. They excluded them from “high politics” discourses on security, economy and immigration. The fact that campaigns tended to be predominantly voiced by male personalities and politicians contributed to the misrepresentation of women in the Brexit dialogue (Katwala and Ballinger, 2016). Overall, women were considered undecided voters prior to the Brexit referendum.

Hence, given the above literature that women remained undecided ahead of the EU referendum, the voter’s illusion (H4) theory of Quattrone and Tversky led to the theory’s hypothesis about the last heterogeneous effect, the effect of gender on voter’s illusion. It was expected that the female British electorate, being reportedly undecided weeks before the referendum, when informed that the undecided voters mould the referendum result, should be identified with that undecidedness. To be noted that voters had been effectively primed to answer the research questions as undecided
voters (Appendix D). Consequently, women should turn out more in the frame that undecided voters define the referendum’s outcome than when they learn that Vote Leave/Vote Remain subscribers shape the result. As per Quattrone and Tversky’s voter’s illusion (H4), women voters are expected to fall more into the voter’s illusion “trap” at the undecided voters frame, because it is there that they should consider their vote as diagnostic of millions of other like-minded undecided votes.

*Hypothesis 14 (H14): Female voters turn out more in the frame they are informed about undecided voters shaping the referendum’s result than when informed that campaign subscribers to Vote Leave/Vote Remain will determine the outcome.*

### 4.5 Conclusion

All three parts of the PhD’s theory aim to introduce prospect theory as an alternative theoretical model of EU referendum voting mainly next to the third EU referendum school of utilitarian expectations. The latter is based on the extensively criticized expected utility theory whose criticism led to the introduction of the Nobel prize awarded prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) as an alternative theory contemplating decision-making more effectively. Despite the literature’s limited application of prospect theory to voting behaviour, this PhD revisits and expands Quattrone and Tversky’s (1988) first attempt to adapt prospect theory to voting behaviour. Customizing Quattrone and Tversky’s work to voting behaviour in Britain's EU referendum created 14 hypotheses which are tested throughout the two empirical chapters of this thesis and reflect on voter’s choice and turnout in Britain’s historic in or out of the EU referendum.

The first part of the PhD’s theory examined choice in the EU referendum as a decision under risk and continued with the adaptation of Quattrone and Tversky’s (1988) application of prospect
theory’s reference point and ratio-difference principle to accommodate the referendum’s leave vote. The second part of the theory discussed the relevance of voter’s illusion by Quattrone and Tversky (1986) for the British electorate which is theorized to turn out based on how diagnostic of millions of others they viewed their single vote. Finally, the third part of the theory aspires to present a more complete proposition of prospect theory as an alternative to the utilitarian expectations school at EU referendum scholarship by adding the much cited aspect of demographics in the referendum’s leave outcome. Particularly, the theory chapter added the heterogeneous treatment effects of the understudied demographics of marital status, employment, parenthood and gender.

The thesis’ subsequent chapter is the methods chapter which outlines in detail how the thesis’ theory was tested ahead of the 2016 referendum in Great Britain. In short, the first two parts of the theory were tested in three different survey experiments in cooperation with Ipsos Mori UK, within representative samples of the UK population and in a lab experiment at the premises of King’s College London. The third part of the theory discussing the heterogeneous treatment effects of demographics on the reference point, ratio-difference principle and voter’s illusion was tested within the three survey experiments which took place in association with Ipsos Mori UK.
CHAPTER V: METHODOLOGY, DATA AND MEASUREMENT

5.1 Introduction

The theory of this PhD was presented in the previous chapter. It suggested an alternative mainly to the third school of EU referendum voting (Hobolt, 2005), the “utilitarian expectations” which had been based on the cited as flawed expected utility theory. This alternative encompasses prospect theory (Kahneman and Tversky, 1979), which had been launched as an argument against expected utility theory, and particularly Quattrone and Tversky’s (1986, 1988) first application of prospect theory to candidate choice and turnout. The PhD adapts Quattrone and Tversky’s structure in the context of Britain’s EU referendum of 2016. The current chapter will outline the methods used to test overall the PhD’s theory, the data’s sources, the operationalization of variables as well as the statistical analysis followed.

5.2 Survey experiments in political science

As it was discussed in the theory chapter, survey experiments are of strategic importance for this research whose methodological aim is to transfer from the lab to representative samples of the UK electorate Quattrone and Tversky’s (1986, 1988) original application of prospect theory to voting behaviour, reflecting on both choice and turnout. Hence, it is purposeful at the beginning of the methods chapter to briefly discuss survey experiments as a method in political science.

In the late 1990s and after half a century of tackling methodological issues with survey research, a new research model was introduced in political science, based on the non-experimental backbone of survey research but with experimental nature and properties. The introduction of the “survey experiment” has been mainly attributed to the work of Sniderman (1996). This scholar found that by taking benefit from advances in computer science like CATI (Computer-Assisted Telephone
Interviewing) it is possible to draw trustworthy inferences about political behaviour in the real world by randomly assigning subjects to control and treatment groups as well as selecting representative samples.

A survey experiment is thus defined as “a deliberate manipulation of the form or placement of items in a survey instrument, for purposes of inferring how public opinion works in the real world” (Gaines, Kuklinski and Quirk, 2007). A plethora of survey experiments have been conducted in political science investigating causal relationships of variables by monitoring differences between treatment and control conditions. Some survey experiments were conducted to assess methodological questions over past studies. For example, Clarke et al. (1999) used this method to argue against Inglehart’s (1990) findings about post-materialism. They accomplished that with a control condition of the same structure and the variables that Inglehart had used in his research, while at the treatment condition they changed the variable from inflation to unemployment. They thus concluded that post-materialism criteria were met to a lesser extent in their treatment condition, challenging Inglehart’s findings.

Other scholars design survey experiments to investigate substantive issues instead of methodological ones. One of the first survey experiments of this kind was conducted by Sniderman and Piazza (1996) who tested racial attitudes and stereotypes by priming their treatment group differently than the control group (reverse order of questions). They were thus able to infer that the “mere mention of affirmative action encourages dislikes of the blacks”. Similarly, Sniderman and Camines (1997) discovered in another survey experiment called the “welfare mother experiment” that “mother’s success” was attributed more to black women who were high school graduates than white who had dropped out of school. Different survey experiments attempted different manipulations and priming between the control and treatment group (e.g. Gilens, 2001; Kuklinski et al. 1997; Gibson, 1998).
This PhD tested most of its research hypotheses (H2 - H14), which were presented in the theory chapter, through three survey experiments conducted in cooperation with Ipsos Mori UK. The research scope behind these hypotheses was to contribute external validity to Quattrone and Tversky’s (1986, 1988) reference point, ratio-difference principle and voter’s illusion by testing the validity of their prospect theory research for voter’s choice and turnout in Britain’s EU referendum of 2016. Consequently, it is this PhD’s aim to present an alternative theoretical model to the third school of EU referendum voting of utilitarian expectations (Hobolt, 2005) based on the discussed in the literature review as the alternative to expected utility theory, prospect theory. In addition to the three survey experiments, a lab experiment which took place at the premises of King’s College London enriched and completed this research by testing the PhD’s first hypothesis (H1), as explained in the theory chapter. The following sections outline the details of the three survey experiments and the lab experiment conducted throughout this research.
5.3 The Research Design

As stated in the previous chapters, risk is a main element of prospect theory, which is a theory that examines decision-making (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Furthermore, Britain’s EU referendum, which was a crucial referendum deciding the country’s fate within or outside the EU, has been considered by this thesis as the appropriate “risky” political evolution to examine electoral behaviour. Besides, scholars had widely reaffirmed that the 2016 referendum was a unique environment of uncertainty and risk (e.g. Begg and Mushovel, 2016; Dhingra et al., 2016; Macmillan, 2016; Ebell and Warren, 2016; MacDonald, 2016; Obstfeld, 2016; Ford, 2016; Schiereck, Kiesel and Kolaric, 2016; Cumming and Zahra, 2016; Oliver and Williams, 2016; Franks, 2016; Masouros and Papadopoulos, 2016). Having theorized the vote in Britain’s EU referendum as a risky decision, the methodology of this PhD includes three survey experiments and one lab experiment to test the theory’s hypotheses.

5.3.1 The three survey experiments

The theoretical framework of the problem that this research addresses was outlined in the theory chapter. Briefly, it refers to bridging the gap of a consistent theoretical model of EU referendum voting (Hobolt, 2006) by considering it as a decision under risk leading to risk-seeking and risk-averse voting behaviour. Hence, it is intended that an alternative mainly to the utilitarian expectations school is presented through this PhD, based on prospect theory, which is the alternative to the discussed as flawed expected utility theory. For the assessment of the PhD’s theory, three survey experiments were conducted, both for methodological and substantive reasons. On the one hand, the methodological aim to implement survey experiments in this research is intertwined with one of the main reasons why political scientists didn’t substantially deploy prospect theory in electoral behaviour research. That is the laboratory origin of Kahneman and Tversky’s (1979) prospect theory which according to Mercer (2005) was a considerable
impediment for the theory to flourish in political science. Thus, using survey experiments in this PhD is first of all a methodological decision to address the methodological issue of prospect theory’s adaptation to political science. The purpose was to contribute external validity to principles of this theory, as examined by Quattrone and Tversky (1986, 1988) who first attempted to apply them to voter’s choice and turnout. This was accomplished in this PhD by testing them in real public opinion environments. Hence, a number of research questions were inserted into Ipsos Mori survey waves ahead of Britain’s EU referendum of 2016. The exact questions are presented later in this chapter.

On the other hand, apart from the methodological scope of the survey experiments, their implementation was also decided upon a substantive reason. That was to address choice and turnout in Britain’s EU referendum through an attempt to launch an alternative theoretical approach next to the utilitarian expectations school (Hobolt, 2005) of EU referendum scholarship. This alternative approach is forged upon Quattrone and Tversky’s (1986, 1988) initial lab study applying prospect theory to voting behaviour as the alternative to expected utility theory. In the previous chapters expected utility theory was argued as a flawed theory whose weaknesses were overcome by prospect theory (e.g. Knight, 1921; Allais, 1953a, 1953b, 1953c). Consequently, following the logic of Quattrone and Tversky’s (1988) lab experiments analysed in the literature review, at the thesis’ first survey experiment the principle of prospect theory which was adapted to EU referendum voting is the “reference point”. At the second survey experiment the frame invariance axiom of expected utility theory is challenged through the test of Quattrone and Tversky’s (1988) ratio-difference principle. Finally, at the third survey experiment it is Quattone and Tversky’s (1986) “voter’s illusion” that is tested, which challenges Downs’ (1957) model of the rational voter concerning turnout. Therefore, three survey experiments aim to address the witnessed research gap (Hobolt, 2006) of a lack of a parsimonious theoretical model accommodating voting behaviour in EU referendums. Overall, this PhD endeavours to show in
this way the feasibility of transitioning prospect theory from the lab to survey experiments with external validity, by studying voter’s behaviour at the environment of the 2016 EU referendum in Great Britain.

The three survey experiments implemented research questions inserted into survey waves of Ipsos Mori UK, weeks ahead of the Brexit referendum of June 23\textsuperscript{rd} 2016. The method that Ipsos Mori UK used following my coordination was “Face-to-Face Omnibus (Capibus)” applied to representative samples of the UK population. More details about that can be found in Appendix K. The interviews which included this PhD’s research questions were conducted by Ipsos interviewers in-home, using CAPI (Computer Assisted Personal Interviewing). The first survey experiment testing prospect theory’s reference point had a sample size of 953, the second testing the ratio-difference principle took place in another survey experiment with a sample size of 989 while the third survey experiment testing voter’s illusion had a sample size of 986. The survey questions formed 3 pairs of two frames. Measuring the differences between the two frames, in perfect alignment with Quattrone and Tversky’s (1986, 1988) binary logic, addressed the validity of the reference point, ratio-difference principle and voter’s illusion reflecting on the substantive issue of voter’s choice and turnout in the EU referendum. The samples of the survey experiments were randomly split between two treatment groups, in accordance with the binary research structure of Quattrone and Tversky’s (1986, 1988) laboratory work. The groups were randomly assigned by Ipsos Mori UK to one of the two frames testing the reference point, the ratio-difference principle and voter’s illusion. Ipsos Mori applied the randomization method of “versioning”, according to which the CAPIBUS sample was split in two and each participant was presented with a different version of the research question.

Nevertheless, the empirical research of this PhD will be conducted in two methodological parts, not only three survey experiments but also a lab experiment. First, three survey experiments in cooperation with Ipsos Mori UK estimated the Remain/Leave choice as well as Vote/Abstain
decision in the Brexit referendum. By inserting research questions within survey waves this research assessed Quattrone and Tversky’s (1986, 1988) findings about prospect theory’s adaptation to voting behaviour. The three survey experiments share the aim to examine how prospect theory accommodates electoral behaviour in an EU referendum under risk. As previously stated in the thesis, this is the mere methodological scope of this study, to transfer from the lab to survey experiments the findings about Quattrone and Tversky’s “reference point”, “ratio-difference principle” and “voter’s illusion”. Secondly, at the second methodological part of this PhD a lab experiment was conducted to test the main theoretical assumption of the PhD’s theory (H1), in order to confirm if voting in the EU referendum can be viewed as a decision under risk, something necessary for prospect theory to be applied. Hence, the lab experiment tested the hypothesized in the theory chapter association of risk propensity with voting behaviour in the EU referendum. It thus tested whether voters vote for Leave if they are generally risk-takers in their lives whereas they vote for Remain if they are generally risk-averse (H1).
5.3.2 The Lab Experiment

The methodological limitations of Quattrone and Tversky’s (1986, 1988) lab experiments were discussed and tackled with the implementation of survey waves which were composed by representative samples of the UK population. However, the laboratory roots of prospect theory were revisited in this PhD to complete the thesis’ research syllogism. Hence, this thesis is empirically completed by conducting a lab experiment. The lab experiment was conducted at King’s College University computer lab and its participants were 89 subjects, composed by university students and staff. The sample size was in line both with the size of Quattrone and Tversky’s lab experiments, as well as other pertinent framing studies (Gross, 2008; Druckman and McDermott, 2008).

The reason for the decision to conduct a lab experiment in this PhD had a strong methodological essence. First, the lab provides the necessary “controlled variation” through rigid control of the decision’s environment, something hard to replicate in survey experiments (Falk and Heckman, 2009). Lab participants’ attention thus tends to be more focused during the experimental task and provides accurate and relevant answers resulting in remuneration/payoff (Ledyard, Kagel and Roth, 1995; Friedman and Sunder, 1994; Xiao and Houser, 2005). Besides, all participants at the PhD’s lab experiment received a remuneration of £5 (Appendix G). Naturally, this wasn’t the case with the Ipsos survey experiments which presented the information only as textual stimuli through the experimenter’s tablet. In addition, scholars had stressed the low cost of lab experiments as a sound benefit (Friedman and Sunder, 1994). Hence, the hypothesis tested in the PhD’s lab experiment (H1) was tested in the lab also because Ipsos Capibus waves is a costly method that may not allow for additional questions which demand a greater focus by voters, i.e. risk propensity scale. Notwithstanding, this thesis combines the methods of three survey experiments and a lab experiment influenced by what has been referenced as a fruitful methodological complementarity in a research design between a lab and a survey experiment (Falk and Heckman, 2009; Karlan,
2005; Todd and Wolpin, 2006; Dohmen et al., 2005). It is thus aspired that the combination of these methods contributes to a comprehensive methodological approach in this research.

All in all, the complementarity’s aim of the two empirical parts of this study, three survey experiments and one lab experiment, was to introduce through prospect theory an alternative to the utilitarian expectations school with a theoretical model of voter’s choice and turnout in EU referendums theorized as decisions under risk.
5.4 Operational Definitions

5.4.1 Dependent Variables

On the one hand, at the three survey experiments the dependent variable in every question asked was the categorical dichotomous answer of participants at the survey waves, either Yes or No. The dichotomous nature of the dependent variable was designed to fit precisely the research construct of the initial experiments of Quattrone and Tversky (1986, 1988) which had encompassed dichotomous dependent variables too. As seen in their literature review, Quattrone and Tversky’s dependent variable was a dichotomous alternative between Candidate A and Candidate B, Policy A and Policy B, Vote and Abstain. It was thus regarded as essential to maintain this binary design in the three survey experiments as well as the thesis’ lab experiment. The Yes or No answer in this thesis reflects on voter’s choice for Britain to Remain (Yes) or Leave the EU (No) as well as the tendency to turn out (Yes) or abstain (No) at the EU referendum. The hypotheses (H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, H14) which are relevant to these dependent variables were presented earlier in the theory chapter of the thesis.

On the other hand, at the laboratory experiment of this PhD which was conducted at the premises of King’s College London, the dependent variables were the participants’ score to the risk propensity scale and the vote inclination for Remain and Leave in the EU referendum. The hypothesis (H1) behind these dependent variables was presented in the theory chapter too.

Naturally, the Ipsos Mori survey waves recorded values (Don’t Know and Refused) which were analysed as missing values in the tests of the hypotheses of the three survey experiments. The following tables present an analysis of the missing values of the dependent variables at the thesis’ survey experiments.
Table 5.1: The demographics for the dependent variable’s missing values (Don’t Knows/Refused) of the first survey experiment

<table>
<thead>
<tr>
<th></th>
<th>High Reference Group</th>
<th>Low Reference Group</th>
</tr>
</thead>
<tbody>
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<td>Age</td>
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<td>0</td>
</tr>
<tr>
<td>Employment</td>
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<td>0</td>
</tr>
<tr>
<td>Marital status</td>
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<tr>
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<td>Internet use</td>
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<td>0</td>
</tr>
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<td>Gender</td>
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</tr>
<tr>
<td>Parenthood</td>
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N=69
Table 5.2: The demographics for the dependent variable’s missing values (Don’t Knows/Refused) of the second survey experiment

<table>
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<tr>
<th>Missing Values</th>
<th>Unemployment Group</th>
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<td>0</td>
</tr>
<tr>
<td>Employment</td>
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<td>0</td>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Internet use</td>
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</tr>
<tr>
<td>Education</td>
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</tr>
<tr>
<td>Gender</td>
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<td>0</td>
</tr>
<tr>
<td>Parenthood</td>
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</tr>
</tbody>
</table>

N=57
Table 5.3: The demographics for the dependent variable’s missing values (Don’t Knows/Refused) of the third survey experiment

<table>
<thead>
<tr>
<th>Missing values</th>
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</thead>
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<td><strong>Leave/Remain Campaign Followers Group</strong></td>
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<td>Age</td>
</tr>
<tr>
<td>Employment</td>
</tr>
<tr>
<td>Marital status</td>
</tr>
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<td>Ethnicity</td>
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<tr>
<td>Internet use</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Parenthood</td>
</tr>
</tbody>
</table>

N=38

5.4.2 Independent Variables

Apart from the research frames, in every survey experiment there were a number of independent variables included within the models, which are analysed in the upcoming empirical chapters. First, those are the control variables of demographics that Ipsos Mori provided by default. The eight demographic independent variables provided which served as control variables at the survey experiments were: age, parenthood, marital status, gender, education, employment status, ethnicity and internet usage. Besides, scholars researching prospect theory had also used a wide range of demographics as independent variables that influenced the dependent variable measuring risk-seeking or risk-averse behaviours. For instance, Leimberg et al. (1989) found that the financial
risk tolerance depends on the life stage of the decision-maker. However, next to these demographics used as control variables there are also the interactions between the research frames (reference point, ratio-difference principle, voter’s illusion) and the specific demographics of marital status, employment, parenthood and gender which will be analysed as independent variables in the thesis’ empirical chapters. The hypotheses for these heterogeneous treatment effects which serve as independent variables on the reference point, the ratio-difference principle and voter’s illusion (H5, H6, H7, H8, H9, H10, H11, H12, H13, H14) were discussed in the preceding theory chapter.

The below tables present the observations for the independent variables together with an analysis of their missing values, clustered by survey experiment. Details about the recoding of the demographic variables received from the Ipsos Mori data can be found in Appendix E.

Table 5.4: The descriptive statistics of the data of the first survey experiment

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<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tbody>
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<td>Parenthood</td>
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</tbody>
</table>
Table 5.5: The missing values of demographics between the two research groups of the first survey experiment

<table>
<thead>
<tr>
<th></th>
<th>High Reference Group</th>
<th>Low Reference Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
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<tr>
<td>Ethnicity</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

N=953

Table 5.6: The descriptive statistics of the demographics for the data of the second survey experiment

<table>
<thead>
<tr>
<th></th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio-Difference Principle</td>
<td>989</td>
<td>1.4975</td>
<td>.50025</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Age</td>
<td>989</td>
<td>2.4247</td>
<td>1.13895</td>
<td>1</td>
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<tr>
<td>Employment</td>
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<td>1.4970</td>
<td>.50024</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Marital status</td>
<td>989</td>
<td>1.4156</td>
<td>.49307</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>987</td>
<td>1.1266</td>
<td>.33275</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Internet use</td>
<td>989</td>
<td>1.3195</td>
<td>.46652</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>982</td>
<td>1.2963</td>
<td>.45687</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Gender</td>
<td>989</td>
<td>.4995</td>
<td>.50025</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parenthood</td>
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<td>.42268</td>
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</table>
Table 5.7: The missing values of demographics between the two research groups at the second survey experiment

<table>
<thead>
<tr>
<th>Missing Values</th>
<th>Employment</th>
<th>Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
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<td>4</td>
</tr>
<tr>
<td>Ethnicity</td>
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<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

N=989

Table 5.8: The descriptive statistics of the data of the third survey experiment

<table>
<thead>
<tr>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voter’s illusion treatment</td>
<td>1.5122</td>
<td>.50011</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Age</td>
<td>2.44412</td>
<td>1.13419</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Employment</td>
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<td>.49968</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Marital status</td>
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<td>2</td>
</tr>
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<td>1.1240</td>
<td>.32973</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Internet use</td>
<td>1.3367</td>
<td>.47283</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>1.3002</td>
<td>.45858</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Gender</td>
<td>.5051</td>
<td>.50023</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parenthood</td>
<td>.2454</td>
<td>.43056</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 5.9: The missing values of demographics between the two research groups of the third survey experiment

**Missing Values**

<table>
<thead>
<tr>
<th></th>
<th>Leave/Remain Campaign Followers Group</th>
<th>Undecided voters Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

N=986

5.5 The Research Questions of the three survey experiments

5.5.1 Questions testing the “Reference Point” in the 1st survey experiment

As it was explained previously in the thesis, expected utility theory holds that there should be no difference in choice between two equal prospects if only the reference point changes (Quattrone and Tversky, 1988). According to Quattrone and Tversky’s work though, when the voter is exposed to different reference points there is substantial difference in candidate preference. The reference point is an important principle of prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). As stressed in the theory chapter, the validity of the reference point for voter’s choice in the EU referendum is tested at the PhD’s first survey experiment. The survey experiment was conducted in cooperation with Ipsos Mori UK where the two versions of the same question were inserted inside an opinion poll wave a few weeks before the EU referendum.

The exact questions (Questions 1.1 and 1.2) testing the applicability of prospect theory’s reference point (H2)¹ in Britain’s EU referendum are presented below:

¹ Hypothesis 2 (H2): When EU growth is projected to be lower than the UK, voters will vote more for risk-averse Remain than in the frame the EU growth is projected to be higher than the UK.
Question 1.1: The low reference frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the EU referendum’s impact on the UK economy.

Newspaper Headline 1: According to recent economic research, in 2018 the EU economy is estimated to grow by 1%. If the UK leaves the EU, the UK economy is estimated to grow in 2018 by 4% while if it remains it would grow by 2%.

Newspaper Headline 2: According to recent economic research, in 2018 the EU economy is estimated to grow by 2%. If the UK leaves the EU, the UK economy is estimated to grow in 2018 by 1% while if it remains it would grow by 3%.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you vote for the United Kingdom to remain a member of the European Union or leave the European Union? Please answer based only on the above information, even if that would be against your current voting intention:

1. Remain a member of the European Union
2. Leave the European Union
3. Don’t know
4. Refused”
Question 1.2: The high reference frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the EU referendum’s impact on the UK economy.

Newspaper Headline 1: According to recent economic research, in 2018 the EU economy is estimated to grow by 4%. If the UK leaves the EU, the UK economy is estimated to grow in 2018 by 4% while if it remains it would grow by 2%.

Newspaper Headline 2: According to recent economic research, in 2018 the EU economy is estimated to grow by 5%. If the UK leaves the EU, the UK economy is estimated to grow in 2018 by 1% while if it remains it would grow by 3%.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you vote for the United Kingdom to remain a member of the European Union or leave the European Union? Please answer based only on the above information, even if that would be against your current voting intention.

1. Remain a member of the European Union
2. Leave the European Union
3. Don’t know
4. Refused”
5.5.2 Questions testing the “Ratio-difference principle” in the 2nd survey experiment

As it was analysed in the literature review, a core principle of rational choice under expected utility theory is invariance. This means that the order of the prospects shouldn’t impact the decision itself. Moreover, the frame or wording between equal prospects shouldn’t make rational decision-makers or voters choose differently (Quattrone and Tversky, 1988).

Further, it was discussed previously in the thesis that there is a psychophysical effect that is called ratio-difference principle (Quattrone and Tversky, 1988). It briefly shows that the gains from 1 to 2 dollars will be conceived as more important than the gains from 29 to 30 dollars, although in both cases the user wins 1 dollar. The latter would be explained by Quattrone and Tversky (1988) with the relative ratio of 1/2 being greater than 29/30, despite the difference in absolute values being exactly the same.

The second pair of questions in the Ipsos opinion poll, testing the ratio-difference principle (H3)² is the following:

² Hypothesis 3 (H3): In the unemployment frame, voters will vote more for the UK to remain in the EU than in the employment frame.
Question 2.1: The Unemployment Frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the EU referendum’s impact on the UK economy.

Newspaper Headline 1: According to recent economic research, in 2018 the UK leaving the EU would result in an unemployment rate of 9% and an inflation rate of 1% in the UK.

Newspaper Headline 2: According to recent economic research, in 2018 the UK remaining in the EU would result in an unemployment rate of 4% and an inflation rate of 3% in the UK.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you vote for the United Kingdom to remain a member of the European Union or leave the European Union? Please answer based only on the above information, even if that would be against your current voting intention.

1. Remain a member of the European Union
2. Leave the European Union
3. Don’t know
4. Refused”
Question 2.2: The Employment Frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the EU referendum’s impact on the UK economy.

Newspaper Headline 1: According to recent economic research, in 2018 the UK leaving the EU would result in an employment rate of 91% and an inflation rate of 1% in the UK.

Newspaper Headline 2: According to recent economic research, in 2018 the UK remaining in the EU would result in an employment rate of 96% and an inflation rate of 3% in the UK.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you vote for the United Kingdom to remain a member of the European Union or leave the European Union? Please answer based only on the above information, even if that would be against your current voting intention.

1. Remain a member of the European Union
2. Leave the European Union
3. Don’t know
4. Refused”
5.5.3 Questions testing the “Voter’s Illusion” in the 3rd survey experiment

Another finding of Quattrone and Tversky (1986) which is relevant to this thesis is “voter’s illusion”. They had initially referred to the rational turnout model of Downs (1957) and uncovered the “irrationality” of voters’ taking up the cost to vote in general elections despite their vote representing only a very small fraction of influence compared to the sum of votes judging the electoral result. Quattrone and Tversky (1986) showed how turnout is influenced by the knowledge of how abstention in the coming elections will evolve and particularly how information about the “non-aligned” voters’ turnout intention versus the turnout of “partisans” can influence a voter’s turnout decision. The voter, as discussed in the literature review, will thus go to the polling station or not depending on how “diagnostic” of millions of other votes his one single vote is perceived to be.

However, for the theoretical scope of the third survey experiment the information about “non-aligned” voters’ frame was substituted by “undecided voters” and the “partisans” with “followers of Vote Leave and Vote Remain” campaigns. The theoretical reasons for this adaptation to the EU referendum context were given in the theory chapter. In short, the foundations for this modification were the millions of think-alike voters who remained undecided prior to the referendum, the cited reduced importance of partisanship to account for Britain’s EU referendum’s result as well as the assimilation of Vote Leave and Vote Remain campaigns with political parties receiving government funding as such.

The third pair of questions inserted within a third Ipsos opinion poll investigated turnout, additionally to voters’ choice that the previous questions examine (1.1, 1.2, 2.1, 2.2). Therefore, the UK voter was placed under two frames. The first one informed that in the EU Referendum abstention will be the same as the 2015 elections, the “undecided voters” will equally split between Leave and Remain and thus the Vote Leave/Vote Remain followers will be expected to shape the referendum’s result. The second frame maintained that in the coming UK referendum abstention
will be the same as in 2015 election, the Vote Leave/Remain followers’ vote will be equally split between Leave and Remain and thus the undecided voters will be anticipated to determine the referendum’s result.

The exact third pair of question testing voter’s illusion (H4)\(^3\) in Britain’s EU referendum follows:

\(^{3}\)Hypothesis 4 (H4): When voters are informed that the undecided will shape the referendum’s outcome, they will turn out more than when they are informed that followers of “Vote Remain” or “Vote Leave” campaigns will define the result.
Question 3.1 The “Campaign Followers” frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the expected turnout at the EU referendum.

Newspaper Headline 1: According to a new opinion poll, 34% of the electorate will not vote in the EU referendum, similar to the percentage who didn’t vote in the May 2015 General Election.

Newspaper Headline 2: According to a new opinion poll, undecided voters will split evenly between the Remain and Leave vote and those who have joined or signed up to the “Vote Remain” or “Vote Leave” campaigns will determine the result of the referendum.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you vote in the EU Referendum? Please answer based only on the above information, even if that would be against your current voting intention.

1. Yes, I would vote in the EU Referendum
2. No, I would not vote in the EU Referendum
3. Don’t know
4. Refused”
Question 3.2 The “Undecided Voters” frame

“As you may know the United Kingdom will have a referendum on its membership of the European Union on the 23rd of June this year. Imagine you were an undecided voter reading the below two newspaper headlines regarding the expected turnout at the EU referendum.

**Newspaper Headline 1:** According to a new opinion poll, 34% of the electorate will not in the EU referendum, similar to the percentage who didn’t vote in the May 2015 General Election.

**Newspaper Headline 2:** According to a new opinion poll, those who have joined or signed up to the “Vote Remain” or “Vote Leave” campaigns are estimated to split evenly and therefore undecided voters will determine the result of the referendum.

Still thinking as an undecided voter and regardless of your voting intentions, if you read or saw these headlines in the news, would you cast your vote in the EU Referendum? Please answer based only on the above information, even if that would be against your current voting intention.

1. Yes, I would vote in the EU Referendum
2. No, I would not vote in the EU Referendum
3. Don’t know
4. Refused”
5.6 The lab-experiment’s Methods

The three survey experiments were conducted by inserting research questions within Ipsos survey waves capturing the vote tendency of the electorate weeks before the EU referendum. They were conducted in close coordination with Ipsos Mori UK. Given though that the lab experiment was conceived, designed and conducted by this PhD candidate, it is purposeful to devote the current section of the methods chapter presenting in detail the lab experiment too.

The lab experiment received the Ethical Approval LRS15/162641 (Appendix F).

5.6.1 Sampling method

A sample is defined as a portion of a population or universe (Tailor, 2005). Scholarship identifies four types of non-probability sampling: convenience sampling, quota sampling, purposive sampling and snowball/chain-referral sampling (Tansey, 2007). There are two main categories of sampling methods: probability and non-probability sampling. The former refers to a sample whereby each participant has the same known probability of being randomly selected (e.g. Battaglia, 2008; Henry, 1990). On the other hand, in non-probability sampling randomization isn’t required when selecting participants from the population. Instead, they are selected based on the research scope as well as the need for promptness in data collection that the study may entail (Etikan, Musa and Alkassim, 2016; Battaglia, 2008).

In this PhD the methods used to recruit participants in the lab experiment were King’s College London Circular Email and King’s College London Student Union Newsletter. The experimental task was conducted by a non-probability convenience sample of students and staff from King’s College London. The main reason for choosing this sampling method is that Quattrone and Tversky’s (1986, 1988) initial study that inspired this research had also used a convenience sample of Stanford university students. In addition, previous framing scholarship (Aarøe, 2011; Gross, 2008; Gross and D’Ambrosio, 2004) which focused on self-reporting scales to measure emotional response had also used convenience samples in the lab. Notwithstanding, it is informative to
discuss below the benefits and drawbacks of convenience sampling as opposed to other sampling methods like probability random sampling.

Convenience sampling or accidental/Haphazard sampling is a non-probability sampling method where easily accessible participants to the researcher take part in the experiment based on their willingness and their alignment with some criteria (Dornyei, 2007; Given, 2008). Here the basic criterion was to be UK citizen with voting rights in Britain’s EU referendum. A plethora of social science and psychology research is based on convenience samples (e.g. McCombs and Shaw, 1972; Courtright, 1996; Ferber, 1977; Milgram, 1963; Festinger and Carlsmith, 1959; Peterson and Merunka, 2013; Leiner, 2014; Etikan, Musa and Alkassim, 2015; Sell & Petrulio, 1996; Sparbel & Anderson, 2000; Houde, 2002; Potter, Cooper and Dupagne, 1993; Sherry, Jefferds and Grummer-Strawn, 2007; Ryan et al., 2001; Landers and Behrend, 2015). The main advantages of convenience samples is their cost-effectiveness as well as the straight forward process of recruiting participants (Lang, 1996; Etikan, Musa and Alkassim, 2016). However, at the same time there is scholarship criticizing convenience samples for not being representative of the population providing results which are non-generalizable (e.g. Palinkas, 2003; Hatch and Lazaraton, 1991; Mackey and Gass, 2005; Marshall, 1996; Landers and Behrend, 2015; Schonlau, Fricker and Elliott, 2002; Fowler, 2006; O’Leary, 2004; Leiner, 2014; Robson, 2011). While the random probability sample is considered to be the golden standard of sampling (Leiner, 2014), as it was the case with the representative sample of the UK population selected by Ipsos Mori UK in the thesis’ three survey experiments, scholars argue that it is wrong to dismiss the credit of convenience samples in science (Wilkinson, 1999; Landers and Behrend, 2015; Etikan, Musa and Alkassim, 2016). Landers and Behrend (2015) stress that every sampling method has its benefits and drawbacks and that by discrediting convenience sampling affects good science through limiting data sources, which may slow scientific progress.

Moreover, it needs to be underscored here that Mook (1983) had argued that a convenience sample’s purpose isn’t to make generalizations but to “test” hypotheses, as it is the case in this
thesis’ lab experiment. In the broader perspective of the sampling discussion, Berkowitz and Donnerstein (1982) draw on the distinction between the scope of a survey experiment (generalization) and that of a lab experiment (testing a hypothesis in a specific sample). The latter is in alignment with the previously discussed research design of this thesis which uses both survey experiments and a lab experiment for different reasons as explained previously in this chapter. Besides, Meltzer et al. (2012) claim that a lab experiment tests a hypothesis in relation to reality but doesn’t necessarily accommodate reality. Lang (1996) addresses the topic by suggesting that the generalization of findings doesn’t exclusively depend on the sampling method and statistical inference but on logical inference as well. Mook (1983) supports the claim that although the convenience sampling method might not provide generalizability, it casts light on the reasons behind the hypotheses tested, while future research can be inspired and further investigate the findings in other sampling methods too. All in all, the convenience sample of this thesis’ lab experiment was chosen in acknowledgement of the particularities and benefits of the method and the findings of the first empirical chapter are naturally discussed as such. Not to omit that previously it was already discussed that the cited complementarity between a lab and a survey experiment (Falk and Heckman, 2009; Karlan, 2005; Todd and Wolpin, 2006; Dohmen et al., 2005) is the purposeful intent of this research design.

5.6.2 Participants

The lab experiment took place on 15 and 16 June 2016 at the Computer Lab of the Strand Campus of King's College London. It was decided to conduct the lab experiment one week before the EU referendum in order to capture a more valid vote intent of the electorate. The 89 participants of this lab experiment were UK citizens who enjoyed full voting rights at the EU referendum. Indicatively, out of the 89 participants participating in the experiment, 44 were female (49%), aged between 25-34 (37.1%), white British (67.4%), single (60.7%) and without children (79.8%), working full time (44.9%), holding a Bachelors degree (43.8%), who use the Internet more than 7
hours per day (30.3%) and earn an income of £50,000 or more per annum (23.6%). Participants were paid £5 for participating post the completion of the experimental task (Appendix G).

The below tables present the descriptive statistics and the missing values of the lab experiment.

