

The Effects of Economic Conditions on Support for Environmental Protection



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Submitted as part of the DPhil Sociology
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Abstract:

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This thesis highlights the ways in which economic conditions affect support for environmental protection. The coincidence of a decrease in environmental attitudes and increase in climate scepticism with the Great Recession of 2008 had suggested that deteriorating economic conditions could have a negative effect on environmental attitudes. While previous literature has largely supported this, it has been limited in its ability to firmly establish the causal mechanisms at work.

The analysis contained in this thesis makes a number of important advances. Using cross-national data from before and after the onset of the economic crisis, I demonstrate that changing prioritisation of environmental protection is particularly sensitive to changes in unemployment rates and that its connection with changing economic growth would appear to be spurious. Through an innovative online survey experiment, I show that the salience of individuals' economic perceptions has an independent effect on their prioritisation of taking urgent action to tackle climate change – with those who are reminded of their positive economic perceptions being more likely to prioritise such action and vice versa for those who are reminded of their negative economic perceptions - but that it has no such effect on their belief in anthropogenic climate change. However, analysis of New Zealand panel data suggests that changes in economic perceptions and individuals' household financial situation cannot explain the decline in environmental attitudes witnessed in 2008.

I make a substantive methodological contribution by establishing that environmental-economic trade-off questions primarily capture environmental rather than economic attitudes. Finally, I demonstrate that environmental attitudes can have tangible effects on support for policies that are environmentally beneficial when such policies are not being primarily framed through an environmental lens using the case study of support for water charges in Ireland in 2011.

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Introduction

This thesis examines the relationship between environmental attitudes - defined as ‘concern for the environment or caring about environmental issues’ (Gifford and Sussman 2012, 65) - and economic circumstances in light of the Great Recession of 2008 using data from 2002 - 2016. Coinciding with the recession whose severity was comparable to that of the Great Depression of the 1930s (Almunia et al. 2010), a sudden and substantial increase in climate change scepticism and drop in environmental attitudes was witnessed across the western world (Eurobarometer 2009; Nielson 2009; Pugliese and Lyons 2010; Ratter, Philipp, and von Storch 2012). While the co-occurrence of these two phenomena has led to the suggestion that the insecurity arising from the recession may have been a causal factor in the observed decline in environmental attitudes and this has received some support in the literature (Kahn and Kotchen 2011; Scruggs and Benegal 2012), a number of key points have been left unaddressed that may call into question such a conclusion. In this introductory chapter, I will begin by summarising the development of the literature on environmental attitudes in general and the key theoretical explanations for why environmental attitudes may be affected by economic conditions, provide an overview of what insights existing literature emerging from the financial crisis on the relationship between environmental protection attitudes and economic conditions can provide and the gaps that it has not satisfactorily addressed, lay out the structure of this thesis and outline the contributions that it will make. It is necessary to provide such a detailed overview of the literature in this chapter in order to provide the context for why the overall research design was chosen.

BACKGROUND

Environmental protection is an issue that gained prominence in the public sphere during the second half of the twentieth century. Rachel Carson’s (1962) *Silent Spring* can be seen as

a key catalyst for this (Guha 2000). In it, and writing at a time when environmental protection was of interest to few beyond conservationists and pollution officials, she wrote of the environmental dangers of synthetic pesticides in a manner that mixed moral outrage with scientific understanding (Festenstein and Kenny 2005, 327) leading the public to demand concrete change to an extent that subsequent environmental advocates have been unable to achieve (Griswold 2012). Following this, other developments increased the attention to environmental issues in the media – and thus raised the overall salience of the issue – such as conservation organisations expanding their focus beyond wilderness and scenic preservation, a rapid uptake in outdoor recreation and political leaders pushing through important environmental legislation (Dunlap 1991, 287/288). During the 1970s, environmental concern broadened and one saw the coalescence of a wide variety of environmental concerns into a recognisable pattern of political thought and the mass transmission of such concerns to the public. This prepared the ground for environmental issues to permeate the political mainstream by the end of the decade (Festenstein and Kenny 2005, 327/328). A particularly significant milestone was set by the United Nations Conference on the Human Environment in 1972 held in Stockholm. This ushered in a new era of international environmental cooperation with a discourse that recognised the negative consequences of human activities for the environment and the need for action, resulting in the establishment of the United Nations Environment Programme and setting the foundation for future developments (DeSombre 2007, 9/10).

The global environmental governance regime has not been without its flaws however and, despite making substantial progress in a number of areas, it has been unable to affect the level of change on the issue of environmental protection that would match its aspirations. The *Agenda 21* document from the key Earth Summit in Rio in 1992 that outlined the blueprint for United Nations action on the environment over subsequent decades has for instance been criticised for being ‘high on political symbolism and low on policy impact’ (Park, Conca, and

Finger 2008, 3); a judgment that could also be applied to regime as a whole. What makes global inaction puzzling is that the absence of comprehensive environmental protection measures is occurring in the face of increased certainty that climate change – which is a major factor in the escalation of environmental problems including the loss of biodiversity and rising sea levels - is anthropogenic. According to the Intergovernmental Panel on Climate Change's (IPCC), it is now extremely likely - at a 95 per cent confidence level - that more than half of the observed increase in global average surface temperatures from 1951 to 2010 were caused by human activities (Stocker et al. 2013, 60). And yet, as Remnick (2015, 36) so eloquently puts it, 'The awareness of nearly all the world's leaders of the imminence of devastating climate change has roused almost none of them to effective action'.

While the Paris Climate Agreement of 2015 represented a substantial advance on business as usual and reinvigorated attempts to come to a collective solution to the climate problem, it clearly falls short of achieving this aim (Bodansky 2017, 316). Indeed, it appears from a report by the United Nations Environment Programme (2017, xiv) that the NDCs (nationally determined contributions) that have been declared are insufficient to reach the goal of staying under a 2°C temperature increase with pledges made only accounting for one-third of the emissions cuts required, and thus 'the gap between the reductions needed and the national pledges made in Paris is alarmingly high'. This raises an interesting theoretical question as to why sufficient action is not being taken despite the recognition and acceptance of the risks posed by not doing so?

The answer to this is not because of the absence of financial or technological resources. Developed countries are not lacking in this respect and could adopt more environmentally sustainable policies and measures. However, a key barrier is that the political leadership and citizen engagement that is needed to do so is a long way away from being reached (Drexhage and Murphy 2010, 6) and public opinion continues to lag behind the scientific consensus

(Maibach, Myers, and Leiserowitz 2014). On the one hand, the achievement and maintenance of a healthy environment could be regarded as a valence issue (Clarke et al. 2009, 5) - that is a policy issue upon which there is widespread agreement among voters on the desirability of its implementation and achievement (Clarke et al. 2011) – and thus one may find the above statement strange. Evidence of the environment as a valence issue can be seen in the European Social Survey (2002-2016) where in each wave almost nine in every ten respondents say that they at least somewhat identify with someone who thinks that it is important to care for nature and the environment (European Social Survey 2018). However, this type of question captures a ‘rating’ dimension (Diekmann and Franzen 1999) where respondents consider environmental protection in the absence of a trade-off.

By instead including a trade-off, one taps into the economic dimension of priority for scarce resources and this is known as a ‘ranking’ dimension’ (Diekmann and Franzen 1999). When one considers the environment from this perspective, it is an instance of what Stokes (1992) points to of a valence issue turning into a positional issue as public opinion displays substantive divisions with environmental issues often given far less priority than economic or security issues (Motel 2014). Indeed, around 2010, it was common for just 2 per cent of Americans to answer in Gallup surveys that the environment or pollution was the most important issue facing the country (Daniels et al. 2013, 463). As governments cannot address all of the complex problems that societies face, the presence of a strong environmental public opinion – especially on this ranking dimension - is an important factor in facilitating legislative attention to address it (Krosnick et al. 2006).

In this regard, as Dunlap (1991, 286) notes, support for environmental protection in a scientific survey or an informal poll is vital as it has been demonstrated that such support lends environmental groups the credibility to claim they represent the public interest (Mitchell 1984)

and it acts as a resource for lobbying for new legislation or pressing for effective implementation of existing legislation (Rosenbaum 1991; Sabatier and Mazmanian 1980). The main rationale behind this is that leaders have a primary incentive to retain power, and as a result they seek to introduce policy that their electorate favours in order to increase their probability of retaining in office (B. Anderson, Böhmelt, and Ward 2017, 3). If they do not incorporate issues that are deemed important and salient by their electorate, they run the risk of losing votes to competitor parties who do take advantage of such an electoral opportunity (Spoon, Hobolt, and de Vries 2014).