**Table 5.10:** The descriptive statistics of the variables of the lab experiment’s data

<table>
<thead>
<tr>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voter’s choice</td>
<td>89</td>
<td>.21</td>
<td>.41</td>
<td>0</td>
</tr>
<tr>
<td>Average Risk Propensity Scale (ARPS)</td>
<td>89</td>
<td>4.19</td>
<td>1.29</td>
<td>1.57</td>
</tr>
<tr>
<td>Age</td>
<td>89</td>
<td>2.18</td>
<td>.131</td>
<td>1</td>
</tr>
<tr>
<td>Employment</td>
<td>88</td>
<td>3.97</td>
<td>3.142</td>
<td>1</td>
</tr>
<tr>
<td>Marital status</td>
<td>89</td>
<td>2.45</td>
<td>.917</td>
<td>1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>87</td>
<td>2.32</td>
<td>2.526</td>
<td>1</td>
</tr>
<tr>
<td>Internet use</td>
<td>89</td>
<td>3.18</td>
<td>1.458</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>89</td>
<td>3.54</td>
<td>1.164</td>
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<tr>
<td>Gender</td>
<td>89</td>
<td>.51</td>
<td>.503</td>
<td>0</td>
</tr>
<tr>
<td>Parenthood</td>
<td>89</td>
<td>.20</td>
<td>.404</td>
<td>0</td>
</tr>
</tbody>
</table>

N=89
Table 5.11: The missing values between the two research groups of the lab experiment

<table>
<thead>
<tr>
<th>Missing Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
</tbody>
</table>

N=89

5.6.3 Lab experiment’s design & operational definitions

The experimental design of the lab experiment had two Dependent Variables:

a) Risk Propensity, which captures the overall tendency of the participants to take risks.

b) Referendum vote intent, which records the vote inclination of the sample to vote for Remain or Leave one week before the EU referendum.

5.6.4 Procedure

The lab experiment was conducted inside the KCL Computer Lab. There were different time slots for the groups of participants during the day. The participants were welcomed and seated in front of a computer desk so that they weren’t sitting close to each other and were unable to look at another participant’s screen. On their desk there was a pile of documents which had been created by this PhD candidate. The documents had first to remain unopened until the participants’ briefing by this researcher was concluded. The experiment’s welcome screen was common for all subjects and had been already loaded on their screen by this researcher.

The subjects when seated received a brief welcome and general guideline from the PhD candidate. Then, as instructed, they opened the documents and found inside three papers in the following order: The Information Sheet (Appendix H) indicating their unique Participant ID
number, The Consent Form (Appendix I) and the Payment Receipt (Appendix G). First, they started the experimental process by reading the Information Sheet and signed the Consent Form. They left the Payment Receipt form for the end of the experimental task, once they received their £5 reward upon completion of the task.

Thereafter, they proceeded with the questionnaire in the computer, starting from typing their unique Participant ID number written on the Information Sheet, which had been randomly assigned to all 89 participants, so that their data were anonymised. The participants were asked to follow the screens and the questions until the questionnaire’s completion. After the completion of the questionnaire the subjects raised their hand and the PhD candidate approached them to verify that everything was finished, handed them the £5 reward and requested them to sign the Payment Receipt form. Later the participants were quietly debriefed and escorted to the exit of the computer lab, while the remaining participants continued taking the experimental task.

5.6.5 Materials & Instruments

Questionnaires in Google Forms

The experiment rolled out in the form of questionnaires, created and aired through the free online platform of Google Forms. The online questionnaire was framed as “Opinion poll about the EU referendum”. It opened in a unique URL at the browser of the computer and guided the participant throughout the experimental task through “next buttons”. The questionnaire included questions related to the dependent variables discussed above as well as demographics.

Google Spreadsheets

The online software of Google Forms required Internet connection to function, which was an important criterion for selecting the King’s College Computer Lab as the venue of the lab experiment. The lab had more than 20 computers available, all connected to the Internet. Google
Forms by default captured and automatically saved online all the finalized questionnaires by the participants in Google Spreadsheets. Thereafter, when all 89 participants had completed their online questionnaires the data was extracted offline to spreadsheets and then incorporated into statistical software (SPSS, Stata) for statistical analysis.

5.7 The Research Questions in the lab experiment

As previously stated, following the three survey experiments, the fourth methodological step in this PhD was to conduct a lab experiment. There were 89 subjects in the lab experiment. The sample size assimilated the size of the samples of Quattrone and Tversky (1988) as well as lab experiments of relevant framing scholars (e.g. Gross, 2008). The answers to the lab experiment’s questions were presented in the form of “Radio Buttons” in Google Forms. There were two research questions in the lab experiment that formed part of the PhD’s theory, reflecting on the lab experiment’s two dependent variables which were discussed above:

1. **Dependent Variable 1:** As explained in the theory chapter, the Risk Propensity Scale (RPS) of Meertens and Lion (2008) was used to monitor whether subjects are generally risk-seeking or risk-averse in their lives. This is a simple 7 item scale where participants need to answer how they agree with daily life risk taking behaviour in a 9-point scale (1=totally disagree, 9=totally agree). This question was asked through the RPS scale.

2. **Dependent Variable 2:** There was a question at the end of the experimental task asking the actual/unbiased vote intention of voters in a week’s time.
The Lab experiments’ questions testing the theory’s research hypotheses

“Question 1” in the lab experiment measured risk propensity while “Question 2” is the question measuring voters’ real vote tendency one week later at the EU referendum. The analysis from these two questions tested H1, which was presented at the theory chapter as the hypothesis testing whether the EU referendum should be viewed as voting under risk.

5.7.1 Risk propensity question

As explained in the theory chapter, this PhD integrates at the lab experiment’s design the Risk Propensity Scale (RPS) of Meertens and Lion (2008). This scale is a variation of the Risk Propensity Scale that Druckman and McDermott (2008) had used in their influential experiments on framing. Druckman and McDermott (2008) had in fact used Zuckerman’s risk taking scale (Bromiley and Curley, 1992). However, Meertens and Lion (2008) argued that Zuckerman’s sensation seeking scale (Zuckerman, 1979) measures the personality trait of thrill and adventure seeking and not the propensity to risk per se. They were similarly critical regarding the achievement motivation scale by Atkinson (1957) that also measures the personality trait of motivation and thus isn’t directly connected to risk taking. Consequently, Meertens and Lion’s (2008) view against existing risk taking scales convinced this PhD candidate that it is the right risk propensity scale to incorporate in this PhD. Hence, Meertens and Lion’s (2008) risk propensity scale (RPS) was chosen to measure the moderating role of risk propensity in EU referendum voting.

RPS is a simple 7 item scale where participants need to answer how they agree with daily life risk taking behaviour in a 9-point scale (1=totally disagree, 9=totally agree).
Table:<br>

<table>
<thead>
<tr>
<th>Figure 5.1: The Risk Propensity Scale (Meertens and Lion, 2008) that the lab’s subjects answered to.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please indicate the extent to which you agree or disagree with the following statement by putting a circle around the option you prefer. Please do not think too long before answering; usually your first inclination is also the best one.</td>
</tr>
</tbody>
</table>
| 1. Safety first *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 2. I do not take risks with my health *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 3. I prefer to avoid risks *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 4. I take risks regularly *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 5. I really dislike not knowing what is going to happen *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 6. I usually view risks as a challenge *  
Mark only one oval.  
|  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| totally disagree | | | | | | | | | totally agree  |
| 7. I view myself as... *  
Mark only one oval.  
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  
| risk avoider | | | | | | | | | risk seeker |
5.7.2 The referendum’s vote control question

**How will you vote next week at the EU referendum?**
*Mark only one oval.*

- [ ] Remain
- [ ] Leave
- [ ] Not sure

As previously stated, the above question captured the vote intent of the participants one week later at the Brexit referendum. This question was asked at the end of the experimental task.

Further, it needs to be stressed that Appendix D elaborates on the thesis’ methodological decision to prime the participants of the survey experiments and the lab experiment as undecided voters. The Appendix confirms that the PhD’s priming technique was effective in leading participants to answer the research questions differently to their actual vote intent at the EU referendum.

5.8 Data Collection

5.8.1 Survey Data

Data was collected from the relevant files sent by Ipsos in SPSS/Stata format. The first survey experiment testing prospect theory’s reference point had a sample size of 953, the second testing the ratio-difference principle took place in another survey wave with a sample size of 989 while the third survey experiment testing voter’s illusion had a sample size of 986. The cases in the samples were by default randomly pre-selected by Ipsos in order to be representative of the UK population.

Moreover, the participants of the two samples were randomly split and assigned by Ipsos to the frames/groups of high reference/low reference, large ratio-difference/small ratio-difference,
campaign followers/undecided voters. The respondents of the same group were asked the same exact question and were thus exposed to the same frame. Hence, the treatment groups in this survey design were similar in size.
5.8.2 Lab Experiment Data

Data was collected via Google Forms and included automatically by that software in Google spreadsheets containing the answers of all subjects. The variable names and labels were edited while all data was transferred into Excel, SPSS and Stata files. The lab experiment tested the pertinent research hypothesis (H1).
5.9 Data Analysis

5.9.1 Survey data analysis

The methodological strategy to analyse the data of the survey experiments was first to aggregate the data of the two separate groups/frames of every question into an aggregated dataset. Since the independent and the dependent variables were the same in the survey experiment’s questions 1.1 and 1.2, and respectively in 2.1/2.2 as well 3.1/3.2 the data of the pair of frames was aggregated into one dataset having the same variables. Notwithstanding, a new categorical variable in the aggregated dataset was created and coded as 0 for the data cases that derived from the question 1.1/2.1/3.1 and as 1 for the cases that derived from question 1.2/2.2/3.2. Hence, there were two frames created for each survey experiment, a low reference one and a high reference one, a large ratio-difference and a small ratio-difference, a campaign followers one and an undecided voters one, through the adaptation of Quattrone and Tversky’s (1986, 1988) binary research syllogism in the context of the EU referendum. Consequently, it was tested whether the frame difference in every pair of questions was able to moderate the dependent variable, Yes or No, which stood for voter’s choice (Leave/Remain) as well as turnout/abstention at the ballots.

Furthermore, the datasets provided categorical data and not continuous. Given that the dependent variable was categorical, parametric methods like ANOVA were by default excluded as DV statistical method. Therefore, to analyse the data non parametric methods were used because they operate through categorical data (dependent variable) and don’t follow any specific (normal) distribution. Those are the data collected for the research questions 1.1/1.2, 2.1/2.2, 3.1/3.2 with answers recorded as a Yes or No. In order to test the theory’s hypotheses in this type of categorical data, binary logistic regression was used. Moreover, it was important to test Quattrone and Tversky’s results (1986, 1988), who had initially used Chi-Square for their result, through relatively more modern statistical models compared to Quattrone and Tversky’s era.
5.9.2 Lab Experiment Data Analysis

As said previously, the lab experiment tested the hypothesis H1. However, contrary to the survey experiments which dealt with categorical variables, in the lab experiment statistical methods were used to analyse a continuous variable i.e. scores at the Risk Propensity Scale (Meertens and Lion, 2008). Participants had to respond to a 9-point scale, ranging from 1 (totally disagree) to 9 (totally agree), in line with Meertens and Lion (2008) who had introduced the scale. The questions were recoded so that the high score shows a high risk taking person and low scores show a low risk taking person. To test H1, which was introduced at the theory section, the mean score in RPS between those who will vote Remain and Leave in the Brexit referendum was measured through t-test mean comparison.

*Statistical packages: SPSS 24.0 & Stata SE 12.0*

As it was the case in the analysis of the data from the Ipsos survey experiments, SPSS and Stata were also used for the lab experiment’s data analysis. This statistical software was provided by King’s College London, Software Distribution division. These statistical packages were used to produce the thesis’ results, reports and graphs.
5.9.3 Statistical methods applied

While Quattrone and Tversky (1986, 1988) had used Chi-Square tests for their findings of the reference point, ratio-difference principle and voter’s illusion, the data collected from the survey experiments in this research were analysed through binary logistic regression models (Hosmer, Sturdivant and Lemeshow, 2000). Binary logistic regression models were built to accommodate voting behaviour in Britain’s EU referendum (choice and turnout), based on prospect theory principles, together with the theorized heterogeneous treatment effects of the demographic variables of marital status, employment, parenthood and gender. Specific hypotheses about the heterogeneous treatment effects were outlined in the theory chapter. The purpose of the logit models was to examine how the reference point, the ratio difference principle and voter’s illusion were moderated by the aforementioned demographics in models that accommodate Britain’s EU referendum behaviour under risk. Concerning the statistical method used to test hypothesis H1 of the lab experiment the t-test mean comparison method for continuous variables (RPS) was implemented.

5.9.4 Acceptable significance levels

Regarding the heterogeneous treatment effects of all survey experiments as well as the main effect of the third survey experiment the acceptable significance level for all survey experiments is p<.05. Also, at the three survey experiments and in the thesis’ appendices at the models during the robustness tests there are significance levels discussed for the control demographic variables at p<.01 and p<.001. However, the discussion for the control variables is not part of the PhD’s theory and hypotheses. Given though that the results of the control variables are in line with other pertinent scholarship, they can re-affirm the validity of the survey waves as representative of the
UK electorate. On the other hand, regarding the lab experiment and given its convenience sample the acceptable significance level is the non-conventional \( p < 1 \). The first empirical chapter discusses in detail the limitations of this non-conventional level with a convenience sample of students and staff of King’s College London.

### 5.10 Conclusion

This chapter outlined the methodological approach followed to test the hypotheses presented in the thesis’ theory chapter. This included three survey experiments and one lab experiment. The survey experiments were conducted in cooperation with Ipsos Mori UK, while the lab experiment was designed and executed by the PhD candidate at the premises of King’s College London. Inspired by Quattrone and Tversky’s (1986, 1988) laboratory study, the first survey experiment tested the impact of prospect theory’s reference point on voter’s choice in the EU referendum. The second survey experiment tested the impact of the ratio-difference principle on the Leave and Remain vote. The third survey experiment tested voter’s illusion regarding the electorate’s turnout behaviour at the referendum’s ballots. The methodological transition of Quattrone and Tversky’s reference point, ratio-difference principle and voter’s illusion from the lab to survey experiments through representative samples of the UK population intends to contribute external validity. In addition, the cost-effectiveness of lab experiments combined with the experimental freedom that they provide was another reason for the incorporation of the lab experiment within the PhD’s research design. Overall, the complementarity between survey and lab experiments in this thesis aspires to contribute methodological value.

The scope of the PhD’s research is to address what Hobolt (2006) had cited as a lack of a parsimonious theoretical model in EU referendum voting. This is attempted to be accomplished here by presenting an alternative mainly to the utilitarian expectations school of EU referendum
voting (Hobolt, 2005), which had been based on the flawed expected utility theory. The validity of the findings in the first attempt (Quattrone and Tversky, 1986, 1988) to apply prospect theory to voting behaviour were tested in this thesis through three survey experiments. The next chapter is the thesis’ first empirical chapter. It focuses on the test of the effect of Quattrone and Tversky’s reference point and ratio-difference principle on voter’s choice in the Brexit referendum (Remain, Leave). The following chapter discusses the results of the first two survey experiments on voter’s choice, which tested the relevant hypotheses presented in the theory chapter. It also discusses the result of the test of H1 in the PhD’s lab experiment.
CHAPTER VI: PROSPECT THEORY’S EFFECT ON VOTER’S CHOICE IN THE EU REFERENDUM

6.1 Introduction

On 23 June 2016, 51.9% of UK voters voted to leave the EU. The EU referendum’s Leave result raised a substantial debate among scholars. As stated in the thesis’ second chapter, this wasn’t the first EU referendum of course, but one of the dozens that had taken place in EU member states. Voting behaviour’s analysis in EU referendums meets two main approaches in scholarship: the second-order election and issue-voting (Garry, Marsh and Sinnott, 2005; Glencross and Trechsel, 2011; Szczerbiak and Taggart, 2004; Lequesne and Schmitter, 2010; Hobolt, 2006; Goldberg and Vreese, 2018; Elkink, Quinlan and Sinnott, 2011).

Beyond the two established schools of EU referendum literature, Hobolt (2005) referred to a third school as “utilitarian expectations”, inspired by Gabel and Palmer’s (1995) “utilitarian appraisals models of integrative policy”. European integration was perceived there by voters as a cost-benefit analysis. Gabel (1998a, 1998b) viewed the vote for EU integration as an opportunity/threat estimation result. However, Hobolt (2005) claimed that this utilitarian approach is informative but doesn’t really explain voting behaviour in EU referendums. As per the preceding literature review, in 2006 the same researcher claimed that the biggest problem of EU referendum scholarship is its lack of a parsimonious theoretical model of voting behaviour. She attempted to bridge that gap with her upgraded utilitarian expectations models of proximity and uncertainty (Hobolt, 2006). Ten years later, Hobolt (2016) adapted the utilitarian model of EU integration to the UK referendum and explained why the ones who benefited more from the EU (highly educated, youth and wealthy) were more likely to vote for Remain than those benefiting the least (poorly educated, elderly, low income).
Notwithstanding, I argued previously in the thesis that in principle the flaw of Hobolt’s utility models and generally the utilitarian expectations school is their reliance on expected utility theory. Indeed, the expected utility theory has been widely criticized for failing to effectively explain human decision-making (e.g. Knight, 1921; Allais, 1953a, 1953b, 1953c). Therefore, the alternative was located in prospect theory, which overcomes the failures of expected utility theory (Levy, 2003; Vis, 2009; Vis and Kuijpers, 2018). In political science, expected utility theory prevailed in accommodating voter’s behaviour as rational decision-maker but was found inadequate following the launch of prospect theory (Vis and Kuijpers, 2018). Hence, this PhD focused on prospect theory to explain EU referendum voting behaviour.

The influential study for this empirical chapter was the initial laboratory adaptation of prospect theory to voter’s choice by Quattrone and Tversky (1988). They challenged expected utility theory due to major inconsistencies observed. They found that individual rationality in electoral behaviour isn’t necessarily intuitively compelling. While most attempts to adapt prospect theory to politics (Mercer, 2005; Levy, 2003; McDermott, Fowler and Smirnov, 2008) start from explaining Kahneman and Tversky’s (1979) Prospect Theory, I begin the empirical part of this thesis by adapting Quattrone and Tversky’s pertinent work. The core syllogism behind this chapter’s hypotheses is the transfer of Quattrone and Tversky’s findings from the lab to representative samples of the general UK population, through Ipsos Mori survey waves. Hence, this PhD attempts to introduce the basis for an alternative school in EU referendum scholarship based on prospect theory.

As seen earlier in the thesis, prospect theory was specified as a theory of decision-making under risk. Therefore, the main Hypothesis 1 (H1) tested whether choice in the EU referendum was a risky decision whereby risk takers vote for Leave (risky option) and risk-averse voters vote for Remain (status quo). On the one hand, my theory refers to Quattrone and Tversky’s main
hypothesis of the reference point (Hypothesis 2) and purposefully specifies it for the unmarried (Hypothesis 5), parents (Hypothesis 8) and the unemployed (Hypothesis 11). On the other hand, the third main hypothesis of voter’s choice tests Quattrone and Tversky’s ratio-difference principle (Hypothesis 3) and specifies it for the married (Hypothesis 6), parents (Hypothesis 9) and employed (Hypothesis 12).

6.2 Results

6.2.1 A lab experiment testing EU referendum vote as voting under risk

H1 was tested in the lab using Meertens and Lion’s (2008) Risk Propensity Scale (RPS). I was initially inspired by the risk propensity scale from Druckman and McDermott’s (2008) framing research, assessing risky decisions influenced by the decision-maker’s risk propensity. They had used Zuckerman’s (1979) risk taking scale (Bromiley and Curley, 1992). However, Meertens and Lion (2008) argued that Zuckerman’s sensation seeking scale (Zuckerman, 1979) measures the personality trait of thrill and adventure seeking and not the risk propensity per se. Consequently, I was convinced by Meertens and Lion’s (2008) view challenging existing risk taking scales to incorporate their risk propensity scale (RPS) to measure possible moderation of framing effects on the EU referendum’s vote. RPS is a 7 item scale for participants to answer how they agree with risk taking behaviour in their daily life through a 9-point Likert scale (1=totally disagree, 9=totally agree).

For the data analysis I processed the responses to the seven relevant items of the RPS scale. The following table shows the sums, means, mode, median and standard deviation in the subjects’ responses to the 7-item RPS4, reflecting on the question presented to the lab experiment.

---

4 Item 1: Safety First
participants. Items 1, 2, 3, and 5 of RPS were inversely recoded, as per Meertens and Lion (2008), since they were originally pointing towards the direction of the subjects’ risk aversion. Following the recoding of these 4 items, all 7 items pointed in the same direction where 1 was absolute risk aversion and 9 absolute risk-seeking. Items 1, 2, 3, 5 at the below table were rephrased as per the necessary recoding.

Table 6.1: Descriptive statistics of subjects’ responses to RPS at the lab experiment

<table>
<thead>
<tr>
<th>N=89</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Item 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am not considering safety as top criterion</td>
<td>I take risks with my health</td>
<td>I don’t avoid risks</td>
<td>I take risks regularly</td>
<td>I really like not knowing what is going to happen</td>
<td>I usually view risks as a challenge</td>
<td>I view myself as … (risk avoider/risk seeker)</td>
</tr>
<tr>
<td>Mean</td>
<td>3.58</td>
<td>4.21</td>
<td>4.16</td>
<td>4.09</td>
<td>3.75</td>
<td>5.07</td>
<td>4.43</td>
</tr>
<tr>
<td>Std Deviation</td>
<td>1.636</td>
<td>2.123</td>
<td>1.943</td>
<td>1.992</td>
<td>2.186</td>
<td>2.082</td>
<td>1.827</td>
</tr>
<tr>
<td>Median</td>
<td>3.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>3.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Mode</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Sum</td>
<td>319</td>
<td>375</td>
<td>371</td>
<td>364</td>
<td>334</td>
<td>451</td>
<td>394</td>
</tr>
</tbody>
</table>

Since items measured risk propensity in a similar way, I calculated the mean of sums (Msums=372.6) for the lab sample. The average risk propensity per subject was ARP=4.186. Knowing that 1=totally disagree and 9=totally agree about risk taking, one deducts that on average this sample consisted of slightly risk-avoiders. Moreover, I created the variable ARPS, the average risk propensity of every subject in the lab experiment, by aggregating responses to all 7 items of

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Item 2: I do not take risks with my health
Item 3: I prefer to avoid risks
Item 4: I take risks regularly
Item 5: I really dislike not knowing what is going to happen
Item 6: I usually view risks as a challenge
Item 7: I view myself as … (risk avoider/risk seeker)
the RPS scale and calculating the overall RPS mean per subject. Hence, in order to test H1 I ran a t-test for the mean comparison of ARPS between those who answered they would vote for Remain or those who would vote for Leave. The relevant question\(^5\) that captured voters’ choice intent one week before the EU referendum was asked at the lab experiment. In the methods chapter this question was discussed as “unbiased” or control question positioned at the end of the experimental task, which didn’t have any frames. The below table presents the result of the data analysis testing H1:

<table>
<thead>
<tr>
<th>EU Referendum vote intent</th>
<th>Observations</th>
<th>ARPS Mean</th>
<th>Std. Error</th>
<th>Std. Deviation</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remain</td>
<td>68</td>
<td>4.155462</td>
<td>.1455822</td>
<td>1.200501</td>
<td>3.864879 - 4.446045</td>
</tr>
<tr>
<td>Leave</td>
<td>11</td>
<td>4.662338</td>
<td>.353762</td>
<td>1.173296</td>
<td>3.874107 - 5.450569</td>
</tr>
<tr>
<td>Combined</td>
<td>79</td>
<td>4.22604</td>
<td>.1352744</td>
<td>1.202345</td>
<td>3.956729 - 4.49535</td>
</tr>
<tr>
<td>diff</td>
<td>-</td>
<td>-.5068755</td>
<td>.3890075</td>
<td>-</td>
<td>-1.281488 - .2677375</td>
</tr>
<tr>
<td>Answering “Not sure”</td>
<td>10</td>
<td>3.871429</td>
<td>.6032602</td>
<td>1.907676</td>
<td>2.506759 - 5.236098</td>
</tr>
</tbody>
</table>

Those who would vote for Leave (t) in the Brexit referendum recorded a higher means score in the (ARPS) Risk Propensity Scale (m=4.662338) than (T) Remain (m=4.155462). This mean difference (diff=mean(Stead)-mean(Leave)) is statistically significant at p<.1 (Pr(T<t)=.0982), although p=.1 is not the conventional level of statistical significance. Therefore, this result is

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\(^5\) Question of the lab questionnaire: How will you vote next week at the EU referendum?
- Remain
- Leave
- Not sure
indicative of the hypothesized relationship between risk propensity and the Brexit vote and provides only tentative and not definite support for H1. Surely, future research is encouraged to revisit H1 through different data sets that may achieve conventional levels of statistical significance. Nevertheless, through the chapter’s inconclusive result one may say that those who are generally risk takers vote for the risk-seeking Leave while those who don’t take risks in their lives opt for the risk-averse remain. H1’s confirmation, although at the non-conventional p<.1 level, is important for this thesis as it supports the basis for the PhD’s research syllogism applying prospect theory to accommodate the EU referendum vote. As discussed in the theory chapter, risk has a perennial value in prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) which governs decisions towards risk-seeking and risk-averse routes. By providing tentative support for H1 at p<.1 a basic syllogism behind the conception of this PhD’s idea is strengthened, that voting in the EU referendum can be regarded as voting under risk. This finding contributes to the pertinent risk research of Clarke, Goodwin and Whiteley (2017) who found that those who regarded Brexit as risky option voted more for the status quo, Remain. However, this finding adds something new through the Risk Propensity Scale. This is the EU referendum vote in connection to the general tendency of the electorate to take risks in their lives. What is more, the confirmation of H1, although at the non-conventional p<.1 level, aligns with the finding of Nadeau, Martin and Blais (1999) who had also discovered the risk-averse Canadian voters to vote more for the status quo.

Further, given that in the lab sample those who vote for Remain score lower in the RPS than those who vote for Leave, the below line chart depicts how subjects’ different risk propensity scores varied between the “Remainers” and the “Brexiteers” in the Brexit referendum:
Figure 6.1: Line chart showing Leave and Remain tendency depending on subjects’ score at the Risk Propensity Scale (ARPS).

The above figure shows that the minimum ARPS value is 1.57 while the maximum is 7. When subjects score below 4 at the Risk Propensity Scale, hence they are generally self-reported as very risk-averse in their lives, the blue line of Remain is above the green line of Leave. This means that very risk-averse Remain voters outnumber the very risk-averse Leave voters. There is thus a tendency for those who score below 4 to express their increased risk-aversion with their Remain vote. Instead, for subjects who score more than 4, and are thus self-reported as very risk-seeking, the green line of Leave is consistently above the blue line of Remain. This means that the very risk-seeking Leave voters outnumber the very risk-seeking Remain voters. Hence, there is a tendency for risk takers (ARP>4) to vote for Leave. Given the fact that the previous t-test of the mean difference between the two vote choices is statistically significant, although at a non-conventional level of statistical significance (p<.1), the graph shows a descriptive tendency between taking risks, as recorded by RPS, and voting in the EU referendum.
As discussed in the theory chapter, research by Nadeau, Martin and Blais (1999) demonstrated that risk-avoiders voted more for the status quo in the Quebec referendum of 1995 than risk-seekers. This chapter adapted the Quebec referendum finding to the context of the EU referendum whereby the status quo is theorized as the Remain vote which would maintain Britain’s EU membership. H1’s result, showing a descriptive tendency (Figure 6.1) to echo Nadeau, Martin and Blais’ risk viewpoint of referendums, is statistically significant (p<.1), although not at the conventional level of statistical significance. However, it could permit the reader to infer specifically for the convenience sample of the lab experiment that risk-averse British voters tended to vote for Remain while risk-seeking for Leave. Nonetheless, in this convenience sample of this PhD risk-averse voters were indeed Remain voters while risk-seeking voters were Leave voters. Overall, H1’s result shows traces of a causality between risk propensity and voter’s choice in the Brexit referendum.

However, it needs to be stressed again that H1 is confirmed within a convenience sample of 89 KCL students and staff. Therefore, the finding may have limited external validity as the sample is not representative of the entire UK population. Nevertheless, given the benefits of convenience samples cited in the methods chapter as well as the fact that Quattrone and Tversky’s study (1988) was also based on convenience sampling, H1’s result tentatively supports a relationship for this sample between risk propensity and voting for Leave/Remain in Britain’s EU referendum.

Therefore, this finding may establish the fertile ground to test my theory that adopts the risk ruled prospect theory to voter’s choice in the EU referendum, through two survey experiments which are subsequently discussed. While the test of EU referendum voting as voting under risk showed tentative support for H1 (p<.1), the rest of the PhD’s hypotheses related to voter’s choice (H2, H3, H5, H6, H8, H9, H11, H12) revisit the test of risk’s effect on voting behaviour through prospect theory and particularly via the adaptation of Quattrone and Tversky’s (1988) work to representative samples of the general UK population. Hence, the next sections constitute a deeper reconsideration of H1 through the lens of prospect theory, which studies decision-making under
Having shown a clear trend (Figure 6.1) which aligns with the literature’s general viewpoint of Remain as risk-aversion and Leave as risk-seeking through prospect theory (Kokotovic and Kurecic, 2017; Dos-Santos, Candeias and Diz, 2017; Hentiz, 2016), the upcoming sections provide something that is missing from scholarship about UK’s referendum. That is to elaborate on prospect theory and test specific theoretical assumptions in lieu of the previously referenced as “flawed” expected utility model. This is aspired to contribute to the question of how the UK electorate voted after all in 2016, suggesting an alternative theoretical model of EU referendum voting.

H1’s result, although not confirmed at the conventional level of statistical significance, may contribute to the thesis’ syllogism regarding voting behaviour in the EU referendum as voting under risk through prospect theory. Considering that H1 was supported at the non-conventional level of p<.1 inside the lab experiment’s convenience sample, given the size of the sample (N=89) and its convenience nature, scholars are strongly encouraged to revisit the link between Meertens and Lion’s (2008) risk propensity scale and voter’s choice in the EU referendum, through bigger representative samples of the British electorate.

6.2.2 A survey experiment testing prospect theory’s reference point in the EU referendum

Descriptive results

The dependent variable in the logistic regression model of the first survey experiment of this PhD is binary, following Quattrone and Tversky’s relevant empirical work. This dependent variable ranged between two categories, Remain (DV=0) and Leave vote (DV=1). The below bar chart depicts the percentages that fall within each category of the dependent variable by treatment group:
Figure 6.2: Descriptive results of the dependent variable by the reference point frame.

Main result

The following table presents the binary logistic regression model for the first survey experiment conducted in cooperation with Ipsos Mori UK. The main result focuses on the main effect of the coefficient “Reference Point” on the dependent variable (Remain/Leave):
Table 6.3: Logistic regression model comprised by the research frame’s coefficient at the first survey experiment.

<table>
<thead>
<tr>
<th>Model 1: Reference point’s effect on EU Referendum vote</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.212 (.097)*</td>
</tr>
<tr>
<td>Reference point (Low reference)</td>
<td></td>
</tr>
<tr>
<td>High reference</td>
<td>-.045 (.135)</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>884</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.
**Significant positive/negative relationship, p<.01.
***Significant positive/negative relationship, p<.001.

The non-statistically significant result of the reference point coefficient in Model 1 shows that H0 cannot be rejected. Hence, H2 isn’t confirmed. This is the first null result of this thesis and surely has its own importance in the discussion of prospect theory as an alternative theory to accommodate EU referendum behaviour. The result shows that in a representative sample of the UK population the reference point isn’t valid for the entire population. Thus, the High Reference Point frame didn’t place the voters in a domain of losses which as per prospect theory would urge for the risky vote decision of Leave. Similarly, the Low Reference Point didn’t position the voter in a domain of gains either which would endorse the status-quo and risk-averse vote of Remain. At a first read the null result of H2 has a consequential impact on the validity of prospect theory to explain voting behaviour in the Brexit referendum, which is that the prospect theory’s reference point fails to do so. However, as this chapter shows later, the syllogism around the reference point which was articulated in the thesis’ theory chapter should not be discarded. Instead, the next
section of this analysis shows that the reference point is statistically confirmed for specific demographic segments of the British electorate, namely the unmarried, the unemployed and parents. Consequently, this null result doesn’t condemn the thesis’ theory to be disproved but to discover why it works only for certain subsamples of voters.

Moreover, given that there isn’t literature that discusses the dependence of prospect theory’s reference point on specific demographic identities and electorate segments, this null result has its own importance. Besides, there is ample scholarship discussing that the frames of political campaigns and the media used for their broadcast often target specific demographics of the electorate (e.g. Stephens and Merril, 1984; Hindman, 2005; Herrnson et al., 2007; Miller, 2013; Elder and Philips, 2017, Ridout et al., 2012; Smith, 2011; Turow et al., 2012). Besides, political campaigns in social media like Facebook often target specific demographic segments (e.g. Smith, 2009; Liberini et al., 2020; Baldwin-Philippi, 2015). Therefore, the fact that this prospect theory framing is influential for specific demographics and not for the entire population shouldn’t come as such a big surprise to the reader but instead it may be expected simply because the framing of political campaigns usually targets concrete segments of demographics. Hence, this null result doesn’t disprove the PhD’s theory based on prospect theory as a whole but limits its applications to specific demographics. Surely though, it is purposeful to look at the upcoming sections of the analysis in this empirical chapter whereby the interpretation of the heterogeneous treatment effects for the unmarried, unemployed and parent voters are discussed.

Meanwhile, to add explanatory value to the model of the first survey experiment I added the control variables of the demographics provided by Ipsos Mori. It is informative to estimate the explanatory value of a model including demographics in a representative sample of the UK population. As discussed in the theory chapter, there is substantial research concerning the role of demographics on the Leave result (Hobolt, 2016; Kaufmann, 2016; Barslund and Ludolph, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016;
Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2018; Antonucci, Howarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017).
**Control variables**

Table 6.4: Logistic regression model comprised by the research frame’s coefficient and the control variables of Ipsos demographics at the first survey experiment.

<table>
<thead>
<tr>
<th>Model 2: Reference point’s effect on the EU Referendum vote with demographics as control variables</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>-.420 (.247)</td>
</tr>
<tr>
<td><strong>Reference point</strong> (Low reference)</td>
<td></td>
</tr>
<tr>
<td>High reference</td>
<td>-.036 (.142)</td>
</tr>
<tr>
<td><strong>Age</strong> (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td><strong>.428 (.205)</strong>*</td>
</tr>
<tr>
<td>55-64</td>
<td><strong>.590 (.238)</strong>*</td>
</tr>
<tr>
<td>65+</td>
<td><strong>.485 (.244)</strong>*</td>
</tr>
<tr>
<td><strong>Employment</strong> (Employed)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>.086 (.170)</td>
</tr>
<tr>
<td><strong>Marital Status</strong> (Married)</td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>-.043 (.156)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong> (White)</td>
<td></td>
</tr>
<tr>
<td>Non white</td>
<td><strong>-.596 (.226)</strong>**</td>
</tr>
<tr>
<td><strong>Internet use</strong> (Heavy)</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>.245 (.174)</td>
</tr>
<tr>
<td><strong>Education</strong> (Poor)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td><strong>-.805 (.162)</strong>***</td>
</tr>
<tr>
<td><strong>Gender</strong> (Female)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.098 (.147)</td>
</tr>
<tr>
<td><strong>Parenthood</strong> (Non parent)</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>-.026 (.205)</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.055</td>
</tr>
<tr>
<td><strong>Hosmer &amp; Lemeshow</strong></td>
<td>.469</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>870</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
Multicollinearity wasn’t an issue in model 2. The regression of the independent variables doesn’t demonstrate any risk of multicollinearity. The following table shows that VIFs are close to 1 and less than 10 while the mean VIF is very close to 1, which doesn’t imply multicollinearity.