In the absence of such bottom-up pressure from the general population, one cannot expect action on environmental protection to be successful. Firstly, political parties will not have the electoral incentive to prioritise an issue that the public are not overly concerned with and those parties that do prioritise the issue are unlikely to reap sufficient electoral rewards to be in a position to enforce such policies. Secondly, even if governments do go ahead with environmental policies in the absence of public support, ‘politically, [the environment] is an issue on which top-down approaches to governance are very likely to fail on grounds of both effectiveness and legitimacy’ (Hurrell 2007, 237). An example of such a failure was the 2018 U-turn by the French government on their carbon tax policies in response to mass public opposition by the Gilets Jaunes. It is thus because of the role of environmental attitudes in influencing environmental action and policy that it is so important to understand what influences individuals’ environmental attitudes.

FACTORS INFLUENCING ENVIRONMENTAL ATTITUDES

Since the emergence of widespread environmental attitudes in the 1960s, much research has been carried out on what influences environmental attitudes. In a recent review article, Gifford and Nilsson (2014) summarise the findings of the individual characteristics that relate

to being more environmentally disposed which include being more highly-educated, having an open and agreeable personality, having self-transcendent values, being female, being younger and holding liberal political views. Another factor they point to is having factual environmental knowledge but while this may be a necessary condition it is not sufficient (Gifford and Nilsson 2014, 142). Among optimistic observers there had been a belief that if greater environmental knowledge is related to greater environmental attitudes, then delivering the message of impending environmental catastrophe would be enough to generate a public demand to undertake action (Dobson 2007, 103/104). Kollmuss and Agyeman (2002) present this as the linear model in which environmental knowledge leads to environmental awareness and concern which induces environmental behaviour. Though still pursued, the evidence would suggest that such a strategy has not worked.

A possible reason for this is that to care for the environment, one may need to develop an emotional connection with what are complex and abstract environmental problems (Heberlein 2012, 17). An emotional connection will not necessarily be provided for by knowledge on its own and it is rare to encounter information that is both scientific and emotive. Formative experiences may play an especially important role in providing this emotional connection with the environment. From reading biographies of conservationists, Tanner (1980, 21) recurrently found stories of ‘many childhood hours spent alone or with a few friends in a more or less pristine environment which, in some cases, was lost to commercial development’. Palmer and Suggate (1996) additionally find through analysing environmental educators in the UK that, among younger cohorts, reading negative stories about environmental problems during childhood are prominent reasons given for developing environmental concern. Another reason for why environmental concern may not rise to the top of people’s agenda is because environmental damage often takes place slowly and incrementally (Kollmuss and Agyeman 2002) and as people may not see environmental degradation in their everyday lives they may

perceive it as a distant problem that does not need to be imminently prioritised in the presence of scarce resources. Indeed, Robert Stavins (in Chipman and Sullivan 2011), director of Harvard's Environmental Economics program, is of the opinion when referring to the US that the country is unlikely 'to take serious action on climate change until there are observable, dramatic events, almost catastrophic in nature, that drive public opinion and drive the political process in that direction'.

It is this perceived non-immediacy of environmental damages that is particularly pertinent to the key research question of this thesis: the relationship between environmental attitudes and economic conditions. Inglehart's postmaterialist thesis is relevant for why the perceived distant threat of environmental issues may lead individuals to deprioritise it during harsh financial conditions such as the economic recession of 2008. Originally based on Maslow's (1970) needs hierarchy¹, it contains two interrelated hypotheses of scarcity and socialisation (Inglehart 1977). The scarcity hypothesis argues that people tend to prioritise their most immediate and urgent needs and so when basic resources that are needed to survive are scarce people will prioritise these but when people have their basic material needs attended to, they are more likely to hold postmaterialist values that emphasise autonomy, self-expression and the quality of life. Environmentalism is categorised as falling under the branch of postmaterial values (Inglehart 1981, 2008). While this scarcity hypothesis is connected with the socialisation hypothesis that proposes that values are conditioned by the circumstances during one's formative years, the thesis also proposes that period effects from economic recessions can produce short-term fluctuations in people's postmaterialist values (Inglehart 1983). Thus, it is expected that 'when the economy falters, voters prioritize issues with material and shortrun pay-offs such as unemployment benefits and tax relief but reduce their support