Table 6.5: VIF table with the regression of the demographic control variables at model 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (18-34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td>1.61</td>
<td>0.621304</td>
</tr>
<tr>
<td>55-64</td>
<td>1.70</td>
<td>0.587512</td>
</tr>
<tr>
<td>65+</td>
<td>2.34</td>
<td>0.426821</td>
</tr>
<tr>
<td>Parenthood (Parent)</td>
<td>1.48</td>
<td>0.675928</td>
</tr>
<tr>
<td>Internet use (Light)</td>
<td>1.36</td>
<td>0.733100</td>
</tr>
<tr>
<td>Employment (Unemployed)</td>
<td>1.45</td>
<td>0.691275</td>
</tr>
<tr>
<td>Education (Highly Educated)</td>
<td>1.11</td>
<td>0.900379</td>
</tr>
<tr>
<td>Ethnicity (Non-white)</td>
<td>1.11</td>
<td>0.897832</td>
</tr>
<tr>
<td>Marital Status (Unmarried)</td>
<td>1.18</td>
<td>0.845768</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>1.07</td>
<td>0.934314</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.40</td>
<td></td>
</tr>
</tbody>
</table>

To corroborate the absence of multicollinearity I also ran a correlation matrix for model 2, which reiterates that there isn’t a troubling correlation between the independent variables influencing the results.
Table 6.6: Correlation matrix for the independent variables of model 2

<table>
<thead>
<tr>
<th></th>
<th>Reference point</th>
<th>Age 35-54</th>
<th>Age 55-64</th>
<th>Age 65+</th>
<th>Employment</th>
<th>Married</th>
<th>Parenthood</th>
<th>Gender</th>
<th>Internet</th>
<th>Education</th>
<th>Ethnicity</th>
<th>constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference point</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 35-54</td>
<td>0.0388</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 55-64</td>
<td>0.0533</td>
<td>0.4358</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65+</td>
<td>0.0291</td>
<td>0.4034</td>
<td>0.3736</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>-0.0302</td>
<td>0.1285</td>
<td>-0.0596</td>
<td>-0.3029</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>-0.0033</td>
<td>0.1436</td>
<td>0.2386</td>
<td>0.2449</td>
<td>-0.1151</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parenthood</td>
<td>0.0074</td>
<td>0.0104</td>
<td>0.2838</td>
<td>0.2865</td>
<td>0.0508</td>
<td>0.2314</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.0014</td>
<td>0.0077</td>
<td>0.0349</td>
<td>-0.0015</td>
<td>0.0886</td>
<td>0.1673</td>
<td>0.1722</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>0.0119</td>
<td>-0.1307</td>
<td>-0.3401</td>
<td>-0.0621</td>
<td>-0.1461</td>
<td>-0.0368</td>
<td>0.0375</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.0090</td>
<td>0.0708</td>
<td>-0.0077</td>
<td>-0.0881</td>
<td>0.1333</td>
<td>-0.0107</td>
<td>0.0285</td>
<td>-0.0266</td>
<td>0.0159</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>0.0492</td>
<td>0.0071</td>
<td>0.1301</td>
<td>0.1276</td>
<td>-0.0965</td>
<td>0.04</td>
<td>-0.1175</td>
<td>-0.0778</td>
<td>0.0232</td>
<td>0.0122</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>constant</td>
<td>-0.3278</td>
<td>0.4637</td>
<td>-0.5416</td>
<td>-0.4197</td>
<td>-0.2769</td>
<td>-0.4366</td>
<td>-0.4193</td>
<td>-0.4206</td>
<td>-0.0389</td>
<td>-0.2322</td>
<td>-0.1242</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Model 2 reveals the main effect of the demographic of education on the EU referendum vote, which has been widely researched throughout the UK referendum scholarship. It is statistically significant (p<.001) with a negative coefficient (-.805), showing that voters of higher education would vote more for remain in Britain’s EU referendum. An increase of the education variable by one unit, namely from low to high education, decreases the logit of the estimated log-odds of voting for Leave by .805 unit. From an odds ratio perspective, voters of high education are approximately .5 times (Exp(B)=.446) less likely to vote for Leave than the poorly educated, controlling for all other variables. Although this statistically significant control variable doesn’t form part of my theory, it is informative to state that it is aligned with Brexit referendum literature, concluding that the poorly educated voted for Leave whereas the well-educated for Remain (Hobolt, 2016; Kaufmann, 2016; Ludolph and Barslund, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Arnórsson and Zoega, 2018; Antonucci, Horvarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017).
Another important informative control variable is age. It is statistically significant (p<.05) for age groups 35-54, 55-64 and 65+ with positive coefficients .428 (35-54), .590 (55-64) and 65+ (.485) respectively, demonstrating that voters of older age vote more for Leave than youth (18-34). An increase of the age control variable by one unit, namely from 18-34 to 35-54, increases the logit of the estimated log-odds of voting for Leave by .428 unit. Also, an increase of the age control variable by one unit from 35-54 to 55-64, increases the logit of the estimated log-odds of voting for Leave by .590 unit. Moreover, an increase of the age control variable by one unit from 55-64 to 65+, increases the logit of the estimated log-odds of voting for Leave by .485 unit. From an odds ratio standpoint, voters aged 35-54 were approximately 1.5 times (Exp(B)=1.535) more likely to vote for Leave than Britain’s youth (18-34), controlling for all other variables. Further, voters aged 55-64 were approximately 1.8 times (Exp(B)=1.804) more likely to vote for Leave than Britain’s youth (18-34), controlling for all other variables. Finally, voters aged 65+ were approximately 1.6 times (Exp(B)=1.624) more likely to vote for Leave than Britain’s youth (18-34), controlling for all other variables. This main effect finding, although not part of my theory, aligns with pertinent UK referendum scholarship, agreeing that the older segments of the electorate voted more for Leave than youth who voted more for Remain (e.g. Goodwin and Heath, 2017; Hobolt, 2016).

Another statistically significant control variable is ethnicity (p<.01) with a negative coefficient (-.596), showing that voters of non-white ethnicity vote more for remain in the EU referendum. An increase of the ethnicity control variable by one unit, namely from white to non-white, decreases the logit of the estimated log-odds of voting for Leave by .596 unit. From an odds ratio perspective, voters of non-white ethnicity are approximately .5 times (Exp(B)=.550) less likely to vote for Leave than white voters, controlling for all other variables. This main effect finding, although not attached to my theory, is in accordance with pertinent UK referendum scholarship agreeing that the white electorate voted more for Leave than non-white voters or migrants, who
voted for Remain (Goodwin and Heath, 2017; Devine and Sensier, 2017; Hozic and True, 2017; Clarke and Newman, 2017).

Overall, it can be said that the main effect results of ethnicity, education and age, which are aligned with EU referendum scholarship, corroborate the validity of this sample as representative of the general UK population.

**Heterogeneous treatment effects**

There are three subsidiary hypotheses related to the reference point hypothesis (H2), regarding the heterogeneous treatment effects of marital status (H5), parenthood (H8) and employment (H11) on the way the reference point influenced the 2016 referendum vote in Britain.

To test H5, H8 and H11 I added to model 2 the interactions between the reference point and the demographics of employment, marital status and parenthood.
Table 6.7: Logistic regression model for the first survey experiment with the heterogeneous treatment effects of Employment, Marital status and Parenthood on the reference point frame.

<table>
<thead>
<tr>
<th>Model 3: The heterogeneous treatment effects on the Reference point at the EU Referendum</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>-.209 (.263)</td>
</tr>
<tr>
<td><strong>Reference point</strong> (Low reference)</td>
<td></td>
</tr>
<tr>
<td>High reference</td>
<td>-.729 (.265)**</td>
</tr>
<tr>
<td><strong>Education</strong> (Poorly educated)</td>
<td></td>
</tr>
<tr>
<td>Highly educated</td>
<td>-.797 (.162)***</td>
</tr>
<tr>
<td><strong>Internet use</strong> (Heavy)</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>.298 (.175)</td>
</tr>
<tr>
<td><strong>Age (18-34)</strong></td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td>.462 (.205)*</td>
</tr>
<tr>
<td>55-64</td>
<td>.747 (.238)**</td>
</tr>
<tr>
<td>65+</td>
<td>.590 (.242)*</td>
</tr>
<tr>
<td><strong>Employment</strong> (Employed)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-.260 (.231)</td>
</tr>
<tr>
<td><strong>Married</strong> (Married)</td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>-.329 (.223)</td>
</tr>
<tr>
<td><strong>Parenthood</strong> (Parent)</td>
<td></td>
</tr>
<tr>
<td>Non parent</td>
<td>-.433 (.274)</td>
</tr>
<tr>
<td><strong>Gender</strong> (Male)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.076 (.147)</td>
</tr>
<tr>
<td><strong>Reference point * Employment</strong></td>
<td></td>
</tr>
<tr>
<td>.609 (.299)*</td>
<td></td>
</tr>
<tr>
<td><strong>Reference point * Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>.600 (.299)*</td>
<td></td>
</tr>
<tr>
<td><strong>Reference point * Parenthood</strong></td>
<td></td>
</tr>
<tr>
<td>.706 (.357)*</td>
<td></td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.059</td>
</tr>
<tr>
<td><strong>Hosmer &amp; Lemeshow</strong></td>
<td>.827</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>872</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
Marital status (H5)

In model 3 the heterogeneous treatment effect of marital status on the reference point is statistically significant (p<.05) and in a positive direction. The result confirms H5. The factor of the UK voter being married moderates the power of the “reference point” on voter’s choice, which determines her intention to vote for Leave or Remain. The table depicts that the interaction marital status*reference point is positively related (.600) to Leave. An increase of the marital status by one unit, namely from being married to unmarried, increases the logit of the estimated log-odds of voting for Leave at the high reference frame by 0.600 unit. From an odds ratio perspective, the unmarried voters are approximately 2 times (Exp(B)=1.822) more likely to vote for Leave at the high reference frame than the low reference frame, controlling for all other variables. The impact of this heterogeneous treatment effect is graphed at the following marginal effects plot:

Figure 6.3: Average Marginal Effects of the reference point for the unmarried voters in the Brexit referendum.
The negative values of the above figure indicate a higher likelihood to vote for Remain while the positive ones a likelihood to vote for Leave. Controlling for all other variables, the change of the electorate’s marital status from married to unmarried increases the probability of voting for Leave by approximately 6% on average in the high reference point frame. Contra, the change of the electorate’s marital status from married to unmarried increases the probability of voting for Remain by approximately 8% on average in the Low Reference point frame. Hence, there is a sizeable difference in the average marginal effect between the two reference point frames equivalent to 14%. The marginal effects graph corroborates H5 and shows that at the high reference point frame, where the EU grows more than the UK and the voter is positioned in a domain of losses, the unmarried have on average approximately 6% more probabilities to vote for Leave. Thus, Leave is the preferred risky vote for the cited in the theory chapter unmarried as risk-taking, in order to minimize losses. Instead, in the low reference frame whereby the EU grows less than the UK the unmarried voters have 8% more chances to vote for Remain, since being placed in a domain of gains makes them more risk-averse in that frame. Overall, although the CIs cross zero, this marginal effect plot shows a purposeful substantive significance in relation to the relevant hypothesis (H5) of the theory chapter.

This result brings to the surface an understudied factor in the UK referendum literature, marital status, uncovered through prospect theory’s reference point. It also allows for some inference concerning the campaign of Vote Leave and Vote Remain focusing on the unmarried. The former graph showed that the unmarried, whom scholarship regards as more risk-seeking than the married (Grabble and Lytton, 1998; Roussanov and Savor, 2014), show greater risk-seeking attitude in the high reference point position, where the EU grows more than the UK. Explained through prospect theory, in that high reference point position they view EU’s considerable growth post Brexit as a threat and thus are positioned in a domain of losses. The latter happens to a greater extent than the low reference position, where the EU doesn’t grow more than the UK. To be noted that EU referendum literature remained inconclusive regarding the effect of marital status on Brexit,
ranging from the claim that the married were more pro-Leave than the unmarried (Powdthavee et al., 2017) to the exact opposite (Alabrese et al., 2019) or even that marital status had no significant effect on Brexit (Liberini et al., 2017). Hence, the result contributes to scholarship on Brexit referendum and particularly casts light on the impact of marital status.

The marital status*reference point result is the first confirmation where my reference point syllogism is valid for EU referendum voting, although limited to the subsample of the unmarried voters. The finding may explain the Leave outcome as the result of effective campaigns of Vote Leave targeting to unmarried voters, informing them about high reference points e.g. EU growing more than the UK in the event of Remain. Leave is presented in this research as the right decision to minimize losses from the threatening and competitive EU growth. Considering the referendum’s Leave outcome one may infer that Vote Leave’s high reference point of “take back control” campaigns on immigration or sovereignty (Bastos, Mercea and Baronchelli, 2018) were more effective towards the unmarried than the lower references of Vote Remain campaigns e.g. reflecting on the benefits of EU integration. Hence, this result contributes to the aforementioned EU referendum perspective of EU referendum campaigns, which was presented in the thesis’ second chapter.

**Parenthood (H8)**

Inspired by referenced work in the theory chapter stipulating that parenthood is linked with risk-aversion, the chapter considers the effect of parenthood on the reference point in the first survey experiment. In model 3 the heterogeneous treatment effect of parenthood on the reference point was statistically significant (p<.05) and in a positive direction (.706). The factor of the UK voter being parent or not influences the power of the frame on voter’s choice, which determines her intention to vote for Leave or Remain. The model shows that the interaction parenthood*reference point is positively related to Leave. An increase of the parenthood variable by one unit, namely
from being childless to parent, increases the logit of the estimated log-odds of voting for Leave in the high reference point frame by 0.706 unit. From an odds ratio perspective, parents are approximately 2 times (Exp(B)=2.026) more likely to vote for Leave in the high reference point frame than the low reference frame, controlling for other variables. The precise impact of this heterogeneous treatment effect is graphed below:

**Figure 6.4:** Average Marginal Effects of the reference point for parent voters in the Brexit referendum.

The negative values of the above figure indicate a higher likelihood to vote for Remain while the positive ones a likelihood to vote for Leave. The change of the electorate’s parenthood status from non-parent to parent increases the probability of voting for Remain by approximately 10% on average in the Low Reference point frame. This confirms H8. Controlling for other variables, the change of the electorate’s parenthood status from non-parent to parent increases the probability of voting for Leave by approximately 7% on average in the High Reference point frame. There is a considerable difference in the average marginal effect between the two reference point frames equivalent to 17%. The above marginal effects graph corroborates H8 and shows that parents have
on average approximately 10% more probabilities to be risk-averse and vote for Remain in the low reference frame where the EU grows less than the UK economy because they are positioned in a domain of gains. Remain is the preferred “riskless” vote for the referenced as risk-averse parents to maximize gains. Instead, in the high reference point frame, where the EU grows more than UK, parents have on average 7% more chances to vote for Leave, despite their default risk-averse tendency. The high reference point is such a strong risk-seeking domain that it switches parents’ default risk-aversion (e.g. Allman et al., 1998; Chaulk, Johnson and Bulcroft, 2003) towards risk-seeking Leave. While confirming H8, the graph shows that the high reference point is so powerful that it can convert parents to the risk-seeking mode, against their cited risk-averse inclination. This is an important finding under prospect theory because it cannot be attributed to expected utility. Although the CIs cross zero, this marginal effect plot shows a purposeful substantive significance in relation to the relevant hypothesis (H8) outlined in the theory chapter.

The graph demonstrates that Quattrone and Tversky’s reference point in voter’s choice is valid both outside the lab and for a real environment of voting under risk, although limited to parents. The low reference point framing of EU growing less than UK leads Britain’s parents to be more risk-averse than the high reference point, whereby the EU grows more than UK. The reason is that parents, as previously discussed, generally avoid risks more than non-parents. Hence, when framed in the domain of gains where the reference is low and the EU grows less than the UK, they become even more risk-averse. Through the prism of prospect theory (Kahneman and Tversky, 1979) Britain’s parents were risk avoiders and voted for Remain to maximize their gains from the EU membership. Simultaneously, the reference point of prospect theory had the power to flip the referenced as default risk aversion of parenthood in the high reference point.

The parenthood*reference point result is the second confirmation that the reference point syllogism is valid for EU referendum voting, although limited to Britain’s parents. Given the referenced literature portraying parents as greater risk-avoiders, one infers that Vote Remain campaigns focusing on this segment were most effective to convince them to vote for Remain.
when the reference point of the frame was low (e.g. low EU Growth, welfare or free movement). Besides, Armstrong, Lisenkova and Lloyed (2016) found that parents with two children were wary of the dangerous repercussions of Brexit to their welfare, hence they voted for Remain. However, the change of the reference point to higher projection of EU growth was able to switch the vote intent of the electorate’s parents towards leave. It may thus be said that Britain’s married may have been influenced by the Leave campaign’s reference points. Judging from the referendum’s outcome, one may infer that for parents the Vote Leave campaign’s high reference points of e.g. “taking back control” (Bastos, Mercea and Baronchelli, 2018) were more impactful than a low reference Vote Remain campaign, e.g. on benefits of cultural diversity (Curtice, 2017). Similarly to H5, one can say that the result of H8 contributes to the EU referendum scholarship of EU referendum campaigns.

*Employment (H11)*

Another heterogeneous treatment effect tested in the first survey experiment was the one of voters’ employment status on reference point’s power in the EU referendum. In model 3 the heterogeneous treatment effect of employment on the reference point was statistically significant (p<.05) and in a positive direction (.609). The latter confirms H11. The factor of the UK voter being employed influenced the power of the reference point frame on voter’s choice, which determined her intention to vote for Leave/Remain. The model shows that the interaction employment*reference point is positively related to the Leave vote. An increase of the employment variable by one unit, namely from being employed to unemployed, increases the logit of the estimated log-odds of voting for Leave in the high reference frame by 0.609 unit. From an odds ratio perspective, the unemployed are approximately 2 times (Exp(B)=1.838) more likely to vote for Leave in the high reference point frame than the low reference, controlling for all other
variables. The impact of this heterogeneous treatment effect is graphed at the following marginal effects plot:

**Figure 6.5:** Average Marginal Effects of the reference point for the unemployed voters in the Brexit referendum.

![Average Marginal Effects of the Unemployed Voters with 95% CIs](image.png)

The negative values of the above figure indicate a higher likelihood to vote for Remain while the positive ones a likelihood to vote for Leave. Controlling for all other variables, the change of the electorate’s employment status from employed to unemployed increases the probability of voting for Leave by approximately 9% on average in the High Reference Point frame. Instead, in the Low Reference Point frame the change of the electorate’s employment status from employed to unemployed increases the probability of voting for Remain by approximately 6% on average. Apparently, there is a noteworthy difference in the average marginal effect between the two frames equivalent to 15%. This graph corroborates H11 and shows that the unemployed have approximately 9% more probabilities to vote for Leave in the high reference frame whereby the EU grows more than the UK economy and thus the voter is positioned in a domain of losses. Hence, for the referenced as risk-taking unemployed, Leave is the preferred risky vote to minimize losses. In the low reference point frame however, whereby the EU grows less than the UK, the unemployed voter has on average 6% more chances to vote for Remain, because he is placed in a
domain of gains and thus is more risk-averse. Although the CIs cross zero, this marginal effect plot shows a purposeful substantive significance in relation to the relevant hypothesis (H1) of the theory chapter.

The result confirms that Quattrone and Tversky’s reference point for voter’s choice is valid both outside the lab and for a real environment of voting under risk (EU Referendum), although limited to the unemployed. The high reference point framing of the EU growing higher than the UK leads Britain’s unemployed to be more risk-seeking than the low reference point whereby the EU grows less than the UK. Indeed, there is literature discovering that the unemployed voted more for Leave in the EU Referendum (Crescenzi, Cataldo and Faggian, 2017; Clarke and Whittaker, 2016). Besides, Britain’s poor, a cluster where the unemployed normally fall within, voted mostly for Leave (Goodwin and Heath, 2016; Antonucci et. al., 2017; Hobolt, 2016; Watson, 2018). Nevertheless, this result shows something new: that the reference point, when framed as the upsetting EU growing faster than UK, places the unemployed in a greater domain of losses. Seen through prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), Britain’s unemployed were risk-seeking and voted for Leave to minimize losses.

The employment*reference point result validates my reference point syllogism for EU referendum voting, although limited to the unemployed. Given the referenced literature portraying the unemployed segments of the electorate as Leave voters, one infers that vote Leave campaigns focusing on the unemployed segments and setting a high reference point were very effective to convince voters to vote for Leave. The change of the reference point from a low to a higher projection of EU growth was enough to secure the vote intent of the unemployed cluster of the electorate. Considering the referendum’s outcome, one may infer that the high reference point of Vote Leave, informing about the loss of national sovereignty from Brussels, threatening immigration (Curtice, 2017) or the return to NHS of £350 million pounds per week (Bronck, 2016), may have placed the unemployed in a higher reference point than a lower reference Vote Remain campaign, discussing the free movement’s benefits or Brexit’s economic dangers. Consequently,
the result allows to infer that the high reference points of Vote Leave campaigns boosted the Leave intent of the unemployed electorate. Future scholarship is encouraged to further investigate the effect of unemployment on the reference point of EU referendum campaigns. Similarly to H5 and H8 one may say that this result contributes to the literature of EU referendum campaigns.

6.2.3 How can other perspectives of EU referendum voting speak to H5, H8 and H11?

It is purposeful to discuss here how the three main schools of voting in EU referendums (second-order, substantive issues, utilitarian expectations) can contribute to the interpretation of the statistically significant results of H5, H8 and H11. First of all, the EU referendum voting school of utilitarian expectations, next to which this PhD, as previously said, aims to suggest an alternative theoretical model, cannot explain the confirmation of H5, H8 and H11. As it was analysed in the literature review, the expected utility theory cannot explain why different and equal frames like the ones of this survey experiment can lead voters to different decisions, while the prospects’ utility remains constant and equal within all pairs of frames in this survey experiment. Therefore, the utilitarian expectations school cannot explain neither H5, nor H8 and H11. Instead, the alternative theoretical model that this PhD proposes inspired by prospect theory can accommodate well this result as seen above. Consequently, as said in the literature review, these statistically significant results in a representative sample of the general UK population can serve as a challenge to the utilitarian expectations model and a counter proposition of an alternative model through prospect theory.

In particular, the risky frame of the High Reference Point places the unmarried in a domain of losses that urges them to vote for Leave more than the married ones. In addition, the risky frame of the High Reference Point places the parents in a domain of losses that urges them to vote for Leave more than non-parents, although the aforementioned scholarship cites parents to be in principle risk-averse people with the scope to maintain their livelihoods and care for their children.
The latter shows not only something that the school of utilitarian expectations cannot explain the result that equal frames cause different vote but also that the risky frame in the survey’s prospect theory environment completely alters parents’ natural inclination to be risk-averse and instead be risk-seeking in the High Reference Point frame. What is more, the risky frame of the High Reference Point places the unemployed in a domain of losses that urges them to vote for Leave more than the employed. Overall, it becomes clear from this empirical chapter’s results that the EU referendum theory of utilitarian expectations cannot explain the impact of the prospect theory frame on the High Reference Point in Britain’s EU referendum behaviour. Thus, in view of this PhD’s result, future research with different research designs is invited to re-evaluate the reasons why especially the voting behaviour of the unmarried, the unemployed voters as well as the parents in the Brexit referendum cannot be accommodated through the EU referendum school of utilitarian expectations.

Moreover, as regards the EU referendum school of substantive issues one can say that the issue of the economy and the repercussions of Brexit to it was an issue of crucial importance that convinced the unmarried to vote for Leave in the High Reference Point. This is the domain whereby the unmarried voter according to prospect theory is positioned in a domain of losses and thus takes the risk-seeking vote of Leave as the optimal decision available. On the contrary, in the less risky environment of the Low Reference Point the unmarried voter is put in a domain of gains which endorses the risk-averse decision of Remain. As said in the theory chapter, the latter contradicts the natural tendency of the unmarried to take risks and it stresses the power of framing in EU referendum voting under prospect theory. Therefore, the Low Reference Point frame makes the unmarried vote more for Remain, being in a domain of gains. Instead, the High Reference Point convinces the unmarried voter to vote in alignment with his natural risk-taking behaviour.

Additionally, the economy and the consequences of Brexit is an issue that was of tantamount importance and enough to convince voters who were parents to vote contrary to their natural risk-averse inclination, which would normally be to vote for remain. Thus, the High Reference Point
is the domain whereby the voter who is parent is positioned in a domain of losses and thus takes the risk-seeking vote of Leave as the optimal decision available. Contra, in the less risky Low Reference Point for the parent voter the substantive issue of economy worked as a factor that provoked the natural inclination of parent voters, which is to vote for Remain. It is in that frame that according to prospect theory he is put in a domain of gains which endorses the risk-averse decision of Remain. Hence, the Low Reference Frame goes in line with the general risk-averse inclination of parents but the High Reference Frame has the power to turn the tendency upside down.

Furthermore, the economy and the repercussions of Brexit is also an issue that was also crucial for the unemployed to vote in line with their natural risk-seeking tendency, as mentioned earlier, which is to vote for Leave because they were already in a domain of losses trying to minimize them. The High Reference Point is the domain where the voter who is unemployed is positioned in a greater domain of losses and thus according to prospect theory takes the risk-seeking vote of Leave as the best option available. On the other hand, in the less risky Low Reference Point the substantive issue of economy for the unemployed voter worked as an issue that provoked a voting behaviour, which is different to the natural risky inclination of the unemployed, which is to vote for Leave. The Low Reference Point is according to prospect theory the frame that the voter is put in a domain of gains, which endorses the risk-averse decision of Remain. Hence, the Low Reference Frame goes against the default risk-seeking inclination of the unemployed while the High Reference Frame provokes the natural tendency to vote for Leave to minimize losses.

On another note, it is noteworthy that another main school of EU referendum voting, the second-order school, cannot contribute to the interpretation of the results of H5, H8 and H11 because this survey experiment wasn’t a priori set to accommodate these hypotheses under the second-order school. Perhaps future scholars may set experimental designs to foster that too through a comparison between the Brexit referendum and a first-order national election in Britain. Additionally, it can be said that the framing of the prospect theory design in this PhD is not based
on second-order effects as the frames don’t inform about dissatisfaction with the incumbent government but instead they focus on the substantive issue of the economy. Therefore, the EU referendum schools of substantive issues is the EU referendum school that is closer to the results of this empirical chapter.

Further, it is interesting to look into how the other perspectives of EU referendum voting discussed in the literature review (i.e. identity politics, EU referendum campaigns, cue-taking and institutional design) could also contribute to the interpretation of the confirmation of H5, H8 and H11. To begin with, identity politics can be considered as particularly relevant to these results. One can say that the unmarried voters in Britain, traditionally risk-takers as cited in the theory chapter, could shape a specific identity who tended to vote for Leave in Britain’s EU referendum. However, H5 shows that it is only in the High Reference Point frame that this segment of the electorate has the Leave vote inclination. Similarly, one may support that British voters who were parents, traditionally risk-averse as cited in the theory chapter, formed a particular identity who tended to vote for Remain in Britain’s EU referendum. Nevertheless, H8 shows that it is only in the Low Reference Point frame that this segment of the electorate has the Remain vote inclination. In addition, British unemployed voters, traditionally risk-seekers as cited in the theory chapter, form a specific identity who tended to vote for Leave in Britain’s EU referendum. H11 shows however that it is only in the High Reference Point frame that this segment of the electorate has the Leave vote inclination. Overall, the confirmation of H5, H8 and H11 reaffirm that identity politics did matter in Britain’s 2016 EU referendum, something that has been already cited by scholars as presented in the thesis’ second chapter.

What is more, another very relevant perspective of EU referendum voting outlined in the literature review, which is based on EU referendum campaigns, can be called to further contribute to these results’ interpretation. Given the literature review that cites the intensity of the EU referendum campaigns as a determinant of the voter’s vote (e.g. Atikcan, 2017; Hobolt, 2005, 2006; de Vreese, 2006; Garry, Marsh and Sinnott, 2005), one can infer that if strong EU
referendum campaigning in Britain had been targeted to the unmarried and used risk-seeking frames like the ones of this survey experiment, then the unmarried could have voted for Leave in June 2016. Similarly, one can argue that if strong EU referendum campaigning in Britain had been targeted to parents and used risk-seeking frames like the ones of this survey experiment, then parents could have voted for Leave in 2016. In the same way, the results of the first survey experiment may allow the claim that if strong EU referendum campaigning in Britain had been targeted to the unemployed and used risk-seeking frames like the ones of this survey experiment, then the unemployed could have voted for Leave too.

Further, according to Hobolt (2009), complex EU referendum campaigns with conflicting messages, as the pairs of prospects of this survey experiment are considered to be, voters vote according to their feelings regarding the EU. Therefore, the latter reads that the unmarried, the parents and the unemployed in the chapter’s survey experiment tend to vote for Leave in this complex and conflicting question because their real feelings were for Britain to leave the EU. Of course, Hobolt’s study may not explain why the latter is conditional to the exposure to the High Reference Point frame and not the Low Reference Point one, but it is this thesis’ prospect theory angle that does so. In addition, Hobolt (2009) also claims that when the voter is presented in an EU referendum campaign with the stark consequences of an anti-EU vote (aka Leave), then the voter votes in favour of the EU integration proposal in the referendum. On the contrary, the confirmation of H5, H8 and H11 shows something different, that this is more complex than what Hobolt implies and that equal frames with equal negative consequences of the anti-EU side (i.e. Leave), in this PhD research make the voters vote for Leave still. The latter cannot be explained by the work of Hobolt (2009) but through this PhD’s theory which is based on prospect theory. Meanwhile, next to the scholars who have discussed that some campaign frames are more influential than others based on factors like vividness and concreteness (e.g. Atikcan, Chong and Druckman, 2007b; LeDuc, 2005) the prospect theory design of H5, H8 and H11 suggests the
substantial influence of prospect theory’s framing for Britain’s unmarried, parents and unemployed.

As regards now the importance of the EU referendum campaign scholarship for the discussion of this survey experiment’s results, Atikcan (2015) had supported that for the No (anti-EU) campaigners it is enough to raise doubts to the voters for them to vote against the EU question of the referendum. Indeed, it can be said about the confirmation of H5, H8 and H11 that the questions set in the survey experiment did raise doubts to the voters about the economic impact of Brexit and thus they voted for Leave. However, raising many doubts as the questions might be doing, this may not explain why it is in the High Reference Point frame that the voters were convinced more to vote for Leave than the Low Reference Point frame. To be noted that other EU referendum campaign scholars had looked into how an EU referendum held at an EU member state can influence voters from other member states holding upcoming referendums to vote similarly (e.g. Jahn and Storved, 1995; Atikcan, 2015). Nonetheless, as the 2016 Brexit referendum was the first to be held in the EU regarding a member’s departure from it, and also considering the unique British “exceptionalism” and Euroscepticism of the case which were discussed in the thesis’ introduction, one cannot say that the British were influenced to vote for Leave by another EU member state. All in all, out of the alternative EU referendum perspectives next to the three main schools, referendum campaigns is surely the one that is inherently relevant to this empirical chapter’s results.

On another note, this thesis’ second chapter showed that the influence of the campaign can depend on partisan cues. This paves the way to another discussed perspective of EU referendum voting presented in the second chapter, cue-taking, which reflects on the salient partisan cues in place. Hence, H5 could be discussed through cue-taking by saying that if the party’s salient cue had been the negative impact of Brexit on the UK economy, then the unmarried voters would have voted for Leave in the referendum, being placed in a domain of risks which calls for a risky decision. Similarly, H8 can be viewed through the lens of cue-taking by claiming that if the party’s
salient cue had been the issue of the negative impact of Brexit on the UK economy, then parent voters would have voted for Leave in the referendum, although naturally inclined a priori to vote for Remain. Also, H11 can be regarded through the literature of cue-taking by stating that if the party’s salient cue had been the issue of the negative impact of Brexit on the UK economy, then the unemployed voters would have voted for Leave in the referendum. As a result, cue-taking could also be relevant to the interpretation of these findings, although the information of the frames was not about partisan cues per se. Future scholars though may investigate further the power of cue-taking for these three segments of the UK electorate, which were found in this empirical chapter to show statistical significance in a representative sample of the general UK population.

Meanwhile, the last EU referendum voting perspective of institutional design cannot discuss the result of the confirmation of H5, H8 and H11 as the first survey experiment was not about the referendum’s institutional design. However, the fact that these hypotheses were confirmed creates the discussion on who can shape the political agenda in the British polity. Considering that the voter’s vote can be influenced by prospect theory’s framing in this thesis this can be a challenge to the democratic characteristic of equal voting in EU referendums when controlled and manipulated by an elite, as scholars cite accordingly (e.g. Romer and Rosenthal, 1979; Hug and Tsebelis, 2002; Matsusaka and McCarty, 2001; Renwick, Palese and Sargeant, 2019; Tierney, 2012). Besides, as said in the literature review Offe (2017) suggests that it is wrong to ask people to decide on critical political issues while Weale (2018) added that Britain’s EU referendum damaged democracy because the people who questioned the Brexit result were demonized by the press and politicians. As a result, Van Crombrugge (2020) underlined that in Brexit it wasn’t correct to defend that the referendum’s result necessarily expressed the will of the people.

All in all, next to the three main schools intertwined EU referendum voting perspective like substantive issues, identity politics, EU referendum campaigns and cue-taking may be used to extend the thesis’ discussion and contribute to this result from a holistic viewpoint. However, throughout this PhD H5, H8 and H11 have been confirmed through the thesis’ prospect theory
design. Therefore, through these statistically significant findings in a representative sample of the UK population I intend to contribute to the rest of EU referendum voting perspectives. I intend to achieve this by demonstrating something that to the best of my knowledge might be a novel contribution to what we know already about the Brexit referendum: a) that the unmarried British voters tended to vote for Leave influenced by the risk-seeking frame, b) that the British voters who were parents tended to vote for Leave influenced by the risk-seeking frame although their natural risk-averse vote tendency should have pointed the other way and c) that the British voters who were unemployed tended to vote for Leave influenced by the risk-seeking frame, as it has been all theorized in this thesis’s theory chapter. The above aim to contribute to the different perspectives of EU referendum voting which were previously analysed in the thesis’ second chapter.

6.2.4 The contribution of the reference point to the Vote Leave/Remain campaigns

The results of this survey experiment may corroborate the thesis’ syllogism to apply the reference point principle of Kahneman and Tversky’s prospect theory to EU referendum voting. They show that in the referendum’s context the reference point is valid but conditional on voters’ employment, marital status and parenthood. The previous graphs about H5, H8 and H11 allow the inference that the effect of the high reference points of the referendum campaigns on Leave was much bigger than the effect of low reference points on Remain. Hence, Leave’s win may be attributed to the high reference point’s win for these three segments of the electorate. That the EU grows more than the UK if Britain maintains its EU membership placed the unemployed, unmarried and parents of the electorate in a domain of losses which caused their Leave vote. Since expected utility theory cannot accommodate the power of the reference point on risk-seeking/averse decisions (Quattrone and Tversky, 1988), the results of H5, H8 and H11 place prospect theory models as the right theoretical alternative to the utilitarian expectations school (Hobolt, 2005) of EU referendum voting. The three demographics are important for the reference
point and future scholars are encouraged to further investigate them in different EU referendum polities.

Another reason for this chapter’s noteworthy contribution is that existing Brexit literature either it doesn’t focus on the demographics of marital status, employment and parenthood or it reports their non-significant effect on Leave (Liberini et al., 2017). To be considered that the Vote Leave campaign appealed more to the poorer (Hobolt, 2016; Goodwin and Heath, 2016), uneducated (Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017), older (Hobolt, 2016), white (Hozic and True, 2017) and male (Haastrop, Wright and Guerrina, 2016) part of the electorate. Leave voters were viewed as conservative voters allured by the promise to take back from Brussels their national sovereignty, control immigration as well as terrorism, constrain mobility and EU enlargement or returning £300 million per week to NHS (Bastos, Mercea and Baronchelli, 2018; Curtice, 2017; Corbett, 2016; Clarke, Goodwin and Whiteley, 2016). Instead, the Vote Remain campaign represented a more liberal view of EU integration stressing the benefits of free movement, trade and workers’ rights, peace and prosperity (Clarke, Goodwin and Whiteley, 2016; Bastos, Mercea and Baronchelli, 2018; Corbett, 2016).

Regarding now the Remain campaign’s “Project Fear”, by highlighting the costs-loses of Brexit (Mason, 2016; Clarke, Goodwin and Whiteley, 2016) to the economy and households (e.g. £4,300 income loss or £30 billion austerity budget or £38 weekly income loss and 10-18% property price drop, as it had been claimed by the then chancellor Osborne and Bank of England’s governor), one infers that Leave’s high reference point might have overruled Project Fear for the unmarried, unemployed and parents. As Mason (2016) underlines, project fear lost because the “left-behind” had nothing more to lose. Indeed, prospect theory’s reference point result showed that the bigger losses felt in the high reference points of the referendum campaigns led to a risk-seeking Leave tendency. Hence, the reference point result in this empirical chapter may contribute as an alternative explanation of why Remain’s Project Fear lost to Leave’s High Reference points. Overall, the first survey experiment may show that the high reference points of Vote Leave were
successful for Britain’s unmarried, unemployed and parents in convincing them towards Leave. Equally, the Leave result may be attributed to the low reference point of Vote Remain campaigns, namely to the peace and prosperity benefits of the status quo. Nonetheless, future scholarship is invited to further re-address the effect of the marital, employment and parenthood status on the reference point in the EU referendum.