¹ This suggests that those who grow up in an environment where their lower order needs are attended to will develop into a more mature personality and as an adult will be better equipped to cope when they are deprived of their lower needs.

for issues with long-term and post-material benefits such as ... environmental protection' (Abou-Chadi and Kayser 2017, 201). This could be further enforced by environmental issues being reported less by the media during economic contractions in favour of economic stories, resulting in people having less exposure to the issue and thus potentially a corresponding drop in their levels of concern (Carmichael and Brulle 2017).

There are also other psychological mechanisms that could be particularly pertinent for inhibiting environmental concern in favour of maintaining existing lifestyles due to the fact that proposed steps for addressing many environmental issues contradict basic assumptions of quality of life, economic prosperity and material needs (Kollmuss and Agyeman 2002, 254). Festinger's (1957) theory of cognitive dissonance proposes that individuals unconsciously seek consistency in their beliefs and mental frameworks and, as a result, will selectively interpret information. If information supports existing values and mental frameworks it will be readily accepted, but if it undermines people's beliefs it may be resisted, avoided or not perceived at all. Thus, to avoid dissonance, individuals may (unconsciously) selectively interpret information regarding environmental damage to perceive it as less serious and thus not develop a heightened concern for the issue. Likewise, system justification theory presents a case for why people may opt for the status quo even if it is socially disadvantageous as it may fulfil a psychological need for stability (Nordhaus and Shellenberger 2009). Especially when it comes to concern on climate change, system justification responses may thus be triggered whereby people – especially those on the right who have a greater commitment to the prevailing social and economic systems - are more willing to believe that the current system is working well rather than accept that there is a climate problem that may threaten life as they know it (Feygina, Jost, and Goldsmith 2010; Santos and Feygina 2017)². During periods of economic instability,

² It is also worth noting that this is an example in which one's political values can influence one's perceived environmental knowledge and may result in individuals having misconceptions on scientific facts about the environment in order for their belief structure to remain intact. And once an individual holds such misperceptions

this theory can also provide a rationale for why individuals may be less concerned about the environment as system justification responses may increase when there is a heightened motivation for individuals to defend a threatened system (Hennes et al. 2016, 756).

All of these theories suggest that the ranking dimension of environmental protection is the dimension that would be particularly at risk of declining as a result of worsening economic conditions.

ENVIRONMENTAL ATTITUDES AND THE 2008 ECONOMIC CRISIS

Having given an overview of why an economic downturn could be expected to have an adverse effect upon environmental attitudes, I will now lay out the literature that has examined this in the aftermath of the 2008 economic crisis. The vast majority of these studies have found that more severe declines in economic conditions are associated with greater declines in environmental prioritization and that the crisis can be held responsible for declining environmental concern in general.

Kahn and Kotchen published what would be one of the earliest papers investigating the impact of the 2008 financial crisis on environment attitudes by ‘providing the first empirical estimates of macroeconomic effects on concern about climate change’ (Kahn and Kotchen 2011, 257) using multiple approaches and focusing on the unemployment rate as an indicator of macroeconomic conditions. Through utilising Google search data from the US as an indicator of public concern from January 2004 through to February 2010, they find that an increase in a state’s unemployment rate is associated with a decrease in searches for ‘global warming’ and an increase in searches for ‘unemployment’. While the change in the frequency

and have these reinforced by the political party cues they are receiving (McCright and Dunlap 2011; Dunlap, McCright, and Yarosh 2016), these misperceptions can be very difficult to overturn (Flynn, Nyhan, and Reifler 2017). This then has a knock-on effect on individuals’ willingness to prioritise especially action on climate change as if they do not believe that humans are responsible for it or that it is even occurring at all they are very unlikely to be willing to support measures to address it (Krosnick et al. 2006).

of the search terms is running in opposite directions, the change in their magnitude is similar and moreover the decrease is larger in Democrat-leaning states. Secondly, using pooled cross-sectional analysis from two nationally representative US surveys administered in October 2008 and December 2009/January 2010, they find that an increase in unemployment is negatively associated with people's climate change concerns and beliefs. Finally, in an earlier draft of this paper (Kahn and Kotchen 2010), they also report analysis using eleven Californian household surveys conducted from between January 2008 to May 2009 that shows that people who live in counties with higher levels of unemployment are less likely to say that the environment is the most important issue.

Scruggs and Benegal (2012) build upon this by adding further analysis. Using aggregate US public opinion poll data from 1997-2011 on belief in the occurrence of global warming, they control for both national and global weather patterns and media coverage of climate change in addition to unemployment rates³ as explanatory variables. They find no effect of media coverage but find that changes in the unemployment rate and changes in weather patterns are significantly correlated with belief in global warming. The lack of an effect of media coverage could however be a result of a flawed measurement strategy as they use coverage of climate change/global warming in the New York Times to create a climate sceptic ratio that they generalise as a valid measure of climate scepticism coverage in the media. However, consumers of the New York Times have a different demographic to consumers of other popular US media sources⁴. Thus, their measure is only picking up on the exposure to climate sceptic arguments of a select portion of society, which is especially problematic as not only is the

³ And consumer confidence in an alternative model

⁴ For instance, the New York Times has 56 per cent of its readership that has graduated from college, 38 per cent earning more than \$75,000 a year, 31 per cent being able to answer four political knowledge questions correctly and 44% identifying as Democrats compared to 13 percent identifying as Republicans. This contrasts to the profile of consumers of Fox News for instance only 24 per cent have graduated from college, 23 per cent earn more than \$75,000 a year, 16 per cent could answer four political knowledge questions correctly and 40 per cent identify as Republican as opposed to 22 per cent who identify as Democrat (Pew Research Centre 2012)

profile of their consumer base different but the way in which they cover the issue of climate change is also different⁵. In the next section of their analysis focusing on individual, repeated cross-sectional US data from 2006-2011 – and controlling for state-level weather and unemployment data in addition to demographic factors – they find that the more local temperatures deviate above the norm and the lower the state-level unemployment rates become the more likely individuals are to believe in the occurrence of global warming. Finally, using three waves of aggregate Eurobarometer data from Europe between 2008-2009, they find that increased unemployment rates are associated with increased climate scepticism.

Using this same European data, Shum (2012) finds that decreasing economic growth rates (which he uses instead of unemployment rates) negatively affect concern about climate change while additionally controlling for temperatures does not. Brulle, Carmichael and Jenkins (2012) make an even more comprehensive attempt to control for multiple possible explanations by including a number of different measures capturing six overall categories of extreme weather events, dissemination of scientific information on climate change, mass media coverage of climate change, media advocacy, political elites cues and controls (unemployment, GDP, war deaths in Iraq and Afghanistan and the price of oil) while aggregating opinion on climate change in the US between 2002-2010. Though they use a climate change index incorporating a variety of questions on climate change and global warming attitudes – including personal worry, whether one considers climate change global warming is/will have an impact and belief in the occurrence of climate change – their findings on the impact of the economy on such attitudes are in line with those of the Scruggs and Benegal, however their conclusions

⁵ Fox News for instance, and conservative media more generally, consistently have more stories that question human-caused climate change than those that accept the scientific consensus (Feldman et al. 2012). Hmielowski et al (2013) have shown using panel data that consumption of conservative media in the US decreases trust in scientists and as a result people's certainty that global warming is happening with consumption of liberal media having the opposite effect. This effect grows larger with more frequent viewing (Krosnick and MacInnis 2010).

on the impact of both the media⁶ and the weather are contradictory⁷. The same findings were found when they expanded their analysis to cover the timeframe up to 2013 (Carmichael and Brulle 2017).