Robustness tests

Additionally, in Appendix A the reader will find three robustness tests performed for the reference point results of the first survey experiment. They assess whether the variables of Education, Age and Ethnicity, which had statistically significant effects in the main effects model and whose importance in the Leave result had been acknowledged by Brexit scholarship, can provide an alternative explanation to the reference point result. The results of these robustness tests though corroborate the thesis’ syllogism about the effect of prospect theory’s reference point on EU referendum voting.
6.3 A survey experiment testing the ratio-difference principle in the EU referendum

Descriptive results

The dependent variable in the logistic regression model of the second survey experiment accommodating voter’s choice in the EU referendum is binary following the binary nature of Quatrone and Tversky’s empirical work. This binary dependent variable ranged between two categories, Remain (DV=0) and Leave (DV=1) vote. The below bar chart depicts basic percentages that fall into each category of the dependent variable by treatment group:

**Figure 6.6:** Descriptive results of the dependent variable by the ratio-difference principle
**Main result**

The following table depicts the binary logistic regression model for the second survey experiment conducted in cooperation with Ipsos Mori UK. The main result focuses on the effect of the coefficient “Ratio Difference Principle” on the dependent variable:

**Table 6.8:** Logistic regression model for the second survey experiment comprised by the research frame’s coefficient.

<table>
<thead>
<tr>
<th>Model 4: Ratio difference’s effect on EU Referendum vote</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.363 (.093)**</td>
</tr>
<tr>
<td><strong>Ratio Difference</strong> (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.085 (.132)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>930</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.

The non-significant result of the ratio difference coefficient in the logistic regression analysis of Model 4 shows that H0 cannot be rejected. Thus, H3 is not confirmed. This is the second null result of this PhD thesis and certainly has its own importance in the discussion of the PhD’s results. This shows that prospect theory’s ratio-difference principle cannot explain the voting behaviour of the UK voter in this representative sample of the electorate. In combination with the following null results of the theory’s hypotheses for Britain’s unemployed, unmarried and parents, this null result has a catalytic importance in the validity of this component of the PhD’s theory, disproving it both as a main and heterogeneous treatment effect. The main takeaway from all these null results
in this section is that either the ratio-difference principle theorized in the theory chapter has no application in a survey experiment or it should be re-tested in a different way. More is discussed later after the null results of the heterogeneous treatment effects are presented as well.

Nevertheless, as in the first survey experiment, in order to add explanatory value to this model I added the control variables of the demographics provided by Ipsos Mori UK. It is informative to estimate the explanatory value of another model in a representative sample of the UK population with demographics, weeks before the referendum’s ballots in June 2016. As previously referenced in the thesis, there is considerable research on the role of demographics on the Leave result. Hence, the main effects of these control variables contribute to scholarship.
Control variables

Table 6.9: Logistic regression model for the second survey experiment comprised by the research frame’s coefficient and the control variables of Ipsos demographics.

<table>
<thead>
<tr>
<th>Model 5: Ratio difference’s effect on the EU Referendum vote with the demographics as control variables</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>(-.942 (.241)**)</td>
</tr>
<tr>
<td>Ratio Difference (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.056 (.141)</td>
</tr>
<tr>
<td>Age (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td>.808 (.207)***</td>
</tr>
<tr>
<td>55-64</td>
<td>.822 (.248)**</td>
</tr>
<tr>
<td>65+</td>
<td>1.116 (.253)***</td>
</tr>
<tr>
<td>Employment (Employed)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-.026 (.174)</td>
</tr>
<tr>
<td>Marital Status (Married)</td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>.041 (.157)</td>
</tr>
<tr>
<td>Ethnicity (White)</td>
<td></td>
</tr>
<tr>
<td>Non white</td>
<td>-.862 (.249)**</td>
</tr>
<tr>
<td>Internet use (Heavy)</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>.121 (.173)</td>
</tr>
<tr>
<td>Education (Poor)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>-.681 (.167)***</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.277 (.144)</td>
</tr>
<tr>
<td>Parenthood (Non parent)</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>.050 (.202)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.072</td>
</tr>
<tr>
<td>Hosmer &amp; Lemeshow</td>
<td>.925</td>
</tr>
<tr>
<td>N</td>
<td>918</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
Multicollinearity wasn’t an issue in model 5. The regression of the independent variables doesn’t demonstrate any risk of multicollinearity. The below table shows that VIFs are close to 1 and less than 10 while the mean VIF is very close to 1, which doesn’t imply multicollinearity.

**Table 6.10:** VIFs with the regression of the demographic control variables at model 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(34-54)</td>
<td>1.72</td>
<td>0.580761</td>
</tr>
<tr>
<td>(55-64)</td>
<td>1.67</td>
<td>0.600273</td>
</tr>
<tr>
<td>65+</td>
<td>2.46</td>
<td>0.406027</td>
</tr>
<tr>
<td>Parenthood (Parent)</td>
<td>1.42</td>
<td>0.705550</td>
</tr>
<tr>
<td>Internet use (Light)</td>
<td>1.40</td>
<td>0.715746</td>
</tr>
<tr>
<td>Employment (Unemployed)</td>
<td>1.53</td>
<td>0.655651</td>
</tr>
<tr>
<td>Education (Highly Educated)</td>
<td>1.12</td>
<td>0.895212</td>
</tr>
<tr>
<td>Ethnicity (Non-white)</td>
<td>1.06</td>
<td>0.939720</td>
</tr>
<tr>
<td>Marital Status (Unmarried)</td>
<td>1.22</td>
<td>0.819544</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>1.06</td>
<td>0.943786</td>
</tr>
<tr>
<td><strong>Mean VIF</strong></td>
<td><strong>1.42</strong></td>
<td></td>
</tr>
</tbody>
</table>

To corroborate the absence of multicollinearity I also ran a correlation matrix for model 5, which reaffirmed that there isn’t a troubling correlation between the independent variables influencing the results.
Table 6.11: Correlation matrix for the independent variables of model 5

| Referendum vote | Ratio Difference | Employment | Parenthood | Gender | Education | Internet | Married | Ethnicity | Age 35-54 | Age 55-65 | Age 65+ | constant |
|-----------------|------------------|------------|------------|--------|-----------|----------|---------|-----------|-----------|-----------|----------|----------|----------|
| Ratio Difference| 1.0000           |            |            |        |           |          |         |           |           |           |          |          |          |
| Employment      | 0.0162           | 1.0000     |            |        |           |          |         |           |           |           |          |          |          |
| Parenthood      | 0.0579           | -0.0306    | 1.0000     |        |           |          |         |           |           |           |          |          |          |
| Gender          | 0.0107           | 0.0841     | 0.1553     | 1.0000 |           |          |         |           |           |           |          |          |          |
| Education       | 0.0074           | 0.1212     | -0.0473    | 0.0518 | 1.0000    |          |         |           |           |           |          |          |          |
| Internet        | 0.0254           | -0.0340    | 0.0015     | 0.0344 | 0.2218    | 1.0000   |         |           |           |           |          |          |          |
| Married         | 0.0152           | -0.1325    | 0.2280     | 0.0988 | 0.0367    | -0.1669 | 1.0000  |           |           |           |          |          |          |
| Ethnicity       | -0.0095          | -0.0667    | -0.0914    | -0.0979| -0.0090   | -0.00268| 0.0267  | 1.0000    |           |           |          |          |          |
| Age 35-54       | -0.0489          | 0.1081     | -0.1191    | 0.0618 | -0.0544   | -0.1697 | 0.1947  | 0.0366    | 1.0000    |           |          |          |          |
| Age 55-65       | -0.0329          | -0.0877    | 0.2338     | 0.0353 | -0.1208   | -0.2755 | 0.2719  | 0.0432    | 0.5028    | 1.0000    |          |          |          |
| Age 65+         | -0.0210          | -0.3821    | 0.2461     | -0.0126| -0.1131   | -0.3741 | 0.2603  | 0.1186    | 0.4579    | 0.5825    | 1.0000    |          |          |
| _constant       | -0.3959          | -0.2687    | -0.3614    | -0.4263| -0.2285   | -0.0415 | -0.4459 | -0.0727   | -0.5336   | -0.4945   | -0.3954  | 1.0000   |          |

As in Model 2, Model 5 brought to surface the main effect of education on referendum’s vote, which has been intensely studied in EU referendum scholarship. It is statistically significant (p<.001) with a negative coefficient (-.681), showing that voters of high education vote more for Remain in the EU referendum. This means that an increase of the education control variable by one unit, namely from poorly educated to highly educated, decreases the logit of the estimated log-odds of voting for Leave by .681 unit. From an odds ratio perspective, voters of high education are approximately .5 times (Exp(B)=.505) less likely to vote for Leave than voters of low education, controlling for all other variables. Although this statistically significant control variable isn’t part of my theory, it is informative to state that the finding aligns with cited EU referendum literature agreeing that the poorly educated electorate voted for Leave whereas the well-educated for Remain.

As in model 2, another informative control variable in model 5 is age. It is statistically significant (p<.001) for age groups 35-54, 55-64 (p<.01) and 65+ (p<.001) with positive coefficients .808 (35-54), .822 (55-64) and 1.116 (65+) respectively, demonstrating that voters of
older age groups vote more for Leave than youth (18-34). An increase of the age control variable by one unit, namely from 18-34 to 35-54, increases the logit of the estimated log-odds of voting for Leave by .808 unit. Also, an increase of the age control variable by one unit, namely from 35-54 to 55-64, increases the logit of the estimated log-odds of voting for Leave by .822 unit. Last, an increase of the age control variable by one unit, namely from 55-64 to 65+, increases the logit of the estimated log-odds of voting for Leave by 1.116 unit. From an odds ratio standpoint, voters aged 35-54 were approximately 2.5 times (Exp(B)=2.244) more likely to vote for Leave than Britain’s youth (18-34), controlling for other variables. Further, voters aged 55-64 were approximately 2.5 times (Exp(B)=2.275) more likely to vote for Leave than Britain’s youth (18-34), controlling for other variables. Finally, voters aged 65+ were approximately 3 times (Exp(B)=3.052) more likely to vote for Leave than Britain’s youth (18-34), controlling for other variables. As the previous section cited, this main effect finding, although not within my theory is in accordance with previously cited UK referendum scholarship, agreeing that older segments of the electorate voted more for Leave than youth who voted for Remain.

As in model 2, another informative control variable at model 5 is ethnicity. It is statistically significant (p<.01) with a negative coefficient (-.862), showing that voters of non-white ethnicity vote more for remain in the EU referendum. This means that an increase of the ethnicity variable by one unit, namely from white to non-white ethnicity, decreases the logit of the estimated log-odds of voting for Leave by .862 unit. From an odds ratio perspective, voters of non-white ethnicity are approximately .5 times (Exp(B)=.422) less likely to vote for Leave than white voters, controlling for all other variables. This main effect finding, although not part of my theory, aligns with cited UK referendum scholarship, agreeing that the white electorate voted more for Leave than non-white population or migrants who voted for Remain.
Overall, the main effects of ethnicity, education and age, aligned with the first survey experiment and cited EU referendum scholarship, corroborate the validity of this sample as representative of the UK population.

*Heterogeneous treatment effects*

As in the first survey experiment, there are three subsidiary hypotheses related to the ratio difference hypothesis (H3), reflecting on the heterogeneous treatment effects of marital status (H6), parenthood (H9) and employment (H12), on the way the ratio-difference influenced voter’s choice in the Brexit referendum.
Table 6.12: Logistic regression model for the second survey experiment with the heterogeneous treatment effects of Employment, Marital status and Parenthood on the ratio-difference principle.

<table>
<thead>
<tr>
<th>Model 6: Heterogeneous treatment effects on the Ratio-Difference principle at the EU Referendum</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.915 (.265)**</td>
</tr>
<tr>
<td>Ratio Difference (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.018 (.257)</td>
</tr>
<tr>
<td>Ethnicity (White)</td>
<td></td>
</tr>
<tr>
<td>Non white</td>
<td>-.865 (.249)**</td>
</tr>
<tr>
<td>Internet use (Heavy)</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>.287 (.161)</td>
</tr>
<tr>
<td>Age (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td>.803 (.208)***</td>
</tr>
<tr>
<td>55-64</td>
<td>.826 (.249)**</td>
</tr>
<tr>
<td>65+</td>
<td>1.112 (.254)***</td>
</tr>
<tr>
<td>Employment (Employed)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-.052 (.229)</td>
</tr>
<tr>
<td>Married (Married)</td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>.106 (.213)</td>
</tr>
<tr>
<td>Parenthood (Parent)</td>
<td></td>
</tr>
<tr>
<td>Non parent</td>
<td>-.208 (.265)</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.275 (.136)</td>
</tr>
<tr>
<td>Reference point * Employment</td>
<td>.041 (.293)</td>
</tr>
<tr>
<td>Reference point * Marital status</td>
<td>-.138 (.296)</td>
</tr>
<tr>
<td>Reference point * Parenthood</td>
<td>.334 (.358)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.073</td>
</tr>
<tr>
<td>Hosmer &amp; Lemeshow</td>
<td>.930</td>
</tr>
<tr>
<td>N</td>
<td>918</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
Marital status (H6)

The heterogeneous treatment effect of marital status on the ratio-difference principle isn’t statistically significant. Hence, H0 cannot be rejected and H6 cannot be confirmed.

Parenthood (H9)

Moreover, the heterogeneous treatment effect of parenthood on the ratio-difference principle isn’t statistically significant. Consequently, H0 cannot be rejected and H9 cannot be confirmed either.

Employment (H12)

Finally, the heterogeneous treatment effect of employment on the ratio-difference principle isn’t statistically significant. Therefore, H0 cannot be rejected and H12 cannot be confirmed either.

As all null results do, the null results of H6, H9 and H12 don’t lack importance in the entire evaluation of the thesis’ theory. Contra, they fit the non-confirmation of H3 for the importance of Quattrone and Tversky’s ratio-difference principle on voter’s choice in Britain’s EU referendum of 2016. Thus, the second survey experiment is a whole different case than the first one whose results were analysed previously in the chapter. It is not the case here that the main effect fails to be confirmed (reference point) and the heterogeneous treatment effects are confirmed and thus specify the importance of the reference point for specific segments of the UK population. Consequently, the hull results of the heterogeneous treatment effects in the current survey experiment discussed have the importance that they discard as a whole the thesis’ theory on the effect of the ratio-difference principle.
Overall, the second survey experiment showed that Quattrone and Tversky’s ratio-difference principle wasn’t confirmed neither as main effect nor as heterogeneous treatment effects in the EU referendum. While the reference point of prospect theory was proved valid for specific segments of the population (unmarried/unemployed/parents), the ratio-difference principle with which Quattrone and Tversky (1988) also challenged expected utility theory wasn’t confirmed at all in this PhD thesis. A reason for that can be the fact that the unemployment that Brexit would cause, as the frames in the second survey experiment informed, didn’t turn out to be such a crucial issue for the electorate compared to other issues. Consequently, future scholars are encouraged to revisit the frame impact of Quattrone and Tversky’s ratio-difference principle by substituting the unemployment frame with different frames which were relevant to Britain’s EU referendum e.g. NHS, sovereignty, immigration, security, trade.

In conclusion, this PhD confirmed only prospect theory’s reference point for voter’s choice outside of the lab and specifically in a survey experiment with a sample which is representative of the UK population. The model proposed thus in this PhD focuses on explaining EU referendum’s choice based on the impact that the reference point frame has on the unemployed, unmarried and parents.

Robustness tests

Further, in Appendix B the reader will find three robustness tests performed to test for the ratio-difference principle results of the second survey experiment. They assess whether the variables of Education, Age and Ethnicity, which had statistically significant effects in the main effects model 5 and whose importance in the Leave vote had been stressed by Brexit scholarship, can provide an alternative explanation to the ratio-difference principle result.
6.4 Discussion

This chapter aspires to contribute to EU referendum scholarship through the adaptation of Quattrone and Tversky’s (1988) work on prospect theory to this PhD’s two survey experiments with representative samples of the UK population. The chapter brought both statistically significant results and null results which all have their importance in the evaluation of the thesis’ theory on voter’s choice in Britain’s EU referendum of 2016. First of all, the chapter showed that there is a tendency of British voters to regard choice in the EU referendum as voting under risk. H1 was confirmed in the lab experiment since the causality between voters’ risk propensity and referendum vote was found statistically significant (p<.1), although not at the conventional level of statistical significance. Therefore, the H1 is tentatively supported and this data cannot conclude definitely about its confirmation. What it tells us though is that in their inclination towards remain vote, voters who were generally risk-averse in their lives outmuscled those who take risks. Similarly, concerning the tendency to vote for Leave, voters who were by default risk-seeking outnumbered those who didn’t enjoy living with risk. Hence, the result of the analysis testing H1 creates some fertile ground to explore voting in Britain’s EU referendum as a matter of risk and as said in the literature review risk has a perennial value in prospect theory. However, given the fact that the H1 result derives from the analysis of a convenience sample in the lab and succeeding a statistical significance at the non-conventional level of p<.1, although creditworthy as articulated in the methods chapter, future scholars are suggested to also test the relationship between risky EU referendum vote and Meertens and Lion’s (2008) risk propensity scale in wider samples which are representative of the electorate.

Further, elaborating on the descriptive trend that H1’s result tentatively supported, I examined choice in the EU referendum through prospect theory in two survey experiments conducted in representative samples of the general UK population. The analysis showed that some hypotheses were confirmed but also that there were null results. First, the adaptability of prospect theory’s
reference point to EU referendum voting was confirmed for three specific demographic segments of the electorate: the unmarried, the unemployed and parents but not as a main effect on the entire population of the British electorate. As discussed previously, the fact that the main effect of the reference point wasn’t confirmed isn’t particularly worrisome as it is not uncommon that framing in political campaigns often targets specific demographics of the electorate. Therefore, the thesis’ theory on the impact of prospect theory’s reference point on voter’s choice in the Brexit referendum was statistically confirmed in this chapter for Britain’s unmarried, unemployed and parents in a representative sample of the electorate. This is clearly an important finding for this PhD thesis as it can provide an alternative explanation to the EU referendum vote next to the other EU referendum schools. In particular, as said earlier in the chapter the confirmation of prospect theory’s reference point challenges the EU referendum school of utilitarian expectations, because prospect theory is by nature an argument against expected utility theory. In addition, the result reaffirms the referenced validity of the school of substantive issues as it discusses the power of the UK economy post-Brexit to convince voter’s vote in the referendum. Moreover, the result contributes to the EU referendum perspective of campaigns and shows that EU referendum campaigns that incorporate prospect theory’s reference point and target on the unmarried, unemployed and parents can explain voter’s behaviour in the EU referendum of 2016.

Secondly, the chapter continues with a null result, as Quattrone and Tversky’s (1988) ratio-difference principle wasn’t confirmed in a representative sample of the UK electorate. This null result not only concerns the main effect but also the heterogeneous treatment effects for specific demographic segments hypothesized in the thesis’ theory chapter. This result though, as all null results do, maintains its value in the discussion of the PhD’s theory. It demonstrates that the ratio-difference principle that Quattrone and Tversky (1988) had confirmed in the lab doesn’t apply to a survey experiment and a non-hypothetical question. As argued earlier, this can either show that the ratio-difference principle doesn’t work outside the lab or more specifically that the frame of employment and unemployment hasn’t been effective for the British electorate. Thus, voters
couldn’t perceive the ratio-difference between these two similar frames. In the previous section it was cited that future scholars can re-assess the value of Quattrone and Tversky’s ratio-difference principle through other relevant frames in the EU referendum like immigration, NHS burden, trade etc.

Hence, I conclude that only the reference point part of my theory for voter’s choice can be valid in EU referendum voting, specified for three segments of the electorate: the unmarried, the unemployed and parents. Relevant inferences about the prevalence of the high reference points of the Vote Leave’s campaign against Vote Remain’s low reference point were discussed above. Future scholars are also suggested to expand on the role of prospect theory’s reference point in the EU referendum campaigns.

All in all, the first empirical chapter showed that prospect theory cannot be seen as a generalizable explanation for the Brexit referendum but can be useful to help us understand why some sub-groups of the population voted the way they did. Nevertheless, the chapter’s results may be encouraging for future scholars to test the reference point to more EU referendums and perhaps voting behaviour overall. A systematic assessment and confirmation of prospect theory’s reference point in representative samples of electorates through various polities could contribute to the effect of prospect theory in political science. As said in the literature review, despite the limited use of prospect theory in voting behaviour, it is the right alternative to expected utility theory, contemplating its failure to explain the reference point effect. Since the reference point was confirmed in this thesis for a representative sample, although only for specific segments of the electorate, this empirical chapter could show some traces towards an alternative to the third school of EU referendum voting, utilitarian expectations, given that the reference point cannot be accommodated by expected utility theory (Quattrone and Tversky, 1988; Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Therefore, I aspire that this chapter, despite the fact that it didn’t provide a generalizable explanation for the Brexit referendum for the entire electorate, it
could inspire scholars to work towards an alternative EU referendum school operating through prospect theory’s reference point. According to that school voter’s vote would be dependent on whether the reference point sets a domain of gains or losses. If it sets a domain of losses the voter will tend to vote for the risky option (aka Leave) whereas if it sets a domain of gains then the voter will tend to vote for the risk-averse option (aka Remain).

Subsequently, having examined prospect theory’s relevance to voter’s choice in the EU referendum, in the next chapter I move to the second part of the thesis’ theory discussing voter’s turnout in the referendum. In particular, the upcoming second empirical chapter will test the hypotheses regarding “voter’s illusion” in the 2016 Brexit referendum, which aims to challenge Downs’ rational voter model and strengthen the thesis’ viewpoint of EU referendum voting through prospect theory.
CHAPTER VII:
VOTER’S ILLUSION IN THE EU REFERENDUM’S TURNOUT

7.1 Introduction

As stipulated in the thesis’ theory chapter, presently the second empirical chapter confirms the validity of Quattrone and Tversky’s (1986) voter’s illusion for the British electorate’s turnout in the Brexit referendum of 2016 within a representative sample of the UK population. It also specifies it further for the heterogeneous treatment effect of the demographic of marital status. Voter’s illusion holds that voters, when framed with information about fellow partisan/think-alike voters’ behaviour, they decide to turn out because they consider their single vote, which logically cannot shape a ballot’s outcome, to be diagnostic of millions of other think-alike votes. Given this empirical chapter’s statistically significant result (p<.05), it is inferred that British voters identified themselves with undecided voters in the weeks preceding the EU referendum and thus decided to turn out because they saw their vote as diagnostic of a plethora of other undecided votes. Hence, the UK voter didn’t behave rationally in the EU referendum as per Downs’ (1957) rational voter model estimating the costs and benefits of the turnout decision. Instead, according to voter’s illusion, the voter’s turnout decision was based on information about the turnout behaviour of fellow think-alike/undecided voters. Before revisiting in detail the theoretical framework of voter’s illusion, pertinent research follows regarding EU referendum’s turnout and the fitting position of voter’s illusion within turnout scholarship. Later, the reader proceeds to the chapter’s core theoretical contribution to turnout scholarship, voter’s illusion. It needs to be reiterated that this PhD adapted to survey experiments Quattrone and Tversky’s (1986, 1988) inspirational research about the relevance of prospect theory both for voter’s choice and turnout.

Turnout in the EU referendum was the highest since the general election of 1992, 72.2% (Birch, 2016). To better understand the size of turnout in the EU referendum it suffices to mention that in the 2015 general election turnout was 66.1%. According to the NatCen Panel (Swales, 2016), 94%
of those who voted in 2015 also voted in the EU referendum. The 6% turnout increase in 2016 was
due to the fact that the majority of those who abstained in 2015, did cast their votes in the Brexit
referendum (Swales, 2016). To be noted that this was the second EU referendum in Britain,
surpassing the turnout of the 1975 European Community referendum where turnout was 64% (Birch, 2016).

In order to identify the new voters of the 2016 EU referendum, Birch (2016) draws on the
British Election Study. She compared turnout data between the 2015 general election in the UK
and the 2016 referendum. According to the British Election Study, 57% of those who abstained in
2015 but voted in 2016, voted for Leave. Birch (2016) considers that as a proof that Euroscepticism
was a bigger driver than partisanship in the EU referendum. She also discovered that those with
higher education showed up less by 2% at the referendum, whereas scholarship argues that high
education generally increases turnout (Merriam and Gosnell, 1924; Katosh and Traugott, 1981;
Wolfinger, Rosenstone and Rosenstone, 1980; Hogan 1999; Verba and Nie, 1972; Converse, 1972;
Franklin, 2004; Powell 1986). Instead, the poorly educated went to the polling stations of the
referendum by 2% more than the general election. Birch also witnessed that turnout for the UK
voters under 45 years of age was greater by almost 10% in the EU referendum. Instead, those aged
above 45 went to the polling station at the referendum by 6% less than the 2015 general election.

Moreover, age seems to have been an important turnout factor for the Brexit referendum. The
NatCen Panel found that Britain’s elderly were more likely to vote than youth (Swales, 2016). A
relevant research by Lord Ashcroft reported in BBC shows that turnout for older voters was more
increased than the average (Jackson, Thorsen and Wring, 2016). In addition, according to the
analysis by the Financial Times (2016), turnout generally increased with age and thus youth areas
went less to the polling stations. Fox and Pearce (2018) maintained within the same study (Jackson,
Thorsen and Wring, 2016) that if the youth had gone out to vote more, they would have blocked
the high turnout of the Eurosceptic elderly, and hence the Leave result would have been reversed.
Becker, Fetzer and Novy (2017) though argue that the previous assumption isn’t valid.

Moreover, Dr. Thompson’s study at the Loughborough University (Jackson, Thorsen and Wring, 2016) argues that the higher turnout of Leave voters shouldn’t have come as that big a surprise. She claims that generally voters who are prone to change are more inclined to vote. She continues by stating that previous ballots anticipated the Brexit supporters to naturally go to the polling stations to achieve a change. Thompson also refers to “calculus models” of voting, showing that voters tend to vote more if they think their vote will have a consequential impact on the election’s outcome. As a result, she thinks that with polls steadily predicting a Remain win, which rarely dropped below 54%, Remain voters didn’t feel like contributing much with their single vote to what had been initially anticipated as a likely Remain outcome (Jackson, Thorsen and Wring, 2016). On the contrary, Leave voters who were evidently big change supporters, felt each vote mattered in order to beat the Remain presupposed outcome. In fact, Thompson’s pertinent interpretation of turnout, although published after the completion of this PhD’s data collection, may credit this empirical chapter’s syllogism of applying Quattrone and Tversky’s (1986) “voter’s illusion” to EU referendum turnout. Quattrone and Tversky had explained in the lab how one single vote was perceived as diagnostic of millions of other votes. They had used their voter’s illusion finding to challenge the validity of the rational voter’s turnout model ruled by expected utility theory.

The current empirical chapter though examines the turnout component of this PhD which applies prospect theory to accommodate voting behaviour in the EU referendum, through a survey experiment in cooperation with Ipsos Mori UK. Quattrone and Tversky’s (1986) voter’s illusion is thus expanded beyond their work’s lab constraints and hypothetical voting cases. It was assumed that framing has the power to make the voter consider within the real environment of the EU referendum that his vote is diagnostic of millions of others. Further, given the pertinent literature about the role of demographics on turnout behaviour this empirical chapter also draws on the
power of demographics in the referendum’s turnout. In alignment with the previous empirical chapter, this chapter additionally expands on the heterogeneous treatment effect of marital status, parenthood, employment and gender on voter’s illusion. Amidst turnout scholarship, the chapter aims at presenting voter’s illusion as an alternative theory to interpret turnout behaviour in the EU referendum. It forms part of the PhD’s theory of EU referendum voting seen through the lens of prospect theory, already tested for its voter’s choice part as discussed in the previous empirical chapter.

7.2 Turnout theories and the contribution of “voter’s illusion”

In this section the position of voter’s illusion within turnout scholarship is discussed. As said earlier in the thesis, turnout is one of the most researched topics in political science. The foundations were placed with the instrumental voting of the rational model by Downs (1957), whereby the voter assesses the expected utility of turnout or abstention and subsequently makes the decision to go to the polling station or not. The instrumental view of turnout by default leads to abstention, because there is only a slim probability of one’s single vote determining the result. Also, the cost of being informed, register and go to the polling station is bound to be considered higher than the utility of voting (Owen and Grofman, 1984; Mulligan and Hunter, 2003; Opp, 2001; Highton, 2004; Aldrich, 1993; Rosenstone and Wolfinger, 1978; Niemi, 1976; Ordeshook, 1976). The latter led turnout theorists to present new theoretical propositions.

An evolution of Down’s rational model added the consumption benefits of voting. Riker and Ordeshook (1968) contributed the “expressing oneself” parameter in the turnout decision. Franklin (2004) though described that model as incomplete, introducing the individual’s motivation aspect. Issues with defining Riker and Ordeshook’s “expressiveness” of the voter created the need for an upgrade in turnout theory and that was provided through the altruistic or else “ethical voter” who votes for societal betterment (Goodin and Roberts, 1975; Jankowski,
Moreover, Ferejohn and Fiorina (1974) launched their theory of “minimax regret”, whereby voters’ decision to vote is dictated by their drive to minimize their regret or remorse of abstaining (Tideman, 1985). The “game theoretic approach” to turnout by Ledyard (1984) as well as Palfrey and Rosenthal (1983, 1985) added the voter’s perspective of locating a mathematical equilibrium in turnout decisions.

Political scientists have also applied group-based models to explain turnout. The basic assumption for those is that group or team benefits outmuscle the costs of going to the polling station (Filer, Kenny and Morton, 1993; Grossman and Helpman, 2001). Amidst the rich turnout scholarship there is also the “school” regarding turnout through the prism of a learning theory (Fowler, 2006; Plutzer, 2002; Gerber, Green and Shachar, 2003). In contrast to Downs’ rational voter where the citizen seeks to maximize utility from turning out or abstaining, in the learning model the turnout decision is accommodated by the formation of a causal link between past voting behaviour and elections’ outcome. Fowler (2006) calls the voter “adaptive sacrificer” referring to her tendency to maintain a retrospective view of previous turnouts and outcomes.

Further, Matsusaka (1995) and later Larcinese (2000) were the first to see turnout as a decision where the level of voters’ information about the political stakes is a decisive parameter in turnout. This information-based turnout school is particularly relevant to this chapter as political information is presented to UK voters in the third survey experiment to influence their turnout decision. According to the “Civic Voluntarism” model of Verba, Schlozman and Brady (1995), relevant political information increases turnout. Delli, Carpini and Keeter (1997) attribute this phenomenon to the fact that information endorses voters’ “self-interest” to vote. Moreover, Gerber, Green and Larimer (2008) reaffirm that when voters are presented with campaign information, they are more likely to go to the polling station. Similar studies confirm that the latter is valid for various polities (Rosenstone and Hansen 1993; Karp and Banducci, 2007; Hillygus, 2005; Wielhouwer and Lockerbie, 1994; Karp, Banducci and Bowler, 2008; Verba, Schlozman, and
Brady 1995). Trussler (2016) supports that this information-turnout bond is rooted in Downs’ (1957) rational model whereby turnout is a logical assessment of costs and benefits under the expected utility theory. He views political information in its instrumental essence of reducing uncertainty (costs) within Downs’ (1957) decision model of rational turnout. Although advertising in political campaigns is generally associated with an increase in turnout (Ansolabehere and Iyengar, 1995; Krasno and Green 2008; Freedman, Franz, and Goldstein, 2004; Hillygus, 2005), other scholars argue that political ads don’t substantially persuade voters to turn out (Lau et al., 1999, 2007). However, while this empirical chapter does discuss political information’s influence on turnout through framing, it does so not to reaffirm the instrumental rational voter of Downs but to challenge it by bringing to the surface Quattrone and Tversky’s (1986) voter’s illusion in a representative sample of the UK electorate.

Having reviewed the existing turnout schools, it becomes clear that there is scarce work exploring turnout as the direct result of framing. Earlier in the thesis though I described framing as a perennial force of prospect theory (Kahneman and Tversky, 1979) which governs the decision towards risk-seeking and risk-averse routes. While the first empirical chapter explored the power of prospect theory on voter’s risk-averse and risk-seeking choice through the framing principles of the “reference point” and the “ratio-difference principle”, the current chapter discovers how framing defines the decision to turn out or abstain through a finding that the expected utility theory’s rational model cannot accommodate. This new turnout approach, which was initially discovered by Quattrone and Tversky (1986) in a lab, shows that different framing of equal content can turn around turnout behaviour. The latter challenges the turnout approach of Downs’ (1957) rational voter. I thus consider the absence of framing in the aforementioned turnout schools to create a possible gap that it is intended to be bridged with this chapter and particularly through the test of voter’s illusion in a survey experiment of the actual environment of Britain’s EU referendum of 2016.
7.3 Testing voter’s illusion in the EU referendum

This chapter’s distinct aim is to introduce next to the referenced turnout schools the theoretical basis for a new turnout path, challenging Downs’ instrumental view of voting, as Quattrone and Tversky (1986) did. The way this is materialised here is through the turnout module of this PhD’s EU referendum voting theory, voter’s illusion. Quattrone and Tversky (1986) attempted first to apply prospect theory to turnout behaviour. Given their ground-breaking results, they exonerated Downs’ rational model and utility theory. Their theory was based on their assumption that voters consider their vote as “diagnostic of millions of votes” if there is information that all like-minded/partisan voters vote. According to their voter’s illusion theory, the decision to vote or abstain is dependent on voters’ knowledge about whether fellow think-alike voters will predominantly cast their vote.

The innovative adaptation of voter’s illusion to the contemporary question of the EU referendum was key for the chapter’s research design. Particularly, given the large polarization which resulted in partisanship’s reduced effect on the Leave result in 2016 (Swales, 2016; Vasilopoulou, 2016; Birch, 2016) together with the large undecidedness of the electorate weeks before the referendum (Vasilopoulou, 2016; Fenner, Levene and Loizou, 2018; Howard and Kollanyi; 2016), it was anticipated that the British voters would view the undecided voters as think-alike voters, because they should have probably remained undecided themselves. In the literature review, the lab study of Quattrone and Tversky (1986) was presented whereby the mere knowledge that think-alike/partisan voters would vote increased turnout. However, the main hypothesis of this chapter (H4) maintains that in Britain’s EU referendum where partisanship wasn’t a determining factor (Swales, 2016; Vasilopoulou, 2016; Birch, 2016) it will be the information that the undecided voters will determine the referendum’s outcome which will motivate voters to go to the polling station. Similarly, when voters find out that the undecided voters won’t determine the result, turnout should be significantly less.
7.4 Results

7.4.1 A survey experiment testing voter’s illusion in EU referendum’s turnout

Descriptive results

The dependent variable in the binary logistic regression model of the PhD’s third survey experiment is binary, following the paradigm of Quattrone and Tversky’s relevant empirical work. This binary dependent variable ranged between two categories, Abstain (DV=0) and Turn out (DV=1). The below bar chart depicts the percentages that fall within each category of the dependent variable by treatment group:

Figure 7.1: Descriptive results of the dependent variable by the voter’s illusion frame.

Main result

As outlined in the literature review, an important part of Quattrone and Tversky’s (1986) study which applied prospect theory to politics was turnout. They called their theory “voter’s illusion”
and it was their strategy to challenge Downs’ (1957) rational model based on expected utility theory. In the theory chapter it was explained why information about either followers of Vote Remain/Vote Leave campaigns or about undecided voters going to the polling station and determining the referendum’s result was anticipated to be a crucial factor for the voters’ turnout decision. The relevant hypothesis (H4) tested the difference between the frame whereby the campaign followers’ vote shapes the referendum’s outcome and another where the undecided voters’ vote determines the result.

The following table presents the binary logistic regression model for the third survey experiment conducted in cooperation with Ipsos Mori. The main result focuses on the main effect of the coefficient “Voter’s illusion” on the dependent variable (Vote/Abstain):

**Table 7.1:** Logistic regression model for the third survey experiment studying voter’s illusion comprised by the research frame’s coefficient.

<table>
<thead>
<tr>
<th>Model 1: Voter’s illusion effect on turnout in the EU referendum</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>1.294 (.112)*****</td>
</tr>
<tr>
<td><strong>Voter’s illusion</strong> (Vote Leave/Remain followers)</td>
<td></td>
</tr>
<tr>
<td>Undecided voters</td>
<td>.414 (.169)*</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.067</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>948</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the UK population

*Significant positive/negative relationship, p<.05.
**Significant positive/negative relationship, p<.01.
***Significant positive/negative relationship, p<.001.

The voter’s illusion coefficient is statistically significant (p<.05) in model 1, which confirms H4. Naturally, the statistical confirmation of the PhD’s turnout hypothesis (H4), which applies the logic of Quattrone and Tversky’s voter’s illusion to EU referendum’s turnout, is one of the most important findings in this thesis. The relationship between the voter’s illusion coefficient and the
turnout decision has a positive direction (.414). This means that voters exposed to the frame where the undecided voters would shape the referendum’s result were more likely to turn out, compared to the frame where referendum campaign followers shape the referendum’s outcome. Specifically, an increase of the voter’s illusion variable by one unit, namely from the “campaign followers” to the undecided, increases the logit of the estimated log-odds of going to the polling station by .414 unit. From an odds ratio perspective, voters in the undecided voters frame are approximately 1.5 times (Exp(B)=1.294) more likely to vote than abstaining, controlling for all other variables.

This statistically significant result credits the thesis’ reasoning to test voter’s illusion in a survey experiment. As previously stressed, Quattrone and Tversky had used the environment of a lab to challenge Downs’ (1957) rational model of turnout. Apart from choice studied in empirical chapter I, framing is also important for the turnout component of this PhD, which applies prospect theory to EU referendum behaviour. According to Downs’ (1957) rational model, the voter would seek to maximize her utility from the exercise of going to the polling station and will logically weigh costs and benefits. It was discussed in the literature review that since it is expected to find costly reasons not to vote, Downs’ theoretical model will lead unequivocally to abstention. However, Model 1 corroborates within a representative sample of the UK population what Quattrone and Tversky (1986) had found in the lab: when the “think-alike framing” is triggered, voters paradoxically regard their vote as diagnostic of millions of other votes.

H4 is thus confirmed and demonstrates that the mere framing had the power to lead the voter to vote or abstain in the EU referendum. Hence, when the UK voter was presented with information that the outcome will be judged by undecided voters, he tended to vote more than in the frame informing that campaign followers will take the lead in shaping the result. Thus, the undecided voters’ information is enough to make the voter believe what for the model of Downs (1957) would have seemed illogical, that her single vote matters. It does so my attributing to the vote a diagnostic essence of numerous others. This statistically significant coefficient shows that this “irrational”
voter’s illusion, as Quattrone and Tversky had called it, can be valid for general populations as well, in addition to their Stanford students’ sample.

Having a closer look at the design of the research question, which was presented in the methods chapter, one notices that the first newspaper headline in every frame purposefully set an equal level of expectations about the EU referendum’s turnout. It informed the sample in both frames that turnout would be the same as in the 2015 general election, as per the alleged “latest poll”. Hence, Headline 1 was the same in both frames. However, Headline 2 introduced the voter to the frame of voter’s illusion, as Quattrone and Tversky had originally done with their hypothetical turnout cases. Therefore, since the electorate is informed to take for granted that abstention will remain the same as in 2015, it was asked to record its turnout inclination based solely on information about the voting behaviour of undecided voters and campaign followers. The fact that the cue about undecided voters’ turnout behaviour pushed voters to vote more demonstrates that in that frame they fell more for the illusion of how much diagnostic their vote is.

If one is to experience “voter’s illusion” as a voter, in which frame would she find her vote as more diagnostic of millions of others, the party supporters (Vote Leave/Remain followers) or the non-aligned (undecided) one? Fenner, Levene and Loizou (2018) analysed the results of 155 polls of the Brexit referendum and found that undecided voters were approximately 14.97% of the UK population. That is equivalent to approximately 9 million voters, who could have judged the referendum result, especially when considering that the Leave side won at the EU referendum by 1,269,501 votes. Additionally, in a study by Howard and Kollanyi (2016) undecided voters were estimated to land close to the area of 30%, who would decide in the last week or day of the ballots. Vasilopoulou (2016) also agreed with the large and defining proportion of undecided votes prior to the referendum. Consequently, the amount of the undecided voters ahead of Britain’s EU referendum was substantial and could have possibly defined the referendum’s outcome.

However, the chapter’s result demonstrates something new: that information about the power
of the undecided voters’ vote can determine turnout. As relevant research underlines the undecided voters’ plethora, it is inferred that in model 1 the voter identified himself with the undecided, being an undecided voter himself days before the referendum. According to the thesis’ theory adapting voter’s illusion to EU referendum turnout in line with Quattrone and Tversky (1986), the voter should be motivated by what fellow think-alike voters would do. The fact that he goes more to the polling station in the undecided voters frame, combined with the indisputable large amounts of undecided vote, may lead one to logically deduct that not only the UK voters remained largely undecided weeks before the referendum but also that they regarded the rest of the undecided electorate as think-alike voters.

Overall, this result underscores the fact that the mere information about the undecided or partisan voters can define the turnout decision. The result of the voter’s illusion coefficient in model 1 provides credit to the construct of the research question inserted in the third survey experiment which had been presented in the methods chapter. Quattrone and Tversky’s (1986) “Party Supporters Theory” frame, as described in the third chapter, was replaced by the turnout behaviour of “Vote Leave/Vote Remain followers” in the third survey experiment because past party vote wasn’t found to be decisive of the referendum’s outcome (Birch, 2016; Swales, 2016; Vasilopoulou, 2016). Therefore, the campaign affiliation replaced party affiliation to make this research relevant to Britain’s EU referendum of 2016. Besides, Vote Leave and Vote Remain campaigns essentially assimilated to two different parties because they had numerous voters who had signed up. To be noted that Vote Leave and Vote Remain had divided the UK public opinion and polarized the UK electorate (Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016), something that substantively served as the “partisan” essence of Quattrone and Tversky’s voter’s illusion. Contrary to their lab environment though, the fact that in this thesis the turnout decision at stake was real and imminent, within an Ipsos survey experiment weeks before the EU referendum, contributes broader external validity to voter’s illusion as an important paradox to Downs’ rational model.
Framing about undecided voters or campaign subscribers does lead the voter to fall for voter’s illusion. In the design of the third survey experiment Quattrone and Tversky’s specific party affiliation doesn’t matter and is therefore substantively replaced by campaign affiliation. Nonetheless, H4 may contribute added value to literature studying the relationship between broader partisan affiliation and turnout, respecting the partisan roots of voter’s illusion. Scholarship already cites two main schools accommodating the relationship between partisanship and turnout: the Columbia and Michigan school (Martinez and Gill, 2005). According to the former, when the low income, education and social class go to the polling station they most usually vote for the left, which is in favour of wealth redistribution. This part of the electorate faces smaller participatory skills or other social impediments like religion (Martinez and Gill, 2005). Nonetheless, the Columbia school holds that when turnout is low, the poor socio-economic classes abstain and thus the result of the ballot favours the right parties. Instead, when turnout is high, the proportion of the “left” peripheral voters who aspire change and redistribution is increased and outmuscles voters of the core right. In the US context, when turnout is high in the elections Democrats win while low turnout endorses a Republican victory.

On the other hand, according to the Michigan school, the level of turnout plays a fundamental role in determining the number of defectors in the electorate and consequently the outcome of the elections too (DeNardo, 1980). DeNardo’s model is based on the premises that the core electorate is comprised by left and right voters. Thus, elections of high interest concentrate participation by independent or undecided voters who are influenced by short-term issues and weak partisans inclined to defect (DeNardo, 1980). Further, DeNardo segregates the election according to the intensity of the political stimulus to low and high stimulus elections. The scholar specifies that in low stimulus elections these “cross-pressured” voters won’t vote for a candidate of the opposing side. The high stimulus elections however call for a wider turnout but the pressures from their party and the opposing party result in their defection. Subsequently, defection of weaker partisans, according to DeNardo, benefits the minority party because in high stimulus elections the defecting
majority partisans outnumber the defecting minority ones. DeNardo puts this into the context of American politics and claims that high turnout will benefit a victory of the Democrats in core Republican “districts” with more potential Republican defectors. Instead, high turnout will benefit Republicans in core Democratic districts with more Democratic defectors. DeNardo’s model shows that high turnout is causally linked to high defection, which favours the minority party at the elections.

Notwithstanding, the narratives of the above two schools on partisanship and turnout apparently cannot explain the chapter’s main result because: a) they reflect on specific party affiliation, which was previously cited not to be determinant of the EU referendum’s result, b) they don’t treat specifically the segment of the undecided voters. Since the EU referendum’s turnout was high, according to the Columbia school, this would mean a high participation of the underprivileged socio-economic strata of the electorate i.e. poorly educated and unemployed who seek for a change to redistribute wealth. The high turnout of those segments, as per the Columbia school, could justify the Leave result per se. Simultaneously, according to the Michigan school, high turnout in the UK referendum should be intertwined with substantial partisan defection helping the “minority” cause in the referendum which one might parallel with the opposite to status quo, Leave. Nonetheless, none of the two schools specifically refer to the undecided voters’ effect on turnout, which the chapter’s main result illustrates.

Voter’s illusion on the other hand, which was statistically confirmed through H4 in a representative sample of the UK population in cooperation with Ipsos Mori UK, contributes to the Columbia and Michigan schools by introducing an alternative perspective to revisit the link between broader partisan (aka campaign) affiliation and turnout. A strong connection is thus eventually forged between undecidedness and turnout. This refers to a “high stimulus” (Denardo, 1980) event, like the EU referendum, where being a past voter of a certain party didn’t overall determine the decision to vote towards Remain or Leave, as already referenced. The chapter’s result of the British voters’ illusion could thus suggest a third school examining turnout and
partisan affiliation, this time focusing on voters’ undecidedness instead. In heavily polarized
elections framing about what undecided voters would do can make the voter go to the polling
station more than framing about campaign affiliation. In fact, this chapter’s result demonstrates
that partisan/campaign affiliation didn’t matter for turnout in the EU referendum, as the Columbia
and Michigan school would argue. Instead, moments before the ballot voters were identified with
undecided voters and turned out motivated by the plethora of the undecided to shape the result.
Consequently, in turnout model 1 a new dimension to turnout in the EU referendum was provided,
seen through the prism of Quattrone and Tversky’s (1986) adaptation of prospect theory to EU
referendum turnout, which revealed “voter’s illusion”. Contributing to scholarship by studying the
relationship between partisanship and turnout outside of the US Elections context where the
Columbia and Michigan schools were developed, may also be an important contribution of the
second empirical chapter.

On another note, to add explanatory value to the model of the third survey experiment the
control variables of the demographics were added to the turnout model. It is informative to estimate
the explanatory value of a model including demographics in a representative sample of the UK
population. Besides, as discussed in the theory chapter, there is substantial research on the role of
demographics in Britain’s EU referendum (e.g. Hobolt, 2016; Kaufmann, 2016; Ludolph and
Barslund, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018;
Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella
and Manning, 2016; Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2018; Antonucci, Horvarth
and Krouwel, 2017; Oliver, 2017; Mayhew, 2017).
Control variables

Table 7.2: Logistic regression model for the third survey experiment comprised by the research frame’s coefficient and the demographic variables provided by Ipsos demographics.

<table>
<thead>
<tr>
<th>Model 2: Voter’s illusion on turnout at the EU referendum with demographics as control variables</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>.385 (.276)</td>
</tr>
<tr>
<td><strong>Voter’s illusion</strong> (Vote Leave/Remain followers)</td>
<td></td>
</tr>
<tr>
<td>Undecided voters</td>
<td><strong>.436 (.175)</strong>*</td>
</tr>
<tr>
<td><strong>Age</strong> (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td><strong>.789 (.233)</strong>**</td>
</tr>
<tr>
<td>55-64</td>
<td><strong>.931 (.292)</strong>**</td>
</tr>
<tr>
<td>65+</td>
<td><strong>1.361 (.318)</strong>***</td>
</tr>
<tr>
<td><strong>Employment</strong> (Employed)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-.010 (.206)</td>
</tr>
<tr>
<td><strong>Marital Status</strong> (Married)</td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>.265 (.199)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong> (White)</td>
<td></td>
</tr>
<tr>
<td>Non white</td>
<td>.253 (.274)</td>
</tr>
<tr>
<td><strong>Internet use</strong> (Heavy)</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>-.212 (.222)</td>
</tr>
<tr>
<td><strong>Education</strong> (Poor)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td><strong>.898 (.223)</strong>***</td>
</tr>
<tr>
<td><strong>Gender</strong> (Female)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-.186 (.176)</td>
</tr>
<tr>
<td><strong>Parenthood</strong> (Non parent)</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>-.048 (.231)</td>
</tr>
<tr>
<td><strong>Pseudo R^2</strong></td>
<td>.059</td>
</tr>
<tr>
<td><strong>Hosmer &amp; Lemeshow</strong></td>
<td>.552</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>937</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the UK population

*Significant positive/negative relationship, p<.05.  
**Significant positive/negative relationship, p<.01.  
***Significant positive/negative relationship, p<.001.
First, multicollinearity wasn’t an issue in this model. The regression of the independent variables doesn’t demonstrate any risk of multicollinearity. Table 7.3 shows that VIFs are close to 1 and less than 10 while the mean VIF is close to 1, which doesn’t imply multicollinearity.

**Table 7.3**: VIF table with the regression of the demographic control variables in model 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (18-34)</td>
<td>1.75</td>
<td>0.572422</td>
</tr>
<tr>
<td>35-54</td>
<td>1.68</td>
<td>0.594561</td>
</tr>
<tr>
<td>65+</td>
<td>2.49</td>
<td>0.401630</td>
</tr>
<tr>
<td>Parenthood</td>
<td>1.41</td>
<td>0.709956</td>
</tr>
<tr>
<td>Internet use</td>
<td>1.45</td>
<td>0.689769</td>
</tr>
<tr>
<td>Employment</td>
<td>1.48</td>
<td>0.677742</td>
</tr>
<tr>
<td>Education</td>
<td>1.11</td>
<td>0.898612</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1.07</td>
<td>0.931009</td>
</tr>
<tr>
<td>Marital Status</td>
<td>1.22</td>
<td>0.816372</td>
</tr>
<tr>
<td>Gender</td>
<td>1.03</td>
<td>0.973938</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.43</td>
<td></td>
</tr>
</tbody>
</table>

To corroborate the absence of multicollinearity a correlation matrix was run, which reaffirms that there isn’t any troubling correlation between the independent variables influencing the results.

**Table 7.4**: Correlation matrix for the independent variables of model 2

<table>
<thead>
<tr>
<th></th>
<th>Voter’s illusion</th>
<th>Employment</th>
<th>Parenthood</th>
<th>Gender</th>
<th>Education</th>
<th>Internet</th>
<th>Ethnicity</th>
<th>Married</th>
<th>Age 35-54</th>
<th>Age 55-65</th>
<th>Age 65+</th>
<th>_constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voter’s illusion</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>0.0312</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parenthood</td>
<td>-0.0572</td>
<td>0.0405</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.0066</td>
<td>0.0686</td>
<td>0.1107</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.0371</td>
<td>0.0830</td>
<td>0.0433</td>
<td>0.0443</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>0.0004</td>
<td>-0.0106</td>
<td>0.0078</td>
<td>0.0334</td>
<td>0.1814</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>0.0111</td>
<td>-0.1128</td>
<td>-0.1002</td>
<td>-0.0290</td>
<td>0.0083</td>
<td>-0.0170</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>0.0174</td>
<td>-0.1063</td>
<td>0.3076</td>
<td>0.0162</td>
<td>0.0677</td>
<td>-0.0572</td>
<td>-0.0333</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 35-54</td>
<td>0.0237</td>
<td>0.1087</td>
<td>-0.0831</td>
<td>-0.0204</td>
<td>-0.0454</td>
<td>-0.2010</td>
<td>0.0687</td>
<td>0.2063</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 55-65</td>
<td>-0.0219</td>
<td>-0.0335</td>
<td>0.2401</td>
<td>0.0281</td>
<td>-0.0290</td>
<td>-0.3030</td>
<td>0.0922</td>
<td>0.2667</td>
<td>0.4016</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65+</td>
<td>-0.0177</td>
<td>-0.3267</td>
<td>0.2285</td>
<td>-0.0194</td>
<td>-0.0119</td>
<td>-0.4404</td>
<td>0.1748</td>
<td>0.2775</td>
<td>0.3613</td>
<td>0.4794</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>_constant</td>
<td>-0.2994</td>
<td>-0.2854</td>
<td>-0.4365</td>
<td>-0.4240</td>
<td>-0.2802</td>
<td>-0.0680</td>
<td>-0.1095</td>
<td>-0.4668</td>
<td>-0.4286</td>
<td>-0.4129</td>
<td>-0.3990</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
Regarding the main effects of model 2, as in model 1, the result of the framing coefficient that tested voter’s illusion reaffirmed a major hypothesis in this thesis, H4. The voter’s illusion coefficient is thus again statistically significant (p<.05) here and with a positive direction (.436). Voters turn out more when informed that the undecided part of the electorate shapes the result than when they receive information that the followers of Vote Leave and Vote Remain will define the referendum’s outcome. Specifically, an increase of the voter’s illusion variable by one unit, namely from the “campaign followers” to the undecided, increases the logit of the estimated log-odds of going to the polling station by .436 unit. From an odds ratio perspective, voters in the undecided voters frame are approximately 1.5 times (Exp(B)=1.547) more likely to vote than voters in the Leave/Remain campaign followers frames, controlling for all other variables. It needs to be restated here that the result in the third survey experiment depicted at both models 1 and 2 is one of the most important findings of this thesis. This means that the turnout component of the PhD’s theory is valid and can be generalized to the UK population. The interpretation and importance of H4’s confirmation was previously analysed in this chapter.

Further, although not entirely part of my theory, it is purposeful to briefly note the findings of the main effects of demographics in model 2 and juxtapose them with existing turnout scholarship about Britain’s EU referendum. Besides, this large survey wave in cooperation with Ipsos Mori was representative of the UK population and shows a valid result of turnout intent weeks before the referendum. First, the independent variable of age is statistically significant for age groups 35-54 (p<.01), 55-64 (p<.01) and 65+ (p<.001) with positive coefficients .789 (35-54), .931 (55-64) and 1.361 (65+) respectively, demonstrating that voters of older age turn out more than Britain’s youth (18-34). An increase of the age control variable by one unit, namely from 18-34 to 35-54, increases the logit of the estimated log-odds of turning out by .789 unit. Similarly, an increase of the age control variable by one unit from 35-54 to 55-64, increases the logit of the estimated log-odds of turning out by .931 unit. Additionally, an increase of the age control variable by one unit from 55-64 to 65+, increases the logit of the estimated log-odds of turning out by 1.361 units. From
an odds ratio standpoint, voters aged 35-54 were approximately 2 times (Exp(B)=2.202) more likely to vote than Britain’s youth (18-34), controlling for all other variables. Also, voters aged 55-64 were approximately 2.5 times (Exp(B)=2.537) more likely to vote than Britain’s youth (18-34), controlling for all other variables. What is more, voters aged 65+ were approximately 4 times (3.902) more likely to turn out than Britain’s youth (18-34). The age main effect finding, although not part of my theory, aligns with pertinent Brexit referendum scholarship which was previously cited and concluded that older voters turned out more than Britain’s youth (Becker, Fetzer and Novy, 2017; Swales, 2016; Jackson, Thorsen and Wring, 2016; Fox and Pearce, 2018; Jackson, Thorsen and Wring, 2016).

Moreover, in model 2 education was also found to have statistically significant effect (p<.001) on turnout with a positive coefficient (.898), showing that voters of high education turn out more in Britain’s EU referendum. An increase of the education variable by one unit, namely from low to high education, increases the logit of the estimated log-odds of voting for Leave by .898 unit. From an odds ratio perspective, voters of high education are approximately 2.5 times (Exp(B)=2.456) more likely to vote than the poorly educated, controlling for all other variables. Once more, although this statistically significant control variable doesn’t form part of the PhD’s theory, it is informative to state here that the finding aligns with previous scholarship on turnout maintaining that in general high education consistently leads to higher turnout (Merriam and Gosnell, 1924; Katosh and Traugott 1981; Wolfinger and Rosenstone, 1980; Hogan 1999; Verba and Nie, 1972; Converse, 1972; Franklin, 2004; Powell, 1986).

Overall, the statistical significance of the control variables of education and age as main effect results of model 2, aligned with referenced turnout scholarship, corroborates the validity of this sample as representative of the UK population.
Heterogeneous treatment effects

Influenced by Lipset’s (1960) “political man” who is dependent on his social status (Martinez and Gill, 2005) as well as the statistically significant heterogeneous treatment effects of empirical chapter I, this chapter continues with an examination of whether voter’s illusion is also moderated by demographics. Previously, in the main effects model 2 the effect of voter’s illusion and demographics on turnout was analysed in a survey experiment. The main effect of voter’s illusion was found to be statistically significant and so did the demographics of age and education. Table 7.2 estimated these demographics to have a specific influence on turnout. The following interaction Model 3 was built with the inclusion of voter’s illusion as main effects coefficient and its interaction with demographics for independent variables, in accordance with H7, H10, H13 and H14 of the theory chapter. In that model only the heterogeneous treatment effect of marital status on voter’s turnout is statistically significant, something that leads to the confirmation of H7. Overall, apart from the heterogeneous treatment effects having particular theoretical expectations for the EU referendum’s turnout, their discussion purposefully maintains the intended balance with the first empirical chapter which had discussed the heterogeneous treatment effects of demographics on the EU referendum vote.
Table 7.5: Turnout Model 3 estimating the heterogeneous treatment effects of demographics on voter’s illusion in Britain’s EU referendum turnout.

<table>
<thead>
<tr>
<th>Model 3: Voter’s Illusion * Demographics</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.686 (.269)***</td>
</tr>
<tr>
<td><strong>Voter’s Illusion (Vote Leave/Remain followers)</strong></td>
<td></td>
</tr>
<tr>
<td>Undecided voters</td>
<td>-.051 (.395)</td>
</tr>
<tr>
<td><strong>Marital Status (Married)</strong></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>-.403 (.241)</td>
</tr>
<tr>
<td><strong>Gender (Female)</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-.034 (.230)</td>
</tr>
<tr>
<td><strong>Parenthood (Non parent)</strong></td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>-.024 (.295)</td>
</tr>
<tr>
<td><strong>Employment (Employed)</strong></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-.122 (.243)</td>
</tr>
<tr>
<td><strong>Voter’s illusion * Marital status</strong></td>
<td>.743 (.371)*</td>
</tr>
<tr>
<td><strong>Voter’s Illusion * Gender</strong></td>
<td>-.365 (.347)</td>
</tr>
<tr>
<td><strong>Voter’s Illusion * Employment</strong></td>
<td>.466 (.361)</td>
</tr>
<tr>
<td><strong>Voter’s Illusion * Parenthood</strong></td>
<td>.526 (.414)</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.020</td>
</tr>
<tr>
<td><strong>Hosmer &amp; Lemeshow</strong></td>
<td>.939</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>947</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
7.4.2 Voter’s illusion specified by voter’s marital status

In Model 3 the interaction between marital status and the voter’s illusion frame was found to be statistically significant (p<.05) and in a positive direction (.743). The latter leads to the confirmation of H7. It means that the unmarried are more likely to regard their vote as diagnostic of millions of others in the undecided voters frame than the Vote Leave/Remain campaign followers’ frame. Consequently, they are more prone to cast their vote in the former frame. Precisely, an increase of the marital status variable by one unit, namely from being married to unmarried, in the undecided voters frame, increases the logit of the estimated log-odds of voting in the EU referendum by .743 unit. From an odds ratio perspective, the unmarried voters are approximately 2 times (Exp(B)=2.103) more likely to vote in the undecided voters frame than the campaign followers frame, controlling for all other variables.

**Figure 7.2:** Plot with the average marginal effects of being unmarried with 95% CIs at Model 3

![Graph showing average marginal effects of the unmarried voters with 95% CIs. The x-axis represents effects on Pr(Turnout) ranging from -0.15 to 0.1, with two distinct lines: Undecided voters with a negative effect and Vote Leave/Remain campaign followers with a positive effect. The 95% CIs are indicated on the graph.]

The negative values of the above figure indicate a higher likelihood to abstain while the positive ones a likelihood to turn out. Investigating the effect of marital status on voter’s illusion, an average
marginal effects plot was run for this interaction using Stata. Interestingly, the above plot shows that the role of marital status on how voters were influenced by voter’s illusion ahead of the ballot particularly depends on whether the voter was married or unmarried. Controlling for all other variables, the change of the electorate’s marital status from married to unmarried increases the probability of turning out by approximately 4% on average in the frame where the undecided voters shape the referendum’s outcome instead of the Vote Leave or Vote Remain campaign followers. On the contrary, in the frame where the campaign followers determine the ballot’s outcome the change of the electorate’s marital status from married to unmarried reduces the probability of turning out in the EU referendum by approximately 7% on average. Apparently, there is a noteworthy difference in the average marginal effect between the two frames, which is equivalent to 11%. All in all, the above graph shows that the unmarried have on average approximately 4% more probabilities to vote in the frame where the undecided voters will turn out more in the referendum and shape the vote. Hence, for the unmarried, voting was the preferred turnout decision in the EU referendum. Instead, in the frame where the Vote Leave and Vote Remain enthusiasts predominantly go to the polling station and determine the result, the unmarried voter has on average 7% less chances to vote, because, as per Quattrone and Tversky’s voter’s illusion, it is in that frame that voters see their vote as diagnostic of millions of other undecided votes. How can this heterogeneous treatment effect on voter’s illusion be interpreted? Overall, although the CIs cross zero, this marginal effect plot shows a substantive significance in relation to the relevant hypothesis (H7) presented in the theory chapter.

Should the unmarried voters be considered by default as individuals who turn out more than the married? The answer is negative. Reviewing the relationship between marital status and turnout leads to Wilensky’s (1961) initial “life cycle theory of participation” (Wolfinger and Wolfinger, 2008). Wilensky had thus found that the married show a high turnout while parenthood decreases participation. Miller, Shanks and Shapiro (1996) confirmed a strong link between marriage and high turnout and so did other researchers (Wolfinger, Rosenstone and Rosenstone, 1980; Strate et
There is also scholarship reporting no significant difference between the married and the unmarried (Sandell and Plutzer, 2005; Highton and Wolfinger, 2001). As Wolfinger and Wolfinger (2008) reviews, pertinent research discusses more specific topics like the effect of divorce on turnout (Bramlett and Mosher; 2001; Squire, Wolfinger and Glass, 1987; Stoker and Jennings, 1995), finding that it suppresses political participation. Overall, the majority of scholars conclude that the married voters go more to the polling station than the unmarried.

Especially in the UK, the research by Denver (2008) reaffirms a robust link between marital status and turnout. This scholar notes that there has been a substantial drop in marriage during the past 30 years in the UK. Most importantly, he uncovers a strong correlation between turnout and married voters in Britain. Earlier, Crewe et al. (1977) were the first researchers, according to Denver, finding that married UK voters from 1966 to 1974 were more prone to vote. Swaddle and Heath (1989) analysing turnout in the 1987 general election confirmed that too. Denver (2008) showcases that married British voters turned out more than the unmarried in the 1987, 1992, 1997, 2001 and 2005 general elections. Crewe et al. (1977), as Denver discusses, outline three reasons explaining the strong association between marriage and turnout: engagement with politics, access to networks and civic duty. Engagement with politics refers to their finding that married voters are more likely to be partisan voters than the unmarried. Thus, as the married electorate is more engaged and interested in the outcome of the election they tend to vote more than the unmarried. Second, access to networks for Crewe et al. (1977) means that the unmarried are more likely to live alone and receive little mobilization by their partner to go out and vote. Last, the sociological explanation of civic duty is about the fact that married voters are more likely than the unmarried to abide by traditional and conservative norms, like that of family or political participation.

In spite of the fact that previous scholarship concludes that married voters vote more than the unmarried, the result of model 3 shows that this marital status turnout norm can be turned upside
down through the voter’s illusion “phenomenon”. Why is that so? Apparently, the voter’s illusion edifice operates outside the general pattern of the marital status’ main effect on turnout. Instead, what was assessed in model 3 was whether married or unmarried voters identify themselves with campaign followers or undecided voters, seeing their vote as diagnostic of millions of others, as Quattrone and Tversky would posit. The latter is different to a main effect of marital status on turnout, which wasn’t spotted neither in model 2 nor 3. Nevertheless, Model 3’s heterogeneous treatment effect result shows that the unmarried voters are significantly influenced by the information of undecided voters moulding the referendum’s result. How can this be justified? The answer was sought in literature exploring the relationship between marital status and partisanship, reviewing the role of partisanship in Quattrone and Tversky’s (1986) voter’s illusion, a role which is purposefully played in this thesis by the referendum’s campaign affiliation.

Weisberg (1987) found the first traces of the “marriage gap” in the American polity. In the 1972 and 1984 presidential elections married voters voted by far more for Republicans than the unmarried. Hayes (1993) maintains that this marriage gap is a more important determinant of partisanship than gender and religion. Research by Plissner (1983) strengthens the role of marital status as predictor of partisanship results in US presidential elections. Overall, existing literature in Britain and the US reaffirms that married voters lean more towards conservative parties than the unmarried (Welch and Thomas, 1988; Deitch, 1988; Poole and Zeigler, 1985, Carroll, 1988). Kingston and Finkel (1987) confirmed that married voters were more likely to vote for Republicans. Specifically, Chapman’s (1985) study of the British Election Survey revealed that UK married voters were less inclined to support welfare redistribution or other big changes implemented by the government, compared to their fellow unmarried electorate. Hayes (1993) attributed the conservatism of the married primarily to the conventional and stable form of living that married voters seek to maintain. She explains this association through the strong partisan cues and symbols that conservative parties in the west have primed married voters with, especially that of the “nuclear bourgeois family”.

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Hence, the aforementioned literature explaining the link between marital status and partisanship contributes to the interpretation of H7’s result. Considering that the unmarried voters are the most liberal part of the electorate as literature cites, in the EU referendum case this could refer to those who crave for big changes like welfare redistribution, taxation or more precisely the relationship with the EU. Consequently, it could make sense that unmarried voters would be more inclined to vote for Leave. On the other hand, the conservative married voters would have better stick to the conventional and stable form of living, which might naturally be ensured through Remain, the status quo. However, that the liberal, eager to make a dynamic change unmarried voters decide to turn out more when finding out about the dynamic undecided voters cannot be explained based on the cited existing scholarship on turnout, marital status and partisanship. Instead, the heterogeneous treatment effect of marital status can be interpreted through voter’s illusion theory.

As per Quattrone and Tversky, the voter will be influenced in his turnout behaviour by the projected voting behaviour of think-alike voters. Therefore, since the unmarried are greatly influenced by the undecided vote, as figure 7.2 showed, it is logically inferred that the unmarried must also be undecided voters themselves. One would anticipate a married voter, previously referenced as more conservative, to turn out to maintain the status quo-Remain, without suffering a major influence from polls’ information about the undecided vote’s effect. Instead, voter’s illusion makes the “conservative” married voters vote less in the undecided voters frame than the “liberal” and presumably undecided themselves unmarried voters. All that despite that married are generally inclined to vote more than the unmarried. It also needs to be underlined here that literature on Leave hadn’t attributed the undecided or Leave vote to the unmarried (Chan et al., 2017; Walker, 2018; Greene, Spoon and Williams, 2017). The latter may contribute additional credit to the voter’s illusion*marital status finding which remains underexplored by existing literature focusing on the 2016 EU referendum in Britain.
All in all, in model 3 the heterogeneous treatment effect of marital status on voter’s illusion is novel because it turns around years of research finding that it is the married who turn out more than the unmarried. The chapter’s contribution specifically lies in finding that the latter isn’t the case when the unmarried are presented with the information of undecided voters defining the election’s result. The unmarried British electorate fell for voter’s illusion in the EU referendum when informed that the undecided vote will shape the outcome. The mere reason for this is that the unmarried particularly identified their political behaviour with the undecided part of the electorate, leading them to embrace Downs’ (1957) mathematical paradox, which implies that their single vote does count after all. According to Quattrone and Tversky (1986), not only does it count, but it is perceived as diagnostic of millions of other votes who motivated the unmarried to turn out. Since this statistically significant heterogeneous treatment effect can be generalized for the UK population based on the representative Ipsos sample, it may be valuable for turnout theorists and political campaigners who discuss the EU referendum’s result to reassess this finding in different settings.

7.4.3 Voter’s illusion specified by voter’s parenthood

According to the thesis’ theory chapter there is an assumption for a heterogeneous treatment effect of parenthood (H10) on voter’s illusion. Given though the non-statistically significant coefficient of the interaction voter’s illusion*parenthood in model 3, H0 cannot be rejected and hence H10 isn’t confirmed.

7.4.4 Voter’s illusion specified by voter’s employment

According to the thesis’ theory chapter there is also the expectation for a heterogeneous treatment effect of parenthood (H13) on voter’s illusion. Given the non-statistically significant
coefficient of the interaction voter’s illusion*employment in model 3, H0 cannot be rejected and hence H13 isn’t confirmed.

7.4.5 Voter’s illusion specified by voter’s gender

According to the thesis’ theory chapter there is equally an expectation for a heterogeneous treatment effect of gender (H14) on voter’s illusion. Given the non-statistically significant coefficient of the interaction voter’s illusion*employment in model 3, H0 cannot be rejected and hence H14 isn’t confirmed either.

Naturally, as in the first empirical chapter the null results produced in this chapter for H10, H13 and H14 have their own value in the entire edifice of the thesis’ theory on voter’s turnout. Thus, the fact that voter’s illusion wasn’t confirmed for the unemployed, non-parents and women doesn’t discard the value of the confirmation of voter’s illusion. On the contrary, the confirmation is maintained as a main effect for the entire population and also more specifically for the unmarried. The latter can be justified because as it was discussed in the first empirical chapter, political campaigns more than often target on specific demographic segments of the electorate (e.g. Stephens and Merril, 1984; Hindman, 2005; Herrnson et al., 2007; Miller, 2013; Elder and Philips, 2017, Ridout et al., 2012; Smith, 2011; Turow et al., 2012; Smith, 2009; Liberini et al., 2020; Baldwin-Philippi, 2015).

Consequently, one may infer that voter’s illusion apart from the main effect for the entire electorate it particularly worked for the unmarried but not for the other three demographics hypothesized, because from the electorate only the unmarried must have remained undecided and empathized with the voter’s illusion frame. On the contrary, one may infer that the unemployed, non-parents and women weren’t undecided before the referendum. To the best of my knowledge,
there isn’t particular scholarship citing that these three demographics of the electorate weren’t undecided moments before the ballots. Consequently, this result calls upon scholars to explore in more experiments the relation between indecisiveness in the EU referendum for the female, unmarried and non-parent voters. If it is verified by future scholars that these three segments of the electorate had made up their mind prior to the EU referendum then it can be inferred that turnout in the Brexit referendum was mainly shaped by Britain’s unmarried who remained undecided and may have fallen for voter’s illusion, considering their vote as diagnostic of millions of other votes. Therefore, the three null results of this empirical chapter don’t discard the confirmation of voter’s illusion but corroborate it as it was confirmed for the entire population. In addition, these null results specify that voter’s illusion isn’t valid for these three segments of the electorate and accentuate the importance of the heterogeneous treatment effect confirmed for the unmarried.

In conclusion, the results confirmed only the theory’s hypothesis for the unmarried (H7) but not for the non-parents (H10), the employed (H13) and the female voters (H14). Why it is that only the unmarried fell for voter’s illusion considering that their vote is diagnostic of millions of others when exposed to the frame informing that the undecided voters will define the referendum’s outcome? To answer that one needs to underline that voter’s illusion was already confirmed for the entire representative sample of the UK electorate (H4), showing that the British voters overall regard their vote as diagnostic of millions of other voters. This result was already interpreted there by inferring that because the British electorate must have remained undecided by millions weeks before the referendum (Fenner, Leven and Loizou, 2018; Howard and Kollanyi, 2016; Vasilopoulou, 2016), it fell for voter’s illusion being undecided itself. Hence, it is justified that they identified more with information about undecided voters shaping the referendum’s outcome instead of the referendum campaign followers. Consequently, following the same logic of interpretation, the statistically significant heterogeneous treatment effect of the unmarried and the non-significant ones for the non-parents, employed and women may lead one to deduct that out of
all the demographic segments of UK's electorate it was the unmarried who remained predominantly undecided prior to the referendum. However, there isn’t research corroborating that the unmarried had remained the most undecided part of the electorate before Britain’s EU referendum. As a result, the inference that this heterogeneous treatment effect of voter’s illusion allows may encourage future scholarship to look more in depth into the undecidedness of the unmarried voters. The latter may be a fruitful approach not only for the UK referendum per se but also for other EU referendums and diverse political events.