In a further study covering the period of 2001-2014 in which they carry out their models separately for Republican and Democrat supporters (Carmichael, Brulle, and Huxster 2017), they show that greater GDP is only associated with a significant (positive) change in their climate index for Democrat supporters, whereas an increase in unemployment rates is only associated with a significant (negative) change in their climate index for Republican supporters. While they also test other non-economic explanations in this paper, the economic model explains the most variance of all their models in the change of their index for Republican supporters. In another paper which examines attitudes towards environmental spending in the US over a longer period of 1974-2012, Conroy and Emerson (2014) demonstrate that a higher unemployment rate – which they lag by one year – is significantly associated with individuals perceiving there to be too much spending on the environment while the reverse is the case for where there is a higher percentage change in real GDP, though individuals' income levels may offset such macrolevel effects.

While the studies that have thus far been detailed suggest that deteriorating economic conditions in the aftermath of the crisis had a direct and negative impact upon environmental

⁶ Using a broader measure of media coverage than Scruggs and Benegal which in addition to coverage in the New York Times also incorporates coverage in three major broadcast nightly news coverage – though still missing key conservative-leaning news sources such as Fox News - and three major weekly magazines, they find a significant and positive effect of media consumption on their climate change index, but find that such an effect is mediated by elite cues and economic factors. In a follow-up article (Carmichael, Brulle, and Huxster 2017) in which they expand their selection to include more news sources and carry out the analysis separately for Republic and Democrat supporters, they find that increased coverage of climate change issues in the New York Times only has a significant impact on their climate change index for Democrats and not Republicans – thus confirming the noted weakness in the Scruggs and Benegal article – and a similar outcome for climate coverage on PBS tv with the addition that it is also associated with a decrease in Republican's score on the index.

⁷ They find a null effect for the impact of extreme weather events on their index which, while in line with the findings of Shum in Europe, contrast to the results of Scruggs and Benegal who found a significant impact on changes in weather anomalies on belief in global warming. It is important to remember that both of their dependent variables are capturing different things.

attitudes, not all studies have come to such conclusions. Analysing data from two independent, nationally-representative samples surveyed by telephone in the US in 2010 and 2012, Krosnick and MacInnis (2012) find no evidence to support the hypothesis that individuals who were living in states that were struggling the most economically witnessed the steepest decline in their support for measures to tackle global warming, instead finding that it was people living in states where the economy was not struggling that witnessed the biggest decrease in this two-year time period. And using two waves of online panel data collected in 2008 and 2011 respectively on a national US sample, Mildemberger and Leiserowitz (2017) find little evidence that changing individual economic fortunes or local economic conditions affected either belief in the occurrence of global warming or whether they thought that global warming should be a priority issue for the next president and congress.

There is also some literature which displays a more nuanced or mixed picture of the effect of the recession on environmental attitudes. Using 2010 data from the Life in Transition Project II⁸, while Mayer and Smith (2017) find that percentage growth in GNI has a positive and significant impact upon both climate change concern and a willingness to pay higher taxes to combat climate change, they also find that individuals who perceive the economic crisis to have had a serious impact on their household are in fact more likely to be concerned about climate change but that this has no impact on their willingness to pay higher taxes and that satisfaction with the state of the economy does not have any effect on either of these two variables. At the individual level they find that recently experiencing economic hardship – measured using objective measures - counterintuitively has a null to positive effect on such climate change attitudes, but being satisfied with one's personal financial situation does have a substantial impact upon being more willing to pay higher taxes to combat climate change

⁸ Mostly containing former USSR states, in addition to some Asian and Western European states.

though not on one's concern. Also of note is a case study of Sweden using data from 1987 to 2010 which does find that the economic cycle continues to exert an influence on environmental concern – measured by whether respondents mentioned it as one of the three most important problems – but that such an effect has weakened over time (Harring, Jagers, and Martinsson 2011). Finally, a special issue of the *Environmental Politics* journal also somewhat supports the claim using data from the International Social Survey Programme (ISSP) concluding that there are, 'subtle signs that the economic recession has diminished support for environmentalism' (Dalton and Rohrschneider 2015, 528), though on balance the issue finds that environmental concerns among the public were resilient to change.

Thus, while the majority of the literature on the relationship between environmental attitudes and the economic crisis of 2008 presents evidence to suggest that the crisis has a negative impact upon environmental attitudes, there are some studies that come to other conclusions and others still that paint a mixed picture.

GAPS AND WEAKNESSES IN THE LITERATURE:

Now that the literature has been outlined, I will present the gaps in the literature