Robustness tests

Additionally, in the thesis’ Appendix C three robustness tests for this empirical chapter corroborate voter’s illusion syllogism and result. The first test contributes to the voter’s illusion interpretation that voters remained undecided prior to the referendum day. The second eliminates the powerful explanatory value of education in turnout as an alternative way to explain voter’s illusion. The third robustness test rejects the effect of age on the referendum’s turnout as an alternative explanation of voter’s illusion.
7.5 Discussion

The thesis’ second empirical chapter confirmed voter’s illusion regarding the turnout behaviour of the UK electorate in the EU referendum. Voter’s illusion refers to the work of Quattrone and Tversky (1986) who challenged Downs’ (1957) rational voter model of assessing voter’s turnout as a logical estimation of costs and benefits. Instead, these two researchers had found in the lab that voters view their vote as diagnostic of millions of other votes and thus decide to turn out based on information presented to them about the voting behaviour of think-alike voters. In a research strategy with the scope to provide external validity to voter’s illusion, this chapter discussed voter’s illusion adaptation to a survey experiment studying turnout behaviour in Britain’s EU referendum. The chapter’s main effect result, spotted within a representative sample of the UK population, allows the inference that the British voters fell for voter’s illusion by identifying their turnout intent with the voting behaviour of undecided voters. In addition, the heterogeneous treatment effect for the voter’s illusion effect on the unmarried was confirmed while the chapter highlighted null results for the theorized heterogeneous treatment effects of being non-parents, unemployed and female. These null results maintain their importance as they accentuate the significance of marital status on voter’s illusion for turnout through the link between being unmarried and being also undecided before June 2016.

Further, on the one hand, the confirmation of the voter’s illusion hypothesis as main effect in a representative sample of the UK population in cooperation with Ipsos Mori UK means that the voting behaviour of the followers of Vote Leave or Remain campaigns didn’t motivate the electorate to go out to vote in the EU referendum as much as the behaviour of the undecided voters did. On the other hand, it is logically inferred that voters were so much influenced by the undecided voters because they remained themselves undecided days before the ballots. Regarding one’s vote as diagnostic of millions of others when informed about the voting behaviour of think-alike voters (voter’s illusion) challenges on its own account Downs’ (1957) rational model. Hence, British
voters didn’t decide to turn out in the EU referendum rationally but based on information about think-alike/undecided voters. Overall, the chapter’s result aims to inspire future scholarship to consider turnout in EU referendums as a juxtaposition between the power of undecidedness and partisanship to motivate the voter to see his single vote as diagnostic of millions of other votes.

Inescapably, the chapter draws on a generally underexplored issue of the undecided voters’ vote in Britain’s EU referendum. Apparently, a representative sample of the UK population identified with undecided voters and decided to cast its vote based on information projecting undecided voters’ behaviour. Contra, projections about the “determined” subscribers of Vote Leave and Vote Remain campaigns didn’t motivate the electorate enough to turn out. Hence, apart from assessing turnout as a matter of how diagnostic one’s vote is perceived to be, the chapter encourages future scholarship to particularly look at the effect of the undecided vote on turnout. As it was the case in Britain’s EU referendum, in other EU referendums or elections the undecided vote may also influence how much diagnostic one’s vote is perceived to be. Concerning the pollsters and campaigners, the chapter may be useful to strategize effective political campaigns that will mobilize electorates to turn out, using information about undecided voters taking control of the ballot’s outcome. Possibly, this may also be an effective approach to reduce undecidedness in EU referendums or other political events by motivating voters to actually vote. It is thus hoped that future scholars will look into this direction, being inspired by the chapter’s statistically significant result spotted in a representative sample of the UK population.

All in all, the confirmation of voter’s illusion in this chapter sits right next to the confirmation of the previously discussed prospect theory’s reference point for voter’s choice in the EU referendum under prospect theory, which was outlined at empirical chapter I. Consequently, both chapters’ adaptation of Quattrone and Tversky’s (1986, 1988) initial laboratory work applying prospect theory to voting behaviour stand as a challenge to the rational voter model ruled by expected utility theory. The thesis’ two empirical chapters showed that the British electorate didn’t
vote rationally in the EU referendum according to the axioms of expected utility theory, which were articulated in the thesis’ third chapter. Both the reference point and voter’s illusion signify two confirmed deviations (Quattrone and Tversky, 1986, 1988) from the model of the rational voter estimating costs and benefits to choose or turn out. Thus, the two empirical chapters of this thesis, one for voter’s choice and another for turnout, challenged voters’ behaviour in the Brexit referendum as non-rational under the auspices of prospect theory’s adaptation to voting behaviour.
CHAPTER VIII: DISCUSSION

8.1 Introduction

This chapter summarizes the key takeaways from the thesis, referring to its literature review, theory and two empirical chapters. It also discusses the PhD’s possible contribution to political science and particularly EU referendum scholarship. Further, it explores the limited validity of the thesis’ theory next to major viewpoints of the Leave result like substantive issues, EU referendum campaigns and identity politics while it discusses why prospect theory could not stand here as a sound alternative theoretical model of EU referendum voting. Meanwhile, the chapter acknowledges the thesis’ methodological limitations. Finally, the chapter provides directions for future research in this field.

As regards the thesis’ overall structure, the introduction chapter introduced the reader to the thesis, its research syllogism and the political and electoral setting ahead of Britain’s EU referendum of 23 June 2016. Chapter II reviewed the existing literature on EU referendum voting. Chapter III discussed an alternative EU referendum school by reviewing prospect theory’s original application to voting behaviour. Chapter IV developed the PhD’s theory and the hypotheses concerning the application of prospect theory to voter’s choice and turnout in the Brexit referendum together with the theorized heterogeneous treatment effects of demographics. Chapter V outlined the PhD’s methodology and analysis followed during the thesis’ three survey experiments and the lab experiment. Chapter VI was the first empirical chapter which concentrated on voter’s choice in the Brexit referendum explained through prospect theory, testing hypotheses and analysing results. Chapter VII was the second empirical chapter and focused on voter’s
“irrational” turnout in the Brexit referendum, claiming that the British electorate in 2016 fell for “voter’s illusion”. Presently, chapter VIII recapitulates the main findings of this thesis together with its limitations while it also addresses guidelines for future research.

8.2 Key findings

This thesis tested the theoretical perspective of an alternative EU referendum theory based on the premises of prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). First, through the adaptation of prospect theory’s initial empirical application to voting behaviour (Quattrone and Tversky, 1986, 1988), this PhD found in the lab that the British voters viewed Leave as a risky decision while Remain as the risk-averse one (H1), something that may establish the basis of risk-seeking and risk-averse decisions through prospect theory. Naturally, the lab experiment’s convenience sample and the fact that H1 was confirmed at the non-conventional level of p<.1 creates limitations to the interpretation of this finding for the electorate, something that was discussed in detail in the first empirical chapter. Further, this PhD’s results through two survey experiments with representative samples of the UK electorate showed that: a) the unmarried, the unemployed and the parents of Britain voted in line with prospect theory’s reference point and b) the British electorate made their turnout decision by falling for voter’s illusion, having remained undecided moments before the referendum.

As the reference point wasn’t confirmed for the entire UK population but for specific subsamples, this PhD thesis showed how the reference point could potentially work for some groups of the electorate in the Brexit referendum by altering the reference point of the EU referendum campaign. Thus, this PhD showed that the risky high reference point of the EU
growing more than the UK led the unmarried, the unemployed and parents to take the risky
decision, in line with prospect theory, which is to vote for Leave. The reference point findings of
this PhD for specific subsamples of the UK electorate aspire to contribute to the EU referendum
school of utilitarian expectations (Hobolt, 2006), which are based on the previously cited as flawed
expected-utility theory. Also, the thesis’ theory may to a certain extent sit next to other EU
referendum perspectives like substantive issues, EU referendum campaigns and identity politics,
although with limitations. What is more, the confirmation of voter’s illusion for the entire
electorate demonstrates that when informed with the frame of the undecided voters shaping the
referendum’s result, the voter considers her vote as diagnostic of millions of others and thus is
willing to turn out. The latter could be seen as a challenge to Downs’ (1957) rational model of
turnout.

Furthermore, as discussed in the empirical chapters, this PhD produced a number of null results,
which surely maintain their own importance in the interpretation of the findings and the
applicability of the PhD’s theoretical model to EU referendum voting. First, as regards voter’s
choice in the EU referendum the reference point wasn’t confirmed as a main effect for the entire
population but only through heterogeneous treatment effects for specific segments of the
electorate. This however may not necessarily discard entirely the applicability of the reference
point as a theoretical model to explain voter’s behaviour, because campaign scholars and
professionals often focus on specific demographics or segments of the electorate in lieu of finding
a framing panacea for the entire electorate. Hence, the thesis suggests a voter’s choice model under
prospect theory’s reference point for three specific segments of the electorate only: the unmarried,
the unemployed and the parents. What is more, the thesis’ theory on the impact of the ratio-
difference principle was disproved both for the entire electorate and the pertinent hypothesized
demographics of the population. The latter demonstrates that the ratio-difference principle has no applicability on EU referendum voting at all. Previously in the first empirical chapter the possible reason for that was discussed to be the fact that the unemployment framing apparently had no impact on voter’s choice. Instead, future scholars are suggested to look into the ratio-difference principle from a different framing referendum viewpoint like immigration, trade, NHS impact etc. In fact, this PhD thesis showed that the ratio-difference principle which used unemployment framing, in line with Quattrone and Tversky’s initial work (1988), cannot accommodate voter’s choice in the Brexit referendum. Nevertheless, this thesis cannot be conclusive on the possible applicability of the ratio-difference principle in the case that other referendum campaign frames would be used, something that future work is encouraged to do.

Moreover, regarding the second component of voting behaviour examined in this PhD, turnout, as said in the second empirical chapter, voter’s illusion was confirmed through a representative sample of the UK population for the entire electorate and also in a heterogeneous treatment effect specifically for the unmarried. However, that chapter also produced null results for the rest of the hypothesized heterogeneous treatment effects, which have also their own importance in the interpretation of the theoretical model suggested regarding voter’s turnout. Thus, the turnout of the employed, the non-parents and female voters wasn’t affected by voter’s illusion as it was the case for the whole electorate and for the unmarried. This shows that the turnout behaviour of the employed, the non-parents and women wasn’t influenced by the frame informing about the undecided voters rushing to the poll stations to cast their votes. In other words, those segments of the electorate didn’t regard their single vote as diagnostic of millions of other votes in that frame, as voter’s illusion would dictate and as it was theorized in the theory chapter. The second empirical chapter previously discussed that the interpretation of the null results in these heterogeneous
treatment effects is that the employed, non-parents and women didn’t identify their turnout behaviour with the undecided because they possibly weren’t undecided voters themselves. On the contrary, as discussed in that empirical chapter the unmarried fell for voter’s illusion because they seemed to have been particularly undecided days before the Brexit referendum. In addition, the fact that the main effect of voter’s illusion was confirmed shows that the undecidedness of the entire electorate who made them feel that their vote mattered in the undecided voters’ frame can be further specified for the unmarried. All in all, the second empirical chapter’s null results show that EU referendum campaigns targeting on the non-parents, employed and women cannot be persuasive towards turnout but, if they had focused on the unmarried segment of the electorate, they could have been more effective. Given the generally low turnout of the Brexit referendum, the latter could have made a difference in the result of Britain’s EU referendum in 2016. Consequently, given that the voter’s illusion was confirmed as a main effect result within a representative sample of the UK population, the null results of the second empirical chapter don’t affect consequentially the applicability of the thesis’ theory on voter’s turnout whatsoever.

Overall, the existence of null results in this thesis is purposeful as they specify the PhD’s theory for the reference point and voter’s illusion and they limit their validity as a way to explain EU referendum behaviour. At the same time they call future scholars to re-assess the theory’s ratio-difference principle through different EU referendum frames. Therefore, the PhD’s theory was only partially confirmed within representative samples of the UK population for voter’s choice and turnout. Thus, Quattrone and Tversky’s (1986, 1988) initial work adapting prospect theory on voter’s choice and turnout has been proved here to have partial and limited applicability on EU referendum voting. It did offer though some results outside the lab, contributing thus to prospect
theory’s external validity, which has been a major point of prospect theory’s criticism as it was discussed in the thesis’ third chapter.

8.3 How do the PhD’s results speak to EU referendum literature?

Utilitarian expectations

It was previously discussed that the partial confirmation of the thesis’ results for voter’s choice had been intended to become a challenge mainly to the EU referendum school of utilitarian expectations (Hobolt, 2005, 2006, 2016; Tucker, Pacek and Berinsky, 2002; Gabel, 1998a, 1998b; Gabel and Palmer, 1995). The reason is that, as per the thesis’ literature review, prospect theory on its own is by default a challenge to expected utility theory, upon which the EU referendum school of utilitarian expectations was based. Overall, in principle the thesis’ partially confirmed results on voter’s choice might contribute somewhat, to the utilitarian expectations school, but definitely with serious caveats. Mainly, the hypotheses of the reference point, which were confirmed only for specific subsamples of the electorate, may tell us that the maximization of utility axiom that expected utility theory dictates depends on where the reference point is set for the unmarried, parents and unemployed voters. Although the reference point wasn’t confirmed for the entire electorate, one may infer that these specific subgroups in the Brexit referendum environment didn’t focus on how to maximize their utility from their vote but instead they were influenced by the reference point to vote either for Leave or Remain.
Besides, if the expected utility theory that governs the EU referendum school of utilitarian expectations had been flawless, then the empirical findings of the first empirical chapter would have been all null. This means that if the utilitarian expectations school was perfectly rigid, then the high and the low reference point, given that they convey an equal message framed differently, as per Quattrone and Tversky’s (1988) original work, shouldn’t have produced statistically significant results at all, not even for the specific subsamples of the unmarried, unemployed and parents. Therefore, the fact that the prospect theory’s framing of the reference point brings to the surface this statistically significant difference in a representative sample between high and low reference point, although only for specific demographics, contributes to the school of utilitarian expectations by positing that when prospect theory’s reference point is in place, the expected utility theory may not work perfectly. This contribution of the thesis’ findings is limited though given that the reference point wasn’t confirmed for the entire electorate.

This is similar to the original laboratory work of Quattrone and Tversky (1988), who had produced empirical findings that challenged expected utility theory. Thus, in the context of Britain’s EU referendum, the reference point results of the first empirical chapter tell us that prospect theory’s reference point did have some effect on the voter’s choice by making them vote for leave in the high reference of the EU economy advancing unfavourably more than the UK, but only for specific subsamples of the electorate. Obviously, the latter lessens by a lot the importance of this finding in challenging the EU referendum school of utilitarian expectations. At the same time, the first empirical chapter’s null results for the ratio-difference principle come to reinforce expected utility theory and thus the EU referendum school of utilitarian expectations, because the low and the high ratio frames didn’t yield any statistically significant result whatsoever. This means that between two equal frames where only the wording differed (i.e.
employment/unemployment), the voter’s choice didn’t change at all. The latter is in line with expected utility theory and reinforces it while showing that this PhD’s results didn’t manage to question significantly the school of utilitarian expectations after all.

Overall, the results of the first empirical chapter didn’t really challenge after all the school of utilitarian expectations but instead they showcased through prospect theory’s reference point the school’s limitations for specific subsamples, whereas simultaneously it invigorated utilitarian expectations through the null results of the chapter’s test for the ratio-difference principle. Nevertheless, it might be meaningful for future scholarship to investigate the reasons why these three subsamples deviate from the maximization of utility axiom of expected utility theory and more specifically they were susceptible to vote in line with the swings of prospect theory’s reference point. Hence, the results on the reference point may complement the EU referendum school of utilitarian expectations but not actually challenge it because clearly they were only partially confirmed and solely for specific subsamples of the electorate.

Substantive issues

Furthermore, the thesis’ results may indirectly speak also to the EU referendum school of substantive issues (e.g. Garry, Marsh and Sinnott, 2005; Glencross and Trechsel, 2011; Szczerbiak and Taggart, 2004; Lequesne and Schmitter, 2010; Hobolt, 2006; Goldberg and Vreese, 2018; Elkink, Quinlan and Sinnott, 2011; Siune and Svensson, 1993; Siune, Svensson and Tonsgaard, 1994; Svensson, 1994, 2002), which had been formerly cited in this thesis as perhaps the most successful strand of literature explaining voter’s behaviour in the Brexit referendum (e.g. Fisher and Renwick, 2018; Hobolt, 2016; Clarke, Goodwin and Whiteley, 2016; Evans, Carl and
Dennison, 2018; Goodwin and Milazzo, 2017). In particular, the partially confirmed results of the first empirical chapter may contribute to the importance of the issue of the economy as a defining EU referendum issue in the Brexit referendum (Curtice, 2017), although for those specific subsamples only. More specifically, they tell us that the issue of the economy, as in the comparison between the growth of the EU economy and the British one, enables prospect theory’s reference point to influence voter’s choice for specific subsamples i.e. the unmarried, the unemployed and the parents. However, the reference point result of the first empirical chapter doesn’t produce data on a possible comparison between different substantive issues, including the economy, to measure the influence of each substantive issue, as other research from the EU referendum school of substantive issues does. Nor does it produce data on the comparison between the economy frame and no frame at all. Therefore, the reference point findings of the first empirical chapter are not very enlightening as regards the impact of the issue of the economy on the Leave vote in comparison with other issues like NHS or unemployment. On the contrary, the thesis’ result is solely an affirmative statement that the economy enabled prospect theory’s impact, and that with caveats, meaning only for three subsamples and not for the entire population. Surely, future research may wish to rediscover the substantive issues setting stemming from this thesis by maintaining the reference point platform of prospect theory but adding also a comparison between different issues at stake in the EU referendum. That could be eventually a more meaningful contribution to the EU referendum school of substantive issues. Contra, currently the thesis’ first empirical chapter contributes only partially to that school, and with limitations as regards its applicability to the general population.

Simultaneously, the null results of the second survey experiment in the first empirical chapter demonstrate that the substantive issue of unemployment had no effect on the ratio-difference
principle at all. Again, the methodological structure of this thesis didn’t provide a comparison between the substantive issue of unemployment and other issues at stake in the EU referendum like immigration, trade, NHS etc. Instead, in line with Quattrone and Tversky’s original work (1988) it only had an affirmative character stating that the unemployment frame didn’t activate at all what Quattrone and Tversky (1988) had called as the ratio-difference principle. Once more, overall, the contribution of this thesis to the EU referendum school of substantive issues cannot be considered to be consequential. It touched the issue of the economy but only in the structure of prospect theory’s reference point as this PhD hadn’t been built to assimilate the design of research of the substantive issues school. Naturally, future research might explore further the ratio-difference principle through substantive issues designs where more issues can be compared between each other. In conclusion, the results of this thesis didn’t speak substantially to the EU referendum school of substantive issues.

EU referendum campaigns

What is more, the thesis discussed in the first empirical chapter that the results may also somewhat contribute to the EU referendum school of EU referendum campaigns (e.g. Hobolt, 2005, 2009, 2016; Atikcan, 2015, 2017, 2018; Garry, 2013, 2014; Garry, Marsh and Sinnott, 2005; Elkink and Sinott, 2015; Druckman and McDermott, 2008; Bowler and Donovan, 1994; LeDuc, 2002a, 2002b, 2007, 2009; Jahn and Storsved, 1995; Hobolt and Brouard, 2011; Kriesi, 2006; Christin, Hug and Sciarini, 2002; Hobolt and Hagemann, 2016; Schuck and de Vreese, 2009; de Vreese, 2007; Kurer, 2019; van Kingeren et al., 2015; Siune and Svensson, 1993; Seidendorf,
2010; Marsh, 2007; Cushion and Lewis, 2017; Semetko and de Vreese, 2004; Jackson, Thorsen and Wring, 2016; Dekavalla, 2018; Moore and Ramsay, 2017). Indeed, the results of the first empirical chapter can show that campaigns that use the frame of the economy’s reference point may be influential towards a risky (i.e. Leave) or risk-averse EU referendum decision (i.e. Remain), while campaigns that incorporate the frame of unemployment may not be successful after all.

Notwithstanding, it needs to be noted that this PhD wasn’t built with the scope to contribute to the school of EU referendum campaigns per se. Therefore, it didn’t apply relevant designs of that school like for example comparing voter’s choice between a campaign and no campaign or between different campaigns. Thus, the thesis’ contribution to this school is not immediate but instead as per the result of the first empirical chapter one may infer that if an EU referendum campaign had utilized prospect theory’s reference point for specific subsamples of the electorate, then it could have been possible that it would create an influential campaign that could perhaps define voter’s choice. In view of that, it can be said that the thesis’ contribution to the EU referendum campaigns is not really substantial after all. The latter is corroborated by the fact that in the second survey experiment the frame of unemployment, which could have been the theme of another EU referendum campaign, didn’t yield any significant results at all. Nonetheless, scholars are encouraged to explore through the design of this thesis the impact of other frames like the immigration, trade and NHS impact on the EU referendum vote.
Identity politics

Finally, the PhD’s results may partially speak also to the EU referendum school of identity politics (e.g. Hobolt, 2016; Carey, 2002; De Vreese and Boomgaarden, 2005; McLaren, 2006; Hooghe and Marks, 2005) as the confirmation of the heterogeneous treatment effects in the first empirical chapter demonstrates that the reference point as well as voter’s illusion in the second empirical chapter are important for specific demographic identities e.g. the unmarried voters. Therefore, it could be said that the confirmed results of the reference point for the unmarried, the unemployed and the parents of the UK electorate shape specific demographic identities that are influenced by prospect theory’s reference point for the voter’s choice in the EU referendum. However, the identities for the null results of the first empirical chapter on the ratio-difference principle show that specific subsamples of the electorate were not influenced at all in their referendum vote by the ratio-difference principle. Naturally, as it is the case in the aforementioned EU referendum schools, the contribution to the school of identity politics wasn’t the initial scope of this PhD. Therefore, its structure and design didn’t focus on techniques used in the literature of identity politics but instead the focus was on prospect theory’s frames of the reference point, ratio-difference principle and voter’s illusion. All in all, it cannot be really suggested that this PhD directly spoke to identity politics but rather in an indirect way given the results describing the heterogeneous treatment effects on the reference point for specific demographics of the British electorate.

Meanwhile, the thesis’ results cannot certainly speak to the EU referendum school of second-order (Reif and Schmitt, 1980; Reif, 1985; Reif and Schmitt, 1997; Schmitt and Mannheimer,
1991; Marsh and Norris, 1997; Van der Eijk & Franklin, 1996; Franklin and Wlezien, 1997; Franklin, van der Eijk and Marsh, 1995; Anderson, 1998; Schmitt, 2005; Franklin, Marsh and Wlezien, 1994; Marsh, 1998; Franklin, 2002; Franklin, Marsh and McLaren, 1994; Ferrara and Weishaupt, 2004) because the research design of the survey experiments in the first place didn’t treat the EU referendum as a second-order election. Similarly, the thesis’ results don’t speak to the EU referendum viewpoint of institutional design (Cheneval and Wakil, 2018; Cheneval and Ferrin, 2018; Hollander, 2019; Silagadze and Gherghina, 2018; Setala, 2006; 2009; Vatter, 2009; Van Crombrugge, 2020; Romer and Rosenthal, 1979; Hug and Tsebelis, 2002; Matsusaka and McCarty, 2001; Renwick, Palese and Sargeant, 2019; Tierney, 2012, 2013; Moore, 2017; Haskell, 2001; Riker, 1988; Lutz and Hug, 2009; Gerber, 1999; Lacey, 2017; Weale, 2018; Haskell, 2001; Riker, 1988; Hix, 1998; Flauss and Auer, 1997; Rose, 2013), other than highlighting the effect of prospect theory’s framing and as a result the fragility of the referendum as democratic apparatus.

Also, the PhD’s results don’t really speak to the EU referendum perspective of cue-taking (De Vries and Steenbergen, 2013; Hobolt, 2007; Steenbergen, Edwards and De Vries, 2007; Ray, 2003; de Vries, 2007, 2009; Edwards, Netjes and Steenberge, 2005; Hobolt, 2016; Kuklinski and Hurley, 1994; Borisova, 2018; Vasilopoulou, 2016) simply because there weren’t partisan cues involved in this methods’ design.

All in all, this PhD spoke indirectly and up to a certain and limited extent only to EU referendum scholarship but surely not substantially, given the partially confirmed results of the first empirical chapter. Nevertheless, future scholars may wish to test through empirical work the intertwined
relationship of the thesis’ confirmed and null results with the other EU referendum schools and interpretations.

8.4 Criticism of this PhD’s suggested theoretical model

Regarding voter’s choice, in short the PhD’s theoretical model didn’t manage successfully to explain how the British voters voted for in Britain’s EU referendum of 2016. First of all, the reason for that is that in the first empirical chapter the reference point hypothesis wasn’t confirmed for the entire British electorate but only for specific subsamples. At the same time, the same chapter didn’t bring any statistically significant results for the ratio-difference principle at all. Therefore, it is clear that for voter’s choice the PhD’s theoretical model of prospect theory failed, except for some subsamples. Why is that so?

The first plausible explanation is in line with what was discussed in previous chapters of the thesis as the limited applicability of prospect theory in political science and more so in voting behaviour. Initially the biggest problem that political science scholars met in applying prospect theory to politics was its mere inductive origins. Although this PhD originally endeavoured to overcome this obstacle through survey experiments and representative samples of the UK population in cooperation with Ipsos Mori UK, the results of the first empirical chapter show that it failed to prove the reference point and the ratio-difference principle as effective ways to explain voting behaviour in the Brexit referendum. It might be the case that other disciplines like economics or financial management are more suitable to be explained through prospect theory but political science and more specifically voting behaviour problems seem to just be too complicated
to be handled by the “simplistic” binary design of prospect theory. This means that the voters cannot really vote based on a reference point swing of the EU economy’s growth but instead voter’s behaviour is a much more complex issue that depends simultaneously on the voters’ beliefs on substantive issues, identities, partisanship etc. One may infer from the first empirical chapter that voters outside the lab are not really subjects that react to stimuli but instead cognitive and emotional decision-makers whose vote is dependent on various factors and complex models. Hence, the first empirical chapter, aside from the confirmation for some specific demographics of the electorate, tells us that the prospect theory models on reference point/ratio-difference principle of Quattrone and Tversky (1988) are just overly simplistic for contemporary EU referendum behaviour outside the controlled environment of the lab.

The second explanation for the PhD’s failure to explain voting behaviour comes from the general critique of prospect theory as theory in social sciences, which was outlined in the third chapter of this thesis. Reference is made here to the criticism regarding the fictitious/hypothetical nature of prospect theory problems (Rossiter, 2018). To be noted that in the problems of the first empirical chapter the voters were primed to suppose that they were presented with a news headline that the EU grows more than the UK in the scenario of Brexit and grows less in the scenario of remain. Obviously, this PhD adopted the “fictitious” character of Quattrone and Tversky’s (1988) work, which apparently didn’t work as the critics of prospect theory had already maintained too. Additionally, in line with the criticism by Slovic (1995), the binary nature of prospect theory, which requests a choice between two alternative prospects is too simplistic and doesn’t really work, as the first empirical chapter of the thesis showed. In addition, the failure of the PhD to confirm the reference point and the ratio-difference hypotheses for voter’s choice in the EU referendum of Britain can also be attributed to the existing criticism that prospect theory tries to
predict with certainty the decision of the decision-maker (aka voter), while real life requires a probabilistic approach (Juslin, Nilsson and Winman, 2009). Moreover, the inability of this PhD to confirm prospect theory’s reference point/ratio-difference principle can be due to the simplistic and ineffective frames of prospect theory, as Hovland, Janis and Kelley (1953) had argued. All in all, apparently the general criticism of prospect theory applies well to the findings of this PhD on voter’s choice too. The reference point and the ratio-difference principle didn’t work, mainly because they were too simplistic and hypothetical as all prospect theory designs were and had been criticised for that very reason.

The third reason why this PhD didn’t succeed in applying prospect theory to voting behaviour could also be its mere design. It can be that the reason for the lack of success of prospect theory to accommodate voter’s choice in Britain’s referendum through this PhD can be the way the reference point of Quattrone and Tversky (1988) was adapted/framed in the context of the EU referendum i.e. the growth of the EU economy as compared to the British one. It could be that other reference point swings could have worked better, like for instance the health standards/education/5G infrastructure/data privacy in the EU as opposed to the UK ones in the event of a Brexit. Surely, the economy reference point didn’t work for the UK population in this PhD, although it did show some significant results for certain subsamples. The same applies to the ratio-difference principle which didn’t offer any significant results at all. An explanation for this thesis not succeeding to bring to the surface the phenomenon of the ratio-difference principle can be that the unemployment framing used wasn’t successful in the first place. Instead, other framing like for example the NHS impact could have been more successful. Surely though, the thesis’ design on the ratio-difference principle wasn’t effective at all.
Another additional reason for the thesis’ shortcoming is the fact that other EU referendum schools like EU referendum campaigns or substantive issues are situated in a better position to accommodate EU referendum behaviour than prospect theory. Having studied the negative results of the first empirical chapter, one may infer that there is not a dire need for a prospect theory school of EU referendum voting in the first place. Instead, the framing that prospect theory “erroneously” (Rossiter, 2018) tries to uncover can be better and already accommodated by the school of EU referendum campaigns. According to that school, campaign frames can influence the referendum vote. And indeed, in EU referendum campaigns the models can be more complex, taking into consideration the voter’s beliefs or partisanship instead of the previously cited and criticized as overly simplistic and hypothetical binary edifice of two prospects in prospect theory. What is more, the substantive issues school can already encompass the issue of the economy and unemployment that the prospect theory structure of this PhD failed to adopt. Given that previously cited literature in this thesis finds the substantive issues to be the most effective school to explain voting behaviour in the Brexit referendum, together with the so many scholars who make use of this school, it seems that once more there isn’t an actual need for a prospect theory school in EU referendum voting. All in all, the failed hypotheses of the first empirical chapter show that other more elaborated and complex schools like substantive issues and EU referendum campaigns are already developed enough and do not gain significant added value from prospect theory. Therefore, one can infer from the PhD’s results in the first empirical chapter that indeed prospect theory doesn’t work for the aforementioned reasons.

On the contrary, when it comes to voter’s turnout, the PhD’s result in the third survey experiment showed that the voter’s illusion phenomenon can be valid for the entire UK electorate. The null results of the heterogeneous treatment effects in the second empirical chapter don’t affect
significantly the validity of the voter’s illusion theory since the latter was already confirmed as a main effect in the representative sample of the UK electorate. Thus, the voter’s illusion result has its own significant importance for turnout scholarship. Except for being a challenge to Downs’ rational voter model, this main effect result establishes the fertile ground for an “irrational” turnout theoretical model according to which the decision to turn out depends on information about the turnout behaviour of undecided voters. The PhD shows that if voters are informed that undecided voters turn out and shape the referendum’s result, then they view their vote as diagnostic of millions of others and thus decide to turn out. Given the scarce literature concerning the role of undecided voters on the turnout decision, this result could broadly contribute to the explanation of turnout behaviour in EU referendums. Naturally, before claiming that a new turnout model is established through the adaptation of Quattrone and Tversky’s (1986) lab-originated voter’s illusion to survey experiments, which shows a paradoxical behaviour challenging the rational voter’s model of Downs (1957), more work on voter’s illusion needs be done by other scholars. Should voter’s illusion be confirmed in different designs and various EU referendums, then it could be claimed that we could possibly have a new turnout model in EU referendums which contradicts the rational voter’s model of Downs (1957).

All in all, this PhD only confirmed a plausible perspective for voter’s turnout in the Brexit referendum. However, it didn’t offer much value on what we know so far about voter’s choice in EU referendums, other than a confirmation for some subsamples. Thus, prospect theory can be used by EU referendum scholarship but only with much caution, as it seems to succumb to its criticism for over-simplicity whereas voting behaviour is surely a very complex environment. Nonetheless, concerning the PhD’s theoretical model on voter’s turnout in the second empirical chapter, the results demonstrate that voter’s illusion was confirmed for the entire electorate. This
is clearly the most important result of this thesis and casts light on the turnout behaviour in the Brexit referendum and possibly more broadly in EU referendums as a whole. The role of the undecided voters in motivating voters to turn out is the key takeaway from the second empirical chapter, a finding that has several implications on turnout scholarship. Overall, the appraisal of the turnout component of this PhD is positive and the details of its discussion were outlined in the second empirical chapter.

8.5 The thesis’ contribution to political science

First of all, this PhD thesis aspired to contribute to political science through the adaptation of prospect theory outside the lab in survey experiments with representative samples of the UK electorate in cooperation with Ipsos Mori UK. As said in the thesis’ third chapter, prospect theory has been under-researched in political science and more so in voting behaviour. The reason for that has mainly been the laboratory roots of prospect theory which constitute the theory’s methods overly simplistic and unable to be applied to natural and complex environments of voting behaviour in political science. Thus, this thesis intended originally to contribute to political science through its adaptation of the first work that tried to apply prospect theory to voting behaviour in a lab (Quattrone and Tversky, 1986, 1988) to survey experiments and representative samples in cooperation with Ipsos Mori UK and in the real context of Britain’s referendum in 2016. Naturally, despite the vigorous methodological approach outlined in the methods chapter, the success of this endeavour must be judged by its results and therefore the contribution to political science in this
thesis is significant only when it comes to voter’s turnout but for voter’s choice it is partial and definitely not substantial.

Regarding voter’s choice, the thesis’ survey experiment for prospect theory’s reference point didn’t yield statistically significant results for the entire population but for specific sub-groups i.e. the unmarried, the unemployed and the parents. At the same time, the test in the second survey experiment for the ratio-difference principle didn’t offer any statistically significant results whatsoever, neither as a main effect nor as heterogeneous treatment effect. The above constitutes the contribution to political science partial and not of an impact that could easily inspire future scholars to follow the path of prospect theory to explain the EU referendum vote. In fact, the results of the first survey experiment confirm that the political scientists’ avoidance to use prospect theory in voting behaviour problems has been right after all.

On the other hand, another survey experiment studying voter’s turnout brought a novel result that might contribute something useful to political science. This PhD adapted successfully Quattrone and Tversky’s (1986) voter’s illusion which was initially confirmed in a lab and confirmed that the UK voter fell for voter’s illusion in the turnout of the Brexit referendum of 2016. In short, the third survey experiment of this PhD showed that when the British voter was informed that the undecided voters will turn out and shape the voter’s turnout then she would rush more to the polling station than when informed that the Vote Remain/Leave followers would shape turnout. This is because, according to Quattrone and Tversky (1986), voter’s illusion makes voters feel their single vote as diagnostic of millions of other votes when they are informed that like-minded voters will turn out. The reason for doing so is because voters feel that in that case their
single vote counts and they can also make a difference in the outcome. As said in the thesis’ third chapter, the latter is of course a paradox to Downs’ (1957) rational voter model, while voter’s illusion in Quattrone and Tversky had been originally used to challenge that model which had been based on expected utility theory. Thus, the fact that this thesis confirmed in a representative sample of the UK population voter’s illusion is a noteworthy contribution to political science and particularly the area of turnout. Future scholars may be inspired from the most important result of the thesis to do more work on voter’s illusion, either in the Brexit referendum, generally EU referendums or turnout overall.

As regards the contribution to EU referendum scholarship, the thesis’ results cannot really point towards a new school inspired by prospect theory next to the established EU referendum schools of second-order, substantive issues, utilitarian expectations or other viewpoints like EU referendum campaigns, identity politics, cue-taking or institutional design. The main reason for that is that the thesis’ test on the reference point wasn’t confirmed statistically for the entire electorate but only for specific subgroups (unmarried, unemployed and parents). In addition, this thesis didn’t confirm prospect theory’s phenomenon of the ratio-difference principle, neither as a main effect nor as heterogeneous treatment effect. Also, the conditional and limited confirmation of the reference point doesn’t create a fertile ground to highlight the benefits of prospect theory to EU referendum voting. At the same time this thesis didn’t compare prospect theory’s reference point or the ratio-difference principle in a model with other EU referendum schools and perspectives, in order to be able to tell which is more suitable to accommodate the vote in the Brexit referendum. Therefore, concerning voter’s choice, this thesis didn’t actually tell us how it
can contribute to the well-established EU referendum schools that have been studied by a plethora of scholars producing numerous citations.

On the contrary, when it comes to turnout in EU referendums, to the best of my knowledge Quattrone and Tversky’s (1986) voter’s illusion hasn’t been confirmed yet outside the lab in the setting of an EU referendum. Consequently, this thesis contributes to what we know so far about turning out in EU referendums. In the second empirical chapter it was discussed that the interpretation of this result, in line with Quattrone and Tversky’s (1986) original work, is that the British voter was motivated to turn out due to the turnout behaviour of the undecided who shape the referendum’s outcome. It was inferred that this is the case because the voter was undecided himself ahead of the ballots, therefore the think-alike voters, who according to Quattrone and Tversky (1986) influence the turnout decision, were the undecided voters per se. This confirmation uncovered in a representative sample of the UK population casts light on the power of indecisiveness on turnout, something that has been understudied in pertinent literature. This means that information or campaigns on the turnout behaviour of the undecided can shape an EU referendum’s turnout and possibly outcome too. A possible application of this result could be the EU referendum campaigns which may want to focus on the undecided to convince voters to turn out. Ultimately, this could be used also as a technique to limit abstention in EU referendums, something that already creates issues to democracy. To do so, future scholars are encouraged to rediscover voter’s illusion through various EU referendums and methodologies in order to strengthen or challenge this finding adequately. In any case, this PhD intends to introduce voter’s illusion in the Brexit referendum as a contribution to political science.
All in all, the contribution of this thesis to political science is mainly limited to voter’s turnout as well as the adaptation of Quattrone and Tversky’s (1986) lab originated prospect theory work to the real environment of Britain’s EU referendum of 2016 through survey experiments and representative samples. However, certainly when it comes to voter’s choice the PhD’s contribution has not been substantial.

8.6 Explaining the leave result: prospect theory in lieu of identity politics?

This thesis sails in a sea of already cited literature explaining the Leave result of June 2016. With a popular theory accommodating the UK referendum outcome being identity politics (e.g. Wallerstein, 2016; Bachmann and Sidaway, 2016; Kaufmann, 2017; Demir, 2017; Goodhart, 2017; Bhambra, 2016, 2017; Gest, 2016; Arnorsson and Zoega, 2018; Steward, 2016; Khalili, 2016; Shilliam, 2016; Hozic and True, 2017; Marchlewiska et al., 2018; Todd, 2017; Brophy, 2018; Grey, 2018; Henderson et al., 2016; Beaumont, 2017; Manners, 2018; Goodwin and Heath, 2016; Dennison and Carl, 2016; Kaufmann, 2019; Clarke and Newman, 2019), it is suggested that it might be that identity politics can explain the Brexiteer’s profile descriptively and not explore deeper psychological reasons behind the leave vote. Instead, prospect theory might have more to show on the psychological causes of specific identities taking a risk-seeking (Leave) or risk-averse (Remain) decision, although the results of the first empirical chapter don’t really support that.

According to the Stanford Encyclopaedia of Philosophy (Heyes, 2002) identity politics encompasses “a wide range of political activity and theorizing founded in the shared experiences of injustice of members of certain social groups. Rather than organizing solely around belief
systems, programmatic manifestos, or party affiliation, identity political formations typically aim to secure the political freedom of a specific constituency marginalized within its larger context. Members of that constituency assert or reclaim ways of understanding their distinctiveness that challenge dominant oppressive characterizations, with the goal of greater self-determination”.

Social identities make people feel that they belong to national state groups like being British or European (Anderson, 1991; Risse, 2010). Political identities on the other hand define the particular differences of a political community and its borders; who is part of it and who isn’t (Borzel and Risse, 2018). Hence, identity politics could describe how the white, old, low income, uneducated, poor, male voters could have voted for Leave.

Indeed, the NatCen Social Research (Swales, 2016), using data from the British Social Attitudes, the British Election Study Internet Panel and Natcen’s Panel, equivalent to a sampling of approximately 40,000 UK voters, holds that “the Leave victory was not about objective demographics alone”. Those researchers found a strong link between Leave and national identity together with the “the sense of change over time”. Ashcroft and Bevir (2016) from the University of California at Berkeley maintain that Brexit was the result of an interaction between “culture, nationalism and citizenship”. Those scholars added that the rise of immigration, the authoritarian style of centralized power in Brussels and a problematic British welfare system, was the fertile ground for the Brexit identity to be born.

Further, Ashcroft and Bevir (2016) argue that the Leave campaign pictured the minorities in the UK to be setting their own benefit as priority against the country’s good. Thus, the British electorate was being called to resist this threatening multiculturalism. Moreover, the nationalist identity was mingled with diversity in the country’s national identity between the English, the
Scottish, the Welsh and the Northern Irish. “Englishness” was more intertwined with Euroscepticism than any voter in Scotland, Wales or Northern Ireland. What is more, Ashcroft and Bevir (2016) add that the Remainers, being younger, educated and high earners, didn’t feel threatened, whereas the UK citizens who struggled to make ends meet saw rising immigration as a big threat to welfare. Also, the Brexiteers shared the feeling that the British identity had been compromised by the EU through the bloc’s free movement of people. According to Borze and Risse (2018), the migration influx shaped identity politics by framing the Schengen crisis in the context of “it is us or them”. Overall, identity politics often masks as right populism and evokes to the electorate calls on national identities and identity appeals (Wodak, 2015).

However, despite the references to identity politics that explain the Brexit result question, there are scholars who maintain their reservations concerning the validity of that theory (Bernstein, 2005). Brubacker and Cooper (2000) stated that too many use the term identity politics but too few have empirical proof about it. Moreover, Lichterman (1999) names identity politics as a “slippery term”, whereas Bickford (1997) views identity politics mostly as an argument against political theories rather than a legit scientific space in political science. Not to omit that Fraser (1997) assimilates the word “identity politics” with the words feminism, anti-heterosexism and anti-racism. Besides, scholars have attributed various contradicting notions to identity politics: neo-Marxists use the term to make the segregation from class politics, new social movements segregate class-based movements from others, while postmodernism/post-structuralism regard identity politics as a political activism instead of cultural activism (Bernstein, 2005).

Bernstein (2005) after having thoroughly reviewed the domain of identity politics, concluded that the theory is more than anything else of descriptive nature rather than explanatory. Identity
politics was criticized by this scholar for making “axiomatic predictions” about a political outcome as a causal result of people belonging to specific status identities. Most importantly, scholars of identity politics make arbitrary and phenomenological assumptions and draw conclusions about causality between the status of identity restructuring and the political outcome, in lieu of thorough empirical analysis. As Bernstein (2005) puts it, the term “identity politics” obscures rather than clarifies. Having stressed on the predominantly descriptive nature of identity politics this PhD syllogism originally tried to go beyond the causal link between what appears true and logic concerning the identity of the Brexiteer through prospect theory (Kahneman and Tversky, 1979). However, the results of the first empirical chapter don’t allow the inference that prospect theory can be a stronger platform to explain EU referendum voting than identity politics.

Inspired by Wrong (2003) who holds that the roots of identity politics can be explored in psychology, this thesis attempted originally to discuss how prospect theory explains a plausible underlying reason that the Leave voter took the risk-seeking decision, instead of describing a demographic trend. Although the thesis didn’t bring consequential results on voter’s choice it could help understand specific trends of the electorate’s subgroups like for instance why the parents were placed in a domain of gains that endorsed risk-aversion (Remain) compared to the unmarried and the unemployed UK voters who sought for risks, since they had been placed in a domain of losses. Despite the partial and limited results of this PhD, future scholars may want to rediscover a possible contribution to identity politics by examining voting in EU referendums as a risky exercise accommodated by prospect theory through different settings and methodologies that can be more profitable than the empirical part regarding voter’s choice in this PhD.
8.7 The thesis’ limitations

Naturally, the limitations of this work are in line with the limitations that studies generally face both in survey and lab experiments. Although limitations in survey and lab experiments are frequent (Gaines, Kuklinski and Quirk, 2007), the complementarity between survey experiments and a lab experiment that this PhD design encompasses attempts to address some of these limitations constructively wherever possible.

8.7.1 The limitations of the thesis’ survey experiments

Duration effects

The first limitation of this research is intertwined with the nature of survey experiments. This methodological design that embraces three survey experiments is a repeated cross-sectional design. This means that it is “carried out at one point in time and over a short period” (Levin, 2006). Researchers infer that if in cross-sectional studies the treatment effect is of substantial impact, then “the treatment works in a politically significant way in the real world” (Gaines, Kuklinski and Quirk, 2007). However, there is a debate in the literature over the “duration” of the treatment effect in a survey experiment. Is it a few minutes, days or longer that a treatment lasts? Hovland and Weiss (1951) found that if the source is trustworthy for the respondent, then the treatment effect lasts longer than when the source isn’t important for the respondent. Moreover, it has been found that the treatment effect in a survey experiment may transform the original political behaviour of the respondent but this change doesn’t last for long (Luskin, Fishkin and Jowell,
2002). Druckman and Nelson (2003) even provided a figure for the treatment effect duration, which is 10 days. Similarly, the follow-up work of Mutz and Reeves (2005) showed that the effects lasted up to three weeks post their first survey experiment.

This thesis attempted to partially tackle this limitation based on its research design. First, there were 3 survey experiments conducted in 3 different points in time and all of them taking place in June 2016 before Britain’s EU referendum. These different survey experiments assessed UK citizens’ voting behaviour (choice and turnout). Since all of them assessed voting under risk and had similar research design, inspired by Quattrone and Tversky’s work (1986, 1988), it was anticipated that the duration of the treatment effect of prospect theory’s adaptation to politics was extended approximately to one month’s time approximately (time from the first survey experiment to the third one). Notwithstanding, the “duration effects” limitation is surely an important issue that all survey experiments generally face and thus it is anticipated that this limitation was still valid for the three survey experiments of this thesis.

One-shot treatment

The second limitation of this thesis, as it is generally the case in all survey experiments, refers to the “one-shot” nature of the treatment as well as the experiment. This means that scholars test a treatment in a cross-sectional survey within a representative sample at a certain point in time and then they infer that their findings are relevant to real world politics. Thus, survey experiments don’t have “continuity” and are rather instantaneous captures of treatments. Nevertheless, this
thesis, although using the method of survey experiments, it attempted to deviate from the one-shot treatment limitation. The “repeated” character of the 3 survey experiments in an approximately one month’s time period shows that the complete theory of this PhD was tested over time, rather than in a “one-shot” exercise. However, given the fact that this limitation affects all survey experiments it should still be considered as a limitation of the thesis’ three survey experiments.

**Mutual causation**

Gaines, Kuklinski and Quirk (2007) underscored that in survey experiments it can sometimes be misleading to focus only on one-way causality. Instead, cross-sectional studies should also allow to monitor more complex causal directions. As these scholars claim, the bridge to this potential limitation could be built by having “multiple treatments across time”. Indeed, this PhD is composed by a logistic regression design that fosters complex causal relations between independent and dependent variables. First of all, surely the $\beta_1$ parameter assessed whether the treatment effects (low reference/high reference, large ratio-difference/small ratio-difference, party supporters/non-aligned voters) had a direct impact on the dependent variable, which stood for the Yes (UK remains in EU)/No (Leave) answer or Yes (Turnout)/No (Abstention). Consequently, the one-way causal relationship was indeed hypothesized in the thesis.

However, the logistic regression models in the three survey experiments included a number of independent variables as control variables, like employment, marital status, parenthood etc. together with the heterogeneous treatment effects of demographics on the dependent variable.
Those independent variables, as said in the methods chapter, were anticipated to have a causal relationship with the dependent variable. For instance, as per previous scholarship relating risk tolerance to demographics, it was expected that the heterogeneous treatment effects of independent variables in the research models (marital status, employment, parenthood) were related to the treatment effect of prospect theory (independent variable $\beta_1$). As a result, one may say that the causal relationship of the variables in the thesis’ logistic regression models was more complex than a simple one-way direction of causality. Thus, the complexity of this research attempts to deviate from the one-way limitation “trap” reported by critics. Furthermore, this study not only reveals complex causal relations of the variables but also it moves towards addressing this limitation reported by Gaines, Kuklinski and Quirk (2007). Those scholars claimed that survey experiments in political science require “multiple treatments across time”. As a result, this PhD research given that it consists of 3 survey experiments and 3 treatments in a time frame of approximately one month is expected to address the mutual causation limitation to a certain extent.

8.7.2 The lab experiment’s limitations

Apart from the limitations of the survey experiments, there are also limitations concerning the thesis’ lab experiment. Despite the fact that the mere nature of lab experiments has been criticised by scholarship as sharing common and inevitable limitations and faults, the design of this study’s lab experiment benefiting from the methodological complementarity with survey experiments, intends to address the lab experiment’s limitations.
Lack of realism

Falk and Heckman (2009) sums up the literature’s reluctance to use laboratory evidence, which he witnessed during his review in the field of social sciences as a problem of “lack of realism”. Shadish, Cook, and Campbell (2002) referred to this matter as an issue of external validity, the question whether causality can surpass a specific dataset and the findings can be valid for variations in samples and settings. According to Morton and Williams (2006) at the Oxford Handbook of Political Methodology, and as discussed previously in this thesis, political scientists have been sceptical about the external validity of experimental data (Mercer, 2005). In particular, according to Morton and Williams (2006), a number of political scientists believe that in order to obtain external validity data needs to derive from a “natural” Data Generation Process (DGP). However, they also stress that it is a mistake to consider external validity as a condition of the existence of the natural DGP. Instead, external validity depends on whether the specific findings can be replicated in a range of datasets, either experimental or observational.

It is thus the latter point presented in the Oxford Handbook of Political Methodology, together with the importance of the complementarity between the lab and survey experiments (Falk and Heckman, 2009), which inspired this PhD candidate to deploy the empirical part of this research in two parts: three survey experiments and one lab experiment. The complementarity between the two methods has been intended to make it possible to test the external validity of the PhD’s theory in a survey and a lab environment. Besides, the mere nature of survey experiments allows to produce large representative data sets whereas the lab experiment provides the right setting for a better control and greater freedom of manipulation in the experimental design. Coming back to the
limitation of the “lack of realism” in the lab experiment, one may consider that the influential contribution of experimental methods in answering political science questions is getting more and more recognized (e.g. Druckman et al., 2006). This PhD candidate argues that lab experiments in political science don’t necessarily suffer from a “lack of realism”. Instead, and especially in synergetic research constructs like the current thesis, they can fruitfully complement other methodological options like surveys experiments.

Selection bias

One of the common questions in a lab experiment is usually whether the participants who are self-selected in the task are representative of the population (external validity), or else whether participants are randomly selected. While internal validity may be ensured by randomly assigning participants to treatments, external validity is subject to the selection bias, which describes the case where the specific sample of subject answers differently to the question compared to non-participants. There are a number of approaches in literature tackling this matter.

On the one hand, the first approach is to assess whether the experimental results of a lab experiment within a sample can be generalised in diverse lab populations. Previous studies have followed this approach by checking the generalizability of the results in populations that differed in terms of occupation, age or nationality (Cleave, Nikiforakis and Slonim, 2010). In the thesis’ lab experiment though this approach wasn’t deployed to overcome the selection bias, because in the methods chapter it was clearly stated that the lab experiment was conducted within a convenience sample. The reasons for that is simply because it was convenience samples that were used by Quattrone and Tversky (1986, 1988). In addition, the scholarship’s second approach to
tackle the selection bias examines whether the recruitment process of the subjects is able to affect the results’ external validity. This mainly refers to the remuneration fee that the participants receive at the end of the experimental task, communicated beforehand to subjects. Scholarship’s third approach to address the selection bias is to segregate the participants in the experiment and estimate what specific characteristics (e.g. demographics) predict that they would participate in a follow-up experiment.

In particular, it needs to be noted that since the lab experiment’s research was conducted through a convenience sample of university students and staff, as it was the case for Quattrone and Tversky’s (1986, 1988) work, the selection bias is not considered to be a crucial limitation for this thesis. Naturally, all lab experiment studies suffer from the limitation of the selection bias. Besides, the discussion of the results in the first empirical chapter has taken into serious consideration this limitation when elaborating with details on the substantive interpretation of the lab experiment’s H1 result in lieu of its non-conventional statistical significance (p<.1).

*Experience of subjects*

According to Falk and Heckman (2009), another possible limitation of lab experiments refers to the experience of the subjects partaking in the study. This experience might refer to the extent of previous participation in lab experiments or the experience in the particular nature of the questions asked, which in this case is voting and especially voting in EU referendums. According to Falk and Heckman (2009), it should be expected that people with more experience are able to learn more easily and adapt more effectively to the experimental process. Nonetheless, as the lab
Experiment’s subjects in this thesis were mostly undergraduate and graduate students of King’s College London, the age range of the subjects didn’t vary considerably. Hence, since the last EU referendum took place in the UK in 1975, it was unlikely that many subjects had experience in voting in the context of EU referendums. Consequently, it was anticipated that the subjects in the thesis’ lab experiment had limited voting experience and thus Falk and Heckman’s (2009) “subjects’ experience” limitation shouldn’t have substantially affected the result discussed in the first empirical chapter of the thesis.

The Hawthorne effect

The Hawthorne effect was revealed during a series of experiments in the Western Electrical Company Hawthorne Works at the beginning of last century in Chicago (Mayo, 1933; Roethlisberger and Dickson, 1939). The aim of those experiments was to assess the effect of the social context on workers’ productivity. The research showed that workers’ productivity scored higher when they felt that they were being observed than when they didn’t. This was explained according to sociologist Mayo (1933) based on the social need of people to discuss about the changes at work and life.

It was thus anticipated that the Hawthorne effect was present also in the lab experiment of this PhD, since the subjects were evidently able to understand that inside the computer lab other people were taking the same experimental task too. This research attempted to tackle this limitation though by informing all subjects before the experimental task that their answers would be recorded.
in full anonymity, as code numbers and not names. This methodological approach might have reduced the Hawthorne effect limitation in the PhD’s lab experiment, although not fully alleviating it.

All in all, every research is bound to have methodological limitations, as it was the case with this thesis’ survey and lab experiments. It was important to outline them though in this section in order for scholars to further improve this research in the future.

8.8 Future research

As previously said, this PhD’s overarching scope was initially to contribute to scholarship with findings that might point towards the introduction of an alternative EU referendum school based on prospect theory. Given the aforementioned limitations however, there might be some space for future scholarship to contribute to this research. This may be achieved by taking two future research pathways reflecting on the two theoretical axes of this PhD thesis: a) testing voting behaviour under prospect theory in comparison with other EU referendum perspectives and b) by testing the validity of the findings of the reference point, ratio-difference principle and voter’s illusion in other EU referendums and polities.
8.8.1 Testing voting behaviour under prospect theory in comparison with other EU referendum perspectives

The scope of this PhD was clearly to assess whether Quattrone and Tversky’s (1986, 1988) initial adaptation of prospect theory to voting behaviour can expand beyond its original confined lab environment by accommodating voter’s behaviour in EU referendums. As said previously, the lab origin of prospect theory was cited to be its biggest flaw. Thus, the research design of this PhD was based on the first adaptation of prospect theory to voting behaviour (Quattrone and Tversky, 1986, 1988) and applied to survey experiments in cooperation with Ipsos Mori UK through representative samples of the UK population. Therefore, the partially confirmed results of the first and second empirical chapter showed a few traces of verification for the thesis’ theory and the importance of prospect theory in EU referendum voting, while the importance of the null results were also previously discussed. Moreover, it was discussed in detail in the second chapter as well as the empirical chapters how prospect theory intended to speak to other EU referendum theories like substantive issues, EU referendum campaigns and identity politics. What this thesis didn’t do though, because it hadn’t been its research scope in the first place, was to present empirical data on the comparison of prospect theory with the other EU referendum schools and examine which school or combination of schools fits best voter’s behaviour in EU referendums.

Consequently, this thesis encourages future scholars to expand the work of this PhD by incorporating EU referendum voting designs that will enable a comparison between prospect theory (i.e. reference point, ratio-difference, voter’s illusion) and the other EU referendum schools. This requires more complex research designs with multiple frames to account for prospect theory,
substantive issues, second-order, utilitarian expectations, EU referendum campaigns, issue-taking and institutional design. In addition, to contemplate prospect theory’s main issue of its lab origin and limited external validity, future scholars are encouraged to step on this thesis’ research design with survey experiments and representative samples of the electorate. Thus, future work can apply this comparative technique for Britain’s EU referendum as well as other EU referendums through survey experiments.

It is also suggested that this comparative syllogism is incorporated through different variations and various survey waves in order to be able to accommodate all other EU referendum schools as well as different points in time either before or after an EU referendum. Nevertheless, it is aspired that this PhD through its use of survey experiments might inspire future scholars to apply this technique to cast light on the comparison of prospect theory with the other EU referendum theories. Given the interrelation of the EU referendum schools, which was discussed in the literature review chapter, it is likely that a complex comparative design of this kind will suggest a hybrid mixed model that uses different theoretical pieces of the EU referendum voting puzzle to better accommodate voter’s behaviour. If this is developed further by various scholars, then it would be interesting to explore its application to EU referendums of various EU member states in sought for a needed “universal” theoretical model of EU referendum voting.
8.8.2 Testing voting behaviour under prospect theory in other polities

EU referendums are frequently taking place among EU member states. Since the first 1972 referendum on European integration in France, around fifty EU related referendums have been conducted (Beach, 2018). Thus, despite the thesis’ partially confirmed results, one may logically assume that more EU referendums in the future could serve as the right research environment to test this thesis’ prospect theory viewpoint of EU referendum voting. Hence, the referendum vote could be further examined as a decision under risk between prospects, leading to a risk-averse vote (e.g. status quo vote) or a risk-seeking one (e.g. “ever closer union”).

Whether a new EU referendum takes place in the UK in the near future or not, research might be interested in testing the thesis’ approach in the context of upcoming EU referendums in other member states. This PhD assessed the validity of the initial attempt to apply prospect theory to politics, which had been made by Quattrone and Tversky (1986, 1988). The thesis supports that, in order to attempt to bring prospect theory closer to future political science, scholars may need to embrace the method of survey experiments in order to enhance the external validity of the lab-rooted prospect theory. By following this methodological pathway a main issue of prospect theory’s critique discussed in the thesis’ introduction can be addressed. For instance, testing the validity of the reference point in representative samples of European electorates is an approach that might show whether the French or other EU citizens vote in the EU referendum based on the position of the reference point (e.g. EU’s economy) in relation to the position of their own country. By doing so, future scholars may modify and localize the frames used in this PhD, in order to establish a risky decision environment that might be accommodated by a prospect theory model in
another European country. Hence, in the case of the reference point in the next EU referendum the reference might be related to trade, immigration, healthcare, Euroscepticism etc. in lieu of the issue of the economy used in this PhD, due to the prominence it had in the agenda of the Brexit referendum (Curtice, 2017).

In addition, this thesis didn’t succeed in yielding results in the first empirical chapter about the effect of Quattrone and Tversky’s (1988) ratio-difference principle on the UK’s vote to leave the EU. However, in the upcoming EU referendums researchers may be able to re-assess the validity of the ratio-difference principle for other electorates, since it is based on a meaningful challenge of expected utility theory concerning its flawed “frame invariance” axiom (Quattrone and Tversky, 1988). Naturally, this PhD candidate encourages future scholars to test the ratio-difference principle, or else the non-validity of frame invariance by altering the frame, from the issue of unemployment which was used in this thesis to other frames like gender equality or LGBTQI+ rights.

Apart from focusing on voter’s choice in EU referendums, future research is also suggested to further investigate the turnout decision leading to voter’s illusion. It needs to be reiterated that this PhD thesis in its second empirical chapter confirmed within a representative sample of the British electorate that the UK voter fell for voter’s illusion on 23 June 2016. This means that the voter in Britain, having remained undecided moments before the referendum, saw her vote as more “diagnostic of millions of others” and thus turned out when informed that the undecided voters would shape the referendum’s result. The statistically significant result (p<.05) that this thesis discovered in the third survey experiment constitutes a challenge to Downs’ (1957) rational voter
model, as Quattrone and Tversky (1986) had claimed. It also calls for further research by political scientists focusing on the next EU referendums to come. Do the Italian or Spanish fall for voter’s illusion as well? If so, do they regard their vote as “diagnostic of millions of others” when informed about the turnout behaviour of undecided voters?

This PhD emphasized on the role of undecided voters in voter’s illusion because of the prevalence of undecided voters in the electorate mix days before the Brexit referendum, amounting to millions of people (Fenner, Leven and Loizou, 2018; Howard and Kollanyi, 2016; Vasilopoulou, 2016). Another reason for doing so was the acknowledged reduced impact of partisanship (Swales, 2016; Vasilopoulou, 2016; Birch, 2016) on the Leave outcome. However, Quattrone and Tversky’s (1986) original work on voter’s illusion had originally relied on the frame of partisanship as enabler of turnout and not on voters’ indecisiveness. Consequently, future scholars are invited to re-assess whether it is information about the undecided voters or fellow partisans that leads someone to see her vote as diagnostic of millions of others and thus go massively to the polling station. Naturally, pertinent modifications and localizations of the frames used in the second empirical chapter are deemed necessary for the adaptation of this research construct in an EU referendum in Finland or Croatia. Overall, the thesis’ voter’s illusion finding, while it is a sound challenge against voter’s rational model, may be able to advance further the importance of the undecided and partisan voter in EU referendums.

Consequently, the findings of this PhD showed partial evidence that the British voter didn’t make a rational decision (as expected utility theory entails) in the 2016 referendum neither regarding her choice nor turnout. Instead, she was risk-seeking (leave) or risk-averse (remain)
depending on the position of the reference point and she also fell for voter’s illusion by paradoxically thinking that her single vote can determine the referendum’s outcome. One may ask however: is the work of Quattrone and Tversky (1986, 1988) a one way road to assess the applicability of prospect theory to EU referendum voting? Given the fact that prospect theory hasn’t been consistently applied yet to explain EU referendum behaviour, as stressed in the literature review, this PhD considered as purposeful to start from the first empirical attempt (Quattrone and Tversky, 1986, 1988) that adapted prospect theory to voting behaviour. Hence, Quattrone and Tversky’s research was used as a solid basis to build the thesis’ theoretical approach and expand their work further through modifications and adaptations to the real political event of the EU referendum and most of all by evading from the theory’s original lab experiment roots.

Notwithstanding, future research may elaborate on the theoretical approach of explaining EU referendum voting through the prism of prospect theory by looking at the roots of the theory per se (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981, 1992). For example, Tversky and Kahneman (1981) stressed two more important paradoxes to the expected utility theory, the reflection effect and probability weighting. The former refers to the defining power of framing as gains and losses while the latter to the fact that people don’t weigh probabilities in a linear way. Thus, despite its partial results this thesis encourages future scholars to aim at developing a comprehensive and parsimonious theoretical model of EU referendum voting tested through diverse EU member states. The latter approach may contribute to EU referendum scholarship.

Another question that may be raised while reading this thesis is whether the theoretical approach of this research can be extended beyond EU referendum voting to voting behaviour in general.
Although this PhD was originally built to solely address an aforementioned gap in EU referendum scholarship, it may generally benefit the broader field of voting behaviour as well. Already in the literature review it was underscored that there is existing but scarce literature explaining voting behaviour under prospect theory, like generally turnout (Peterson and Lawson, 1989) or turnout in the US midterm elections (Patty, 2006), the US presidential campaigns (O’Connell, 2011) or voter’s choice under uncertainty (McDermott, 1998; Stroh and Moskowitz, 1992). Naturally, the literature review leads to the inference that prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) may be explanatory for political events that entail binary voting behaviour as it is the case in this thesis studying EU referendum voting (Yes, No). Hence, the US Presidential elections may be another fruitful environment to apply prospect theory to explain voting behaviour. For example, the 2016 US Presidential elections where the American electorate was called to vote either for Donald Trump (risk-seeking option with limited political experience) or Hillary Clinton (risk-averse option/experienced candidate as she used to be the former Secretary of State) might have also been a fruitful case study for the value of prospect theory in voting behaviour overall. What is more, the 2020 mid-term elections in the US may have been another momentum to study voting behaviour through prospect theory. Consequently, reproducing and adapting the research syllogism of this thesis to other election events might contribute to a broader test of the validity of this PhD’s syllogism. In addition, expect for the US, other polities may also be a fertile ground for accommodating voting behaviour under prospect theory and for this reason it may be purposeful that future scholars explore the adjustability of this thesis’ research syllogism to diverse political contexts.
As a final conclusion, this thesis attempted to bring closer prospect theory to political science by suggesting a new theoretical model of explaining EU referendum voting, although it is true that it only partially succeeded to do so and mostly for turnout. It might be that the key takeaways from this thesis are further developed by future scholars and ultimately move towards an alternative school of EU referendum voting, mainly next to the school of utilitarian expectations but also in conjunction with the other EU referendum schools too. As stipulated in the literature review, there is limited research proposing an alternative way to view voting behaviour in EU referendums through prospect theory. Therefore, despite the thesis’ partial results, future research may locate some fertile ground to further develop the thesis’ theoretical and empirical angle of voting behaviour in EU referendums as well as voting behaviour overall. It is also suggested that the validity of prospect theory in EU referendums needs to be explored together with other EU referendum viewpoints like EU referendum campaigns, identity politics and substantive issues.

8.9 Conclusion

The discussion chapter consisted of nine sections. First, the chapter started with its introduction. Second, it continued with its key findings referring both to the confirmed and null results. Third, the chapter discussed how the thesis’ results can speak to other EU referendum perspectives. Fourth, the chapter outlined a criticism of the PhD’s theory. Fifth, it was described how the PhD aspired to contribute to political science and where it failed to do so. Sixth, the chapter discussed identity politics and how prospect theory was originally envisaged as another perspective to
contribute to it. Seventh, the limitations of the thesis’ survey experiments as well as its lab experiment were presented. Eighth, directions for future research were provided inspired by the thesis’ theory and results. The chapter concluded with this conclusion section.

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APPENDICES

APPENDIX A: Robustness tests for the first survey experiment testing the reference point

The main effects model of the first survey experiment together with scholarship explaining the EU referendum’s result on specific demographics guided this research to conduct three robustness tests in order to assess whether the reference point’s result for the unmarried, the unemployed and parents could be alternatively explained by existing scholarship about the role of demographics in Brexit. First, it was stipulated in the first empirical chapter that the variable of education has been a “universal” finding of scholars studying the Leave result of 23 June 2016 (Hobolt, 2016; Kaufmann, 2016; Ludolph and Barslund, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Hobolt, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2018; Antonucci, Horvarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017). Particularly, aforementioned literature agrees that voters of high education voted for Remain in the referendum whereas voters of low education voted for Leave. Hence, the first robustness test of the reference point’s result in the first survey experiment reflects on whether the effect of education can provide an alternative explanation to prospect theory’s reference point found in the first empirical chapter.

Aligned with the statistical analysis performed in the first empirical chapter to test the reference point results, a new binary logistic regression was run with the variables of education and the reference point frame as main effects, together with their interaction.
Table A.1 shows that the main effect of education on the referendum vote is statistically significant (p<.001) in line with past scholarship. However, the interaction of education with the reference point is not statistically significant. As a result, this robustness test cannot lead to the inference that the reference point effect can be attributed to the prevalent effect of education on the leave result. Hence, the originality of the thesis is corroborated as regards the reference point,
linking it solely to the demographics of marital status, parenthood and employment, for the reasons described previously in the chapter.

Another robustness test for the reference point finding is related to the demographic of ethnicity, which has also been widely cited in the scholarship about Britain’s EU referendum (e.g. Goodwin and Heath, 2017; Devine and Sensier, 2017; Hozic and True, 2017; Clarke and Newman, 2017). In fact, existing literature claims that the UK voters of white ethnicity voted more for Leave than voters of other ethnical background. Hence, a robustness test was conducted in order to check whether the reference point result of the first survey experiment can be accommodated by the ethnicity’s effect on the Leave result.

Thus, a binary logistic regression was also run with the variables of ethnicity and the reference point condition as main effects together with their interaction.
Table A.2: Logistic regression model for the 2nd robustness test of the 1st survey experiment.

<table>
<thead>
<tr>
<th>Model 2: Robustness test for the variable of ethnicity</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.062 (.106)</td>
</tr>
<tr>
<td>Reference point (Low reference)</td>
<td></td>
</tr>
<tr>
<td>High reference</td>
<td>-.123 (.146)</td>
</tr>
<tr>
<td>Ethnicity (White)</td>
<td></td>
</tr>
<tr>
<td>Non-white</td>
<td>-.998 (.293)**</td>
</tr>
<tr>
<td>Ethnicity*Reference point</td>
<td>.415 (.416)</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>.014</td>
</tr>
<tr>
<td>N</td>
<td>882</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.
**Significant positive/negative relationship, p<.01.
***Significant positive/negative relationship, p<.001.

While ethnicity is statistically significant (p<.01), the interaction between ethnicity and reference point isn’t. Hence, one may infer that the demographic of ethnicity cannot account for prospect theory’s reference point effect on the referendum vote. The latter contributes to the interpretation provided for the reference point’s effect on the referendum vote.
What is more, the last robustness test of the reference point’s results in the first survey experiment relates to another established demographic in the UK referendum literature, age. According to scholars, Britain’s elderly voted more for Leave than the youth who voted for Remain (e.g. Goodwin and Heath, 2016; Hobolt, 2016). In order to assess the age factor on the reference point another logistic regression model was designed with the main effects of age, the reference point and their interaction.
**Table A.3**: Logistic regression model for the 3rd robustness test of the thesis’ 1st survey experiment.

<table>
<thead>
<tr>
<th>Model 3: Robustness test for the variable of age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coef./S.E.</strong></td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
</tr>
<tr>
<td>-.766 (.210)</td>
</tr>
<tr>
<td><strong>Reference point</strong> (Low reference)</td>
</tr>
<tr>
<td>High reference</td>
</tr>
<tr>
<td>.161 (.278)</td>
</tr>
<tr>
<td>Age (18-34)</td>
</tr>
<tr>
<td>35-64</td>
</tr>
<tr>
<td>.347 (.278)</td>
</tr>
<tr>
<td>55-64</td>
</tr>
<tr>
<td><strong>1.251 (.308)</strong>***</td>
</tr>
<tr>
<td>65+</td>
</tr>
<tr>
<td>.748 (.243)***</td>
</tr>
<tr>
<td>Age*Reference point</td>
</tr>
<tr>
<td>(35-54) * (High Reference)</td>
</tr>
<tr>
<td>-.054 (.379)</td>
</tr>
<tr>
<td>(55-64) * (High Reference)</td>
</tr>
<tr>
<td><strong>-.905 (.424)</strong>*</td>
</tr>
<tr>
<td>(65+) * (High Reference)</td>
</tr>
<tr>
<td>.000 (.381)</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
</tr>
<tr>
<td>.023</td>
</tr>
<tr>
<td><strong>N</strong></td>
</tr>
<tr>
<td>884</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.

While the above table reaffirms the importance of the main effect of age on the leave vote, showing that Britain’s elderly voted more for Leave than the youth, the heterogeneous treatment
effect of age on the reference point’s impact on the Leave vote shows something new. In particular, the negative coefficient age*reference point yields statistically significant results (p<.05) only for the age cluster of 55-64, which cannot be explained by pertinent literature about the age factor on the referendum vote (e.g. Goodwin and Heath, 2016; Hobolt, 2016). The reason is that the coefficient is negative and not positive like the one of the main effect of age. Thus, the result demonstrates that voters aged between 55-64 in the high reference frame, where the EU grows more than the UK and thus the voter should be positioned in a domain of losses according to prospect theory (Kahneman and Tversky, 1979), take the risky decision (Leave). On the contrary, this robustness test’s result shows that this particular age cluster in the high reference position is risk-averse and votes for Remain. Given that the latter cannot be accommodated by literature’s consent that the elderly voted more for leave, this robustness test strengthens the thesis’ syllogism about the effect of prospect theory’s reference point on the referendum vote. Instead, pertinent risk literature holds that the domain of losses exerts less influence on older decision-makers compared to youth (Mikels and Reed, 2009; Samanez-Larkin et al., 2007). Given the robustness test’s result, this means that those belonging to the segment of 55-64 aren’t influenced by the domain of losses that the high reference point by default establishes. Hence, this age cluster votes more for remain in the high reference frame compared to young voters. As a result, the fact that the age result of this robustness test can be still explained through the thesis’ prospect theory syllogism strengthens the reference point results that were discussed in the first survey experiment.

All in all, three robustness tests were conducted for the first empirical chapter’s statistically significant main effects of education, age and ethnicity, for which Brexit scholars agree about their consequential impact on Leave. Nevertheless, the above robustness tests found that these important explanatory variables of the EU referendum are either not relevant (education, ethnicity) to the
thesis’ prospect theory standpoint of the reference point’s effect or they affect the thesis’ treatment effect in a different way (age), which could be linked to risk-taking literature. In the literature review it was analysed how risk scholarship guided the conception of the PhD’s syllogism. Consequently, since the above robustness tests didn’t yield an alternative explanation of the reference point’s results in the first empirical chapter, they are considered to solidify the confirmations of the heterogeneous treatment effects in the first empirical chapter.

Subsequently, the next appendix, which also focuses on the thesis’ theory to explain voter’s choice in Britain’s EU referendum, discusses the robustness tests of the second survey experiment which tested Quattrone and Tversky’s (1988) ratio-difference principle as a voting behaviour paradox that expected utility theory cannot explain.

**APPENDIX B: Robustness tests for the ratio-difference principle in the second survey experiment**

Similarly to the reference point’s results and given the main effects model of the second survey experiment, together with scholarship explaining the EU referendum’s result based on specific demographics, led this research to conduct a few robustness tests in order to assess whether the ratio-difference principle could be alternatively accommodated by the well established in the Brexit referendum scholarship demographics of education, ethnicity and age. As it was stated in the first empirical chapter, literature agrees that the voters who had a high education voted for Remain in the referendum whereas voters of low education voted for Leave (e.g. Hobolt, 2016; Melkumian, 2018; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016;
Sayer, 2017). Hence, the first robustness test of the ratio-difference principle in the second survey experiment reflects on whether the effect of education may explain the ratio-difference principle instead.

A binary logistic regression was run with the variables of education and the ratio-difference principle condition as main effect as well as their interaction.
Table B.1: Logistic regression model for the 1st robustness test of the 2nd survey experiment.

<table>
<thead>
<tr>
<th>Model 1: Robustness test for the variable of education</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.108 (.109)</td>
</tr>
<tr>
<td><strong>Ratio-difference</strong> (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.013 (.157)</td>
</tr>
<tr>
<td><strong>Education</strong> (Poor)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td><strong>-.932 (.222)</strong>*</td>
</tr>
<tr>
<td><strong>Education*Ratio-difference principle</strong></td>
<td>.312 (.308)</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.022</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>924</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.

Despite maintaining the “universal” significance (p<.001) of education in scholarship as well as throughout other voter’s choice models in this thesis, the above table shows that the interaction of education with the ratio-difference principle isn’t statistically significant. The latter
demonstrates that education didn’t have an important effect on the ratio-difference principle. As a result, next to the non-statistically significant results of the heterogeneous treatment effects of the marital status, employment and parenthood on the ratio-difference principle this robustness test shows that Quattrone and Tversky’s (1988) ratio-difference principle cannot accommodate the EU referendum vote either.

Another robustness test for the ratio-difference principle finding is related to the demographic of ethnicity, which has also been cited in the literature on the Brexit referendum (e.g. Goodwin and Heath, 2016; Devine and Sensier, 2017; Hozic and True, 2017; Clarke and Newman, 2017). Existing literature claims that the UK voters of white ethnicity voted more for Leave than voters of other ethnical background. Hence, a robustness test was conducted in order to check whether the ratio-difference principle in the second survey experiment can be accommodated by ethnicity’s effect on the Leave result.

Thus, a binary logistic regression was run with the variables of ethnicity and the ratio-difference condition as main effect as well as their interaction.
Table B.2: Logistic regression model for the 2nd robustness test of the 2nd survey experiment.

<table>
<thead>
<tr>
<th>Model 2: Robustness test for the variable of ethnicity</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>-.239 (.099)*</td>
</tr>
<tr>
<td><strong>Ratio-difference</strong> (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.074 (.141)</td>
</tr>
<tr>
<td><strong>Ethnicity (White)</strong></td>
<td></td>
</tr>
<tr>
<td>Non-white</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity*Ratio-difference</strong></td>
<td>-1.066 (.328)**</td>
</tr>
<tr>
<td><strong>Ethnicity*Ratio-difference</strong></td>
<td>.035 (.466)</td>
</tr>
<tr>
<td><strong>Pseudo R²</strong></td>
<td>.018</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>929</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.
**Significant positive/negative relationship, p<.01.
***Significant positive/negative relationship, p<.001.

While ethnicity is statistically significant (p<.01), the interaction between ethnicity and ratio-difference principle isn’t. Hence, one may infer that the demographic of ethnicity cannot account either for the ratio-difference principle’s effect on the referendum vote. The latter contributes to the interpretation provided in the first empirical chapter, which underlined the ratio-difference principle’s negligible effect on the referendum vote.
Finally, the last robustness test for the ratio-difference principle, similarly to the first survey experiment, referred to the demographic of age, which was found in the main effects model of the second survey experiment to have a statistically significant effect on the referendum vote. According to previously cited literature, the older segments of the UK electorate voted for Leave while the youth for remain (e.g. Goodwin and Heath, 2016; Hobolt, 2016). Thus, the subsequent robustness test assesses whether the age factor of the EU referendum vote may provide an alternative explanation to the ratio-difference principle assumption.

Another binary logistic regression was thus run with the variables of age and the ratio-difference frame as main effect as well as their interaction.
Table B.3: Logistic regression model for the 3rd robustness test of the 2nd survey experiment.

<table>
<thead>
<tr>
<th>Model 3: Robustness test for the variable of age</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-1.149 (.202)***</td>
</tr>
<tr>
<td>Ratio-difference (Unemployment)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>.109 (.296)</td>
</tr>
<tr>
<td>Age (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-64</td>
<td>.815 (.265)**</td>
</tr>
<tr>
<td>55-64</td>
<td>.986 (.309)**</td>
</tr>
<tr>
<td>65+</td>
<td>1.354 (.270)***</td>
</tr>
<tr>
<td>Age*Ratio-difference</td>
<td></td>
</tr>
<tr>
<td>(35-54) * (Employment)</td>
<td>-.044 (.380)</td>
</tr>
<tr>
<td>(55-64) * (Employment)</td>
<td>-.198 (.439)</td>
</tr>
<tr>
<td>(65+) * (Employment)</td>
<td>.032 (.393)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.042</td>
</tr>
<tr>
<td>N</td>
<td>930</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.
**Significant positive/negative relationship, p<.01.
***Significant positive/negative relationship, p<.001.

Although the above reaffirms the main effect of age in the referendum’s outcome, the heterogeneous treatment effect of age on the ratio-difference treatment doesn’t yield statistically
significant results. Consequently, age can’t provide either an alternative way to test the ratio-difference principle’s impact on the referendum vote.

All in all, as it was the case in the reference point result of the first survey experiment, three robustness tests were conducted for the ratio-difference principle in the second survey experiment, in order to investigate if there is an alternative way to look at the ratio-difference result in lieu of the thesis’ hypothesized heterogeneous treatment effects of the marital status, parenthood and employment, which in the first empirical chapter remained unconfirmed. The demographics of age, education and ethnicity, which were statistically significant in the main effects models of the second survey experiment, cannot contribute either to the ratio-difference principle assumption of the thesis. All in all, the fact that none of the ratio-difference principle hypotheses were confirmed in the second survey experiment combined with the above robustness tests which aren’t statistically significant strengthen the conclusion stipulated in the first empirical chapter that Quattrone and Tversky’s (1988) ratio-difference principle cannot explain voter’s choice in Britain’s EU referendum in general. In that chapter it was discussed that future research could revisit the ratio-difference principle in EU referendum voting by examining the “ratio-difference impact” of different frames to the unemployment one used in the second survey experiment. For example, future scholars could present the prospect theory’s prospects in the form of the effect of other frames e.g. immigration or the NHS argument on the referendum vote by attributing to them different ratios aligned with Quattrone and Tversky’s (1988) work. Notwithstanding, it is deemed important that this robustness test confirms that the unemployment frame didn’t work for the test of the ratio-difference principle. Hence, scholarship can focus on more impactful referendum frames instead.
APPENDIX C: Robustness tests for voter’s illusion in the 3rd survey experiment

Controlling for the undecided voters

A pertinent robustness test about turnout focuses on the content of the frames in the third survey experiment which brought to light results that confirm Quattrone and Tversky’s (1986) voter’s illusion in a representative sample of the UK population. The results of the subsequent robustness test corroborate the interpretation of the voter’s illusion result.

As said in the second empirical chapter, on the one hand a frame informed half of the sample that the followers of Vote Leave and Vote Remain campaigns were equally split and that the undecided voters would shape the referendum’s outcome. On the other hand, the other frame informed that it is the campaign followers who would determine the ballot’s result and not the undecided voter. According to H4, which was confirmed in that chapter, the “undecided voters” frame results in one’s single vote being perceived to be more diagnostic of millions of other votes compared to the “campaign followers’” frame. The syllogism behind this hypothesis was based on the fact that millions of UK voters remained undecided (Fenner, Leven and Loizou, 2017; Howard and Kollanyi, 2016; Vasilopoulou, 2016) prior to the referendum’s ballots. Consequently, a purposeful robustness test assesses here how the voters of this representative sample of the UK population who answered that they remained undecided about their vote intent (“Don’t know”) were influenced by the frames of the undecided and Leave/Remain campaign followers respectively. In fact, it was logically anticipated that had the previously explained interpretation of H4’s result been robust, the undecided voters’ frame should have influenced more the voters to confess their indecisiveness (“Don’t Know”) than the partisan frame.
In order to perform the above robustness check a Chi-square test was run between the categorical variable of the turnout intent in Britain’s EU referendum (Vote, Abstain, Don’t Know) and the categorical variable of the frame (Undecided, Partisan). To be noted that previously in the second empirical chapter the “Don’t Know” answers were treated as missing values in order to strategically assimilate to the binary nature of Quattrone and Tversky’s (1986) lab design of voter’s illusion. The latter was discussed in the methods chapter too.

**Table C.1:** Distribution of frequencies between the three options of the categorical dependent variable of referendum’s turnout intent in the thesis’ third survey experiment.

<table>
<thead>
<tr>
<th>Turnout intent in the EU referendum</th>
<th>“Campaign Followers” Frame</th>
<th>“Undecided voters” frame</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, I would vote at the EU referendum</td>
<td>365</td>
<td>409</td>
<td>774</td>
</tr>
<tr>
<td>No, I would not vote at the EU referendum</td>
<td>100</td>
<td>74</td>
<td>174</td>
</tr>
<tr>
<td>Don’t know</td>
<td>15</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>480</strong></td>
<td><strong>503</strong></td>
<td><strong>983</strong></td>
</tr>
</tbody>
</table>
Table C.2.: The results of the Chi-Square test between the categorical variables of turnout intent and voter’s illusion framing.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymptotic Significance (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>6.566*</td>
<td>2</td>
<td>.038</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>6.581</td>
<td>2</td>
<td>.037</td>
</tr>
<tr>
<td>Linear-by-linear Association</td>
<td>1.859</td>
<td>1</td>
<td>.173</td>
</tr>
</tbody>
</table>

N of valid cases 983

*0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.09.

Apart from reaffirming H4 (p<.05), the above tables show that the undecided voters frame results in more voters (N=20) answering “Don’t Know” to the research question in this survey experiment compared to the campaign followers frame (15). This shows that the undecided voters’ frame has a bigger effect on the indecisiveness of the voters than the campaign followers’ frame. The latter demonstrates that when the electorate is informed that undecided voters will shape the referendum’s outcome they have more chances in identifying themselves with those undecided voters and answer to the turnout intent question that they remain undecided themselves regarding their turnout decision. Overall, this statistically significant robustness test (p<.05) strengthens the interpretation of the voter’s illusion result in the second empirical chapter, which showed that voters behave paradoxically to the rational voter model (Downs, 1957). As a result, when informed that undecided voters shape the referendum’s outcome they consider their single vote as diagnostic of millions of others. The below bar chart depicts visually next to the above table the voter’s
illusion paradox as well as the greater effect of the undecided frame on leading the voters to the undecided/don’t know answer.

**Figure C.1:** Descriptive results of the dependent variable by the voter’s illusion frame.

Nevertheless, it is important to be stressed that this robustness test confirming the power of the undecided frame to lead voters to “indecisiveness” reflects on a limited number of cases who answered “Don’t Know” in the third survey experiment. Only 35 or 3.55% out of a total of 983 valid cases in this representative sample of the UK population through this survey experiment answered that the “undecided voters frame” makes them feel undecided regarding their turnout decision. Hence, given the limited number of cases one may infer that the difference of 5 voters presented in table C1 is not hard to challenge. Notwithstanding, the statistically significant result
(p<.05) of the Chi-Square test (table C.2.), does follow logically the confirmed direction of the effect of the undecided frame on voter’s indecisiveness. Consequently, in spite of the limitations in the number of cases of the undecided voters, this robustness test could still strengthen substantively the voter’s illusion result which stemmed from H4’s interpretation. The latter was interpreted in the second empirical chapter by claiming that the British voter remained undecided prior to the EU referendum and thus fell for voter’s illusion identifying himself with the voting behaviour of the undecided. As a result, she considered his one vote as diagnostic of millions of others.

*Education’s effect on voter’s illusion*

The first empirical chapter on voter’s choice in the EU referendum incorporated robustness tests (Appendix A & B) for the variables that had shown statistically significant main effects. It did so in sought for alternative explanations to the thesis’ findings. Similar robustness tests were conducted for the voter’s illusion result of the second empirical chapter, reflecting on the two main effects that were found to have statistically significant power in the main effects model of that chapter, education and age.

A robustness test refers to the variable of education. As previously discussed, turnout scholarship maintains that in general highly educated voters turn out more than poorly educated (e.g. Merriam and Gosnell, 1924; Katosh and Traugott, 1981; Wolfinger, Rosenstone and Rosenstone, 1980; Hogan, 1999; Verba and Nie, 1972; Converse, 1972; Franklin, 2004; Powell, 1986). Considering the latter together with the statistically significant main effect of education on referendum’s turnout in the second empirical chapter led this thesis to conduct a robustness test
for the variable of education in order to assess whether it can contribute to an alternative explanation of voter’s illusion to the one provided through H4.

Thus, a binary logistic regression model was built with the main effects of the voter’s illusion treatment, education and their interaction as independent variables and the voters’ turnout intent as dependent variable.

**Table C.3:** Logistic regression model for the second robustness test of the third survey experiment testing voter’s illusion on turnout.

<table>
<thead>
<tr>
<th>Model 1: Robustness test for the variable of education</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.069 (.129)***</td>
</tr>
<tr>
<td>Voter’s illusion (Vote Leave/Remain followers)</td>
<td></td>
</tr>
<tr>
<td>Undecided voters</td>
<td>.427 (.191)*</td>
</tr>
<tr>
<td>Education (White)</td>
<td></td>
</tr>
<tr>
<td>Non-white</td>
<td>.830 (.278)**</td>
</tr>
<tr>
<td>Education*voter’s illusion</td>
<td>.039 (.433)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.026</td>
</tr>
<tr>
<td>N</td>
<td>938</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
Although the table reaffirms the statistically significant main effect of voter’s illusion (p<.05) and education (p<.01) on Britain’s EU referendum turnout, the heterogeneous treatment effect of education on the way voter’s illusion affects the turnout of the UK voter isn’t statistically significant. The model shows that the variable of education, whose main effect is widely acknowledged in scholarship, cannot contribute as an alternative explanation of the voter’s illusion result in the third survey experiment. Consequently, the confirmation of H4 which was analysed in the second empirical chapter cannot be attributed to the education’s effect on turnout. Instead, based on the previous robustness test taking into account those who remained undecided in the turnout question, one may infer that the result of the above table strengthens this PhD’s syllogism behind voter’s illusion. The latter is due to the fact that this robustness test eliminates an important alternative explanation of the education variable, which has received a plethora of references agreeing about its power on voters’ turnout. To be reiterated that according to voter’s illusion, the British voters identified themselves with the behaviour of undecided voters and thus went to the polling station considering their single vote as diagnostic of millions of others. As explained in the discussion of H4’s confirmation in the second empirical chapter, the latter constituted a challenge against Downs’ (1957) rational model. Consequently, given that literature’s strong relationship between turnout and education cannot account for the voter’s illusion result, the contribution of voter’s illusion to turnout scholarship is further strengthened.

The effect of age on voter’s illusion

The next robustness test for the second empirical chapter discusses the variable of age as an alternative explanation to the voter’s illusion result. The reason for focusing on age is both the
statistical significance of its main effect on turnout and the fact that Brexit literature concludes that the British elderly turned out more than young voters (e.g. Becker, Fetzer and Novy, 2017; Swales, 2016; Jackson, Thorsen and Wring, 2016; Fox and Pearce, 2018; Jackson, Thorsen and Wring, 2016).

Thus, another binary logistic regression model was created with the main effects of the voter’s illusion treatment, age and their interaction as independent variables and the turnout intent as the dependent variable.
Table C.4: Logistic regression model for the third robustness test of the third survey experiment testing voter’s illusion on turnout.

<table>
<thead>
<tr>
<th>Model 2: Robustness test for the variable of age</th>
<th>Coef./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.488 (.197)**</td>
</tr>
<tr>
<td>Voter’s illusion (Vote Leave/Remain followers)</td>
<td></td>
</tr>
<tr>
<td>Undecided voters</td>
<td>.950 (.290)**</td>
</tr>
<tr>
<td>Age (18-34)</td>
<td></td>
</tr>
<tr>
<td>35-54</td>
<td>1.359 (.304)***</td>
</tr>
<tr>
<td>55-64</td>
<td>.865 (.337)*</td>
</tr>
<tr>
<td>65+</td>
<td>1.235 (.317)***</td>
</tr>
<tr>
<td>Age*voter’s illusion</td>
<td></td>
</tr>
<tr>
<td>(35-54)*(undecided voters)</td>
<td>-.1.377 (.437)**</td>
</tr>
<tr>
<td>(55-54)*(undecided voters)</td>
<td>-.225 (.529)</td>
</tr>
<tr>
<td>(65+)*(undecided voters)</td>
<td>-.486 (.489)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.043</td>
</tr>
<tr>
<td>N</td>
<td>948</td>
</tr>
</tbody>
</table>

Source: Ipsos Mori CAPIBUS Polls June 2016, representative samples of the General UK population

*Significant positive/negative relationship, p<.05.

**Significant positive/negative relationship, p<.01.

***Significant positive/negative relationship, p<.001.
While the above model reaffirms the statistically significant role of voter’s illusion (p<.01) and age (p<.001) on voter’s turnout during Britain’s EU referendum, the interaction age*voter’s illusion shows something new for those aged between 35-54. The negative coefficient shows that the middle aged, when exposed to the frame where they find out that the undecided voters will shape the referendum’s result, go less to the polling station compared to Britain’s youth (18-34). This by default contradicts the aforementioned scholarship agreeing that old voters turned out more than young voters and thus eliminates the possibility for an alternative explanation of the voter’s illusion finding based on age’s impact on the referendum’s result. In fact, the voter’s illusion treatment effect appears to challenge scholarship’s general conclusion about age and turnout by showing voters of 35-54 years of age to regard their single vote as less diagnostic of millions of others compared to youth, something that leads them to abstention. To be reiterated here that the interpretation of voter’s illusion in the second empirical chapter claimed that voters remained undecided moments before the referendum by millions and thus identified with the behaviour of the undecided voters shaping the referendum’s outcome. Hence, according to voter’s illusion one may interpret this statistically significant heterogeneous treatment effect of age by stating that those aged 35-54 didn’t remain undecided before the referendum and thus weren’t influenced by the frame of the undecided voters determining the referendum’s outcome. On the contrary, they made their turnout decision according to Downs’ (1957) rational voter model, which forces by default to abstention weighing the costs of voting.

In addition, it needs to be reiterated that this result cannot be explained through existing literature about age and turnout in Britain’s EU referendum. The result of this robustness test may lead to the inference that the middle aged in the UK weren’t undecided voters prior to the referendum and thus weren’t influenced by the undecided voters’ treatment effect. Consequently,
one may infer that it strengthens the voter’s illusion result revealed in the second empirical chapter and presents it as a rule that endorsed voters’ turnout. Given the above result, the exception to that “voter’s illusion rule” may be the age segment of 35-54, which appears to not abide by voter’s illusion but by the rational voter’s model (Downs, 1957) which by default points to abstention. Naturally, future research is encouraged to elaborate further on the under-researched domain of undecided voters’ turnout in the EU referendum. Moreover, scholars are suggested to investigate more voter’s illusion as a possible rule while taking into consideration Britain’s middle-aged as an exception to that rule.

All in all, the three robustness tests about the second empirical chapter corroborate voter’s illusion syllogism and result. The first test contributed to the voter’s illusion interpretation that voters remained undecided prior to the referendum. The second eliminated the powerful explanatory value of education in turnout as an alternative way to explain voter’s illusion. Similarly, the third robustness test rejected the effect of age on the referendum’s turnout as an alternative explanation of voter’s illusion. Finally, the last robustness test strengthened voter’s illusion as a rule by presenting the rule’s possible exception to be Britain’s middle-aged who seem to have been determined rather than undecided prior to the ballots regarding their vote intent.

APPENDIX D: The priming of the “undecided voter” throughout the thesis

As seen previously in the thesis, the research questions in the three survey experiments and the lab experiment of this PhD primed voters to record their vote intent as undecided voters. The reason for doing so was twofold: a) Given that the ballots were days away from the research questions it was purposeful to prime the voters to think as undecided voters who would answer based on the prospect theory stimuli presented to them and not based on their actual vote intent.
b) Past research had already used the priming of the undecided voter in order to enhance participants to focus more effectively on the experimental stimuli (e.g. Galdi, Arcuri and Gawronski, 2008). Although not forming part of the thesis’ theory chapter, it is useful to present to the reader here that the priming of the undecided voter in this thesis indeed influenced voter’s choice in the EU referendum differently to her actual vote intent.

In order to assess the effectiveness of the undecided voter’s priming, the “unbiased” control question at the end of the lab’s experimental task was compared with the answers to a framing question similar to the reference point question of the first survey experiment. The former captured in the lab the sample’s real vote intent one week before the EU referendum ballots, irrespectively of the control reference point media frame presented at the beginning of the lab experiment. Hence, the following stacked bar chart picturing the answers to the lab experiment’s questions depicts a clear descriptive tendency which shows that when voters were primed to answer their vote intent as undecided voters, they answered in a distinctly different way (remain/leave) compared to the case they were asked to record their real vote intent at the end of the lab experiment.
Figure D.1: Stacked bar chart with the answers to the lab experiment’s undecided priming question.

In the above figure the results are depicted in the category axis together with the unbiased control choice question which was asked at the end of the lab experiment’s questionnaire.

The above stacked bar chart showcases that the research syllogism of this PhD to encompass the undecided priming within its research questions was valid. The graph shows that among the Remain voters who answered to the control reference point question primed as undecided voters nearly 40% of them answered in the unbiased vote intent question that they will vote for Leave.
one week later at the actual referendum. Similarly, among the Leave voters who answered to the reference point question primed as undecided voters around 20% of them answered that they would vote for Remain at the subsequent real vote intent question. As a result, the above descriptive graph shows that the “undecided priming” of this research is actually an effective priming, confirming that the lab experiment’s reference point frames convince the voters to answer differently than their “real” vote intent. Moreover, 40% of the Remain voters in the undecided priming question consists of Leave voters who switched sides because they were influenced by the lab experiment’s reference point framing. Contra, only 20% of the Leave voters is composed by Remainers who answered the other way around because they were influenced by the reference point framing. As a result, given that the undecided priming had double the impact on the vote for Remain than Leave may lead the reader to infer that the priming influenced voters to vote substantially more for Remain than Leave.

Nevertheless, although figure D.1 shows a descriptive tendency for the effectiveness of the priming of the undecided voter, it needs to be stressed that the graph refers to answers from the convenience lab sample of 89 participants who took part in the PhD’s lab experiment. More so, the experimental freedom of the lab experiment, which was previously discussed in detail in the methods chapter as one of the reasons the lab experiment was incorporated as a method throughout this PhD, provided space for the control question at the end of the lab’s experimental task. The latter recorded the “unbiased” vote intent of the voter, regardless of the reference point frames which primed voters to read the stimuli and decide their vote (leave/remain) as undecided. Such control question wasn’t inserted in the three survey experiments for methodological reasons which reflect on Ipsos Mori methodological constraints as well as budgetary limitations of this PhD research. Notwithstanding, the message that graph D.1 conveys is very informative: priming voters
to record their vote intent in the EU referendum as undecided voters who read carefully the prospect theory stimuli, yields different results than simply asking them for their vote intent one week later in the referendum. Consequently, given the above graph, which may provide support to the effective functionality of the undecided priming in this research, this PhD candidate maintains that this type of priming endorses an attentive focus of voters on the thesis’ experimental frames in lieu of recording their actual vote intent in the lab and in the survey experiments.

**APPENDIX E: Recoding the demographics of the Ipsos Mori survey data from the three survey experiments**

It must be noted that the data from the independent variables of the demographics which had been delivered by Ipsos Mori UK were substantively recoded for their inclusion in the binary logistic regression models of the two empirical chapters. First, the variable of Education (originally GCSE/0-LEVEL/CSE, VOCATIONAL QUALIFICATIONS, A-LEVEL, BACHELOR DEGREE, MASTERS/PHD, NO FORMAL EDUCATION, STILL STUDYING) was recoded to Highly/Poorly Educated. The substantive reason behind this recoding was that Brexit scholarship had deducted that the poorly educated voted for Leave whereas the highly educated for Remain (e.g. Hobolt, 2016; Kaufmann, 2016; Ludolph and Barslund, 2016; Celli et al., 2016; Goodwin and Heath, 2016; Melkumian, 2018; Clarke, Goodwin and Whiteley, 2016; Becker, Fetzer and Novy, 2017; Rushton, 2017; Langella and Manning, 2016; Sayer, 2017; Low, 2016; Arnorsson and Zoega, 2018; Antonucci, Howarth and Krouwel, 2017; Oliver, 2017; Mayhew, 2017). Second, the variable of Ethnicity (originally WHITE BRITISH, WHITE IRISH, WHITY
GYPSY/TRAVELLER, WHITE OTHER, MIXED WHITE /BLACK CARRIBEAN, MIXED WHITE/BLACK AFRICAN, MIXED WHITE AND ASIAN, MIXED OTHER, ASIAN INDIAN, ASIAN PAKISTANI, ASIAN BANGLADESHI, ASIAN CHINESE, ASIAN OTHER, BLACK AFRICAN, BLACK OTHER, ARAB, OTHER) was recoded to White/Non-White voter. The substantive reason for that is the literature that described white voters as more prone to vote for Leave compared to non-white ones (e.g. Goodwin and Heath, 2016; Devine and Sensier, 2017; Hozic and True, 2017; Clarke and Newman, 2017).

Third, the variable Marital Status (originally MARRIED, SINGLE, WIDOW/DIVORCED/SEPARATED) was recoded to Married/Unmarried. The substantive reason for that is scholarship’s relevant segregation between the married and the unmarried as regards their conservative/liberal partisan tendency in the UK (e.g. Welch and Thomas, 1988; Deitch, 1988; Poole and Zeigler, 1985, Carroll, 1988) as well as their risk-seeking attitudes (e.g. Grabble and Lytton, 1998; Roussanov and Savor, 2014). Fourth, the variable Employment (originally HAVE PAID JOB-FULL TIME, HAVE PAID JOB PART-TIME(8-29 HOURS A WEEK), HAVE PAID JOB PART TIME(UNDER 8 HOURS), SELF EMPLOYED, FULL TIME STUDENT, STILL AT SCHOOL, UNEMPLOYED AND SEEKING WORK, RETIRED, NOT IN PAID WORK FOR OTHER REASON, NOT IN PAID WORK BECAUSE OF LONG TERM ILLNESS OR DISABILITY, NOT WORKING/HOUSEWIFE) was recoded to Employed/Unemployed. The substantive reason for doing so was that scholarship discusses the unemployed as Leave voters compared to the employed (e.g. Arnorsson and Zoega, 2018; Becker, Fetzer and Novy, 2017; Clarke and Whittaker, 2016; Barber, 2016). Finally, the Internet Use
variable (originally SEVERAL TIMES A DAY, AROUND ONCE A DAY, 4-5 TIMES A DAY, 2-3 TIMES A DAY, AROUND ONCE A WEEK, 2-3 TIMES A MONTH, AROUND ONCE A MONTH, LESS THAN AROUND ONCE A MONTH, NEVER BUT I HAVE ACCESS, NEVER BUT I DO NOT HAVE ACCESS) was recoded for substantive reasons, reflecting on a parsimonious evaluation of the level of internet use, to Heavy/Light Internet users. The remaining independent variables (i.e. Parenthood, Sex) weren’t recoded because their data was collected by Ipsos as binary variables in the first place (i.e. Parent/Non Parent, Male/Female).
APPENDIX F: Ethical approval granted for this PhD by King’s College London: No LRS 15/16-2641

7 April 2016

Dear Panagiotis

LRS-15/16-2641 - Prospect Theory and voting behaviour: Political decisions under risk in the UK in or out of the EU Referendum

I am pleased to inform you that full approval for your project has been granted by the A&H Research Ethics Panel.

- Ethical approval is granted for a period of one year from 7 April 2016. You will not receive a reminder that your approval is about to lapse. It is your responsibility to apply for an extension prior to the project lapsing.
- You should report any unsolved events or unforeseen ethical problems to the panel Chair, via the Research Ethics Office, within a week of occurrence.
- Information about the panel may be accessed at: http://www.kcl.ac.uk/innovation/research/support/ethics/committees/ashl/rep/index.aspx
- If you wish to change your project or request an extension of approval, please complete and submit a Modification Request to cres-lowrisk@kcl.ac.uk. Please quote your ethics reference number, found at the top of this letter, in all correspondence with the Research Ethics Office. Details of how to complete a modification request can be found at: http://www.kcl.ac.uk/innovation/research/support/ethics/applications/modifications.aspx
- All research should be conducted in accordance with the King's College London Guidelines on Good Practice in Academic Research available at: http://www.kcl.ac.uk/college/policyzone/assets/files/research/good%20practice%202015%20FINAL.pdf

Please note that we may, for auditing purposes, contact you to ascertain the status of your research.

We wish you every success with your research.

Best wishes,

A&H Research Ethics Panel REP Reviewers
APPENDIX G: Lab experiment participants’ remuneration form

Reimbursement Confirmation

Title of Project: MEASURING THE IMPACT OF THE UK REFERENDUM ON 23 JUNE 2016

Name of Researchers: Mr. Panagiotis Kapsoumovas/Dr. Lee Savage

☐ I hereby confirm that I have completed the experimental task provided (online questionnaire) and that I have been reimbursed with 5 pounds for my time by the researchers.

Full Name in Capital:...........................................................................................................

Signed:............................................................................................................................

Date:...............................................................................................................................
APPENDIX H: Lab experiment participants’ Information Sheet

Participant Information Sheet

What will be your vote at the EU Referendum 2016?

We would like to invite you to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

We are interested in studying the intended vote choice and turnout on the UK in/out the EU referendum.

Why have I been invited?

You have been invited to participate because you signed up for the call for participation sent out by the department.

Do I have to take part?

It is entirely up to you to decide whether or not to take part. You may choose to ask for independent information or advice about your rights as a research participant or about being involved in this particular research study by contacting the local Research and Development Department (please see below for contact details).

If you do decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form. You are still free to withdraw at any time in the process of the study without giving a reason.

What will happen if I start but then don’t want to carry on with the study?

Participants can withdraw from the study at any time without having to justify their decision. If you decide to withdraw from the study you can tell us whether you are happy for us to use the information obtained up to that point. If you are not, any information that you have given will be destroyed and you will not be contacted by us again.
What will happen to me if I take part?
Taking part will involve running a computer task at King’s College University computer lab. Overall it will take approximately half an hour to complete the study. Breaks will not be available.

We will ask you to complete a set of questionnaires on the computer about some demographics like age and gender. We will also ask you whether you intend to vote in favour of Yes or No at the EU referendum on 23 June 2016 and whether you will go to the polling station to cast your ballot.

What are the possible disadvantages, risks or side effects of taking part?
The computer tasks may seem a bit confusing at times, but we will be able to debrief you fully at the end once you have had a go.

At the end of the study you will have a chance to tell us what your experience of participating in the research was like, and we will take this into consideration for this and future studies.

What are the possible benefits of taking part?
You will gain a wonderful experience in a novel research at King’s College London.

Will I be compensated for my time?
We are able to reimburse you with £5 for your time following the completion of the task.

Will my taking part in the study be kept confidential?
All the information which is collected about you during the course of the research will be kept strictly confidential.

The data will be collected and stored in accordance with the Data Protection Act 1998, secured against unauthorised access.

What will happen to the results of the study?
The research should be completed by the end of 2016. You will be offered a copy of the results of the study once it is completed, if you wish. No individual will be identifiable from the published results.

What if there is a problem?
Complaints
Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. If you have a concern about any aspect of this study, you can speak with the researcher in the first instance or the Project Coordinator (Dr Lee Savage) who will do their best to answer your questions. If you remain unhappy and wish to complain formally, you can do this through the PARC Chair (see below).
Harm
Compensation for harm arising from an accidental injury and occurring as a consequence of your participation in the study will be covered by King’s College London. If you are harmed and this is due to someone’s negligence then you may have grounds for legal action for compensation against King’s College London (with respect of any harm arising out of the participation in the research study).

Who has reviewed the study?
This research was reviewed by the department of European Studies at King’s College London. Participant representatives have been involved in providing advice on the measures and ways to conduct the study in the best possible manner. All research is also looked at by an independent group of people, called a Research Ethics Committee, to protect your safety, rights, wellbeing and dignity.

Contact Details
If you have any questions relating to this research, or concerns about participation, please contact:

Research worker:

Panos Katsampanis
Email: panagiotis.katsampanis@kcl.ac.uk

Project Coordinator:

Dr Lee Savage
Email: leee.savage@kcl.ac.uk

If you would like to speak to someone to get some independent advice about your rights as a research participant, you can contact the local R&D office:

Research Governance Officer
King’s College London
Box P005
De Crespigny Park
London, SE5 8AF
Tel: 020 7848 0251
If you wish to make a complaint about the conduct of this study, you can do this through the PARC Chair:

Dr Stathis Kouvelakis
PARC Chair
Department of French
King’s College London
Room 4.36 Virginia Woolf Building
22 Kingsway
London WC2B 6LE

*We wish to thank you for taking the time to read this sheet and considering taking part in the research study.*
# APPENDIX I: Lab experiment participants’ Consent Form

## INFORMED CONSENT FORM

**Title of Project:** MEASURING THE IMPACT OF THE UK REFERENDUM ON 23 JUNE 2016

**Name of Researchers:** Mr. Panagiotis Katsamanis/Dr. Lee Savage

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you read the Participant Information Sheet for the above study?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you had the opportunity to ask questions and discuss the study?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you received satisfactory answers to all of your questions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you received enough information about the study?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you understand that your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without any penalty?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you agree to taking part in the above study?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Full Name in Capital Letters:**

**Signature:**

**Date:**

**Full Name of Researcher:** PANAGIOTIS KATSAMPANIS
Signed: ...........................................................................................................

Date: 15/06/2016 .................................................................

When completed, 1 copy for participant, and 1 copy for research site file.
APPENDIX J: The Face-to-Face Omnibus of Ipsos Mori

According to Ipsos Mori UK, “Ipsos Face-to-Face Omnibus offers the most representative sample of a population”. The Face-to-Face CAPIBUS uses a rigorous sampling method - a controlled form of random location sampling (known as “random locale”). Random locale is a dual-stage sample design, taking as its universe Sample Units, an amalgamation of Output Areas (OA’s – the basic building block used for output from the Census) in Great Britain. Ipsos MORI uses a control method applied to field region and sub-region to ensure a good geographical spread.

The first stage of the Ipsos sampling process is to define primary sampling units. OA’s (Output Areas) are grouped into Sample Units taking account of their ACORN characteristics (CACI ACORN is the geo-demographic system that Ipsos uses). A total of 170-180 PSU’s are randomly selected from the stratified groupings with probability of selection proportional to size. The second stage of sampling happens every week on Capibus. At this stage, usually two adjacent output areas (OA), made up of c.125 addresses each, are randomly selected from each PSU, which becomes the secondary sampling unit. Using CACI ACORN allows Ipsos to select OAs with differing profiles to ensure they are interviewing a broad cross-section of the public, because even people of the same age and working status may have a different viewpoint depending on their background. Fieldwork times and quotas are therefore set to control for this element – age, working status and gender - giving a nearly random sample of individuals within a Sample Unit. Typically, Ipsos uses 170-180 sampling units (sampling points) per survey. Precise sampling units of addresses combined with control of quotas affecting the likelihood of being at home produces a sample profile that is similar to that achieved on The National Readership Survey (which uses random
probability sampling) after four call-backs. Only a limited amount of corrective weighting is therefore needed to adjust the final results on Ipsos Mori’s CAPIBUS survey so that they are in line with the national demographic profile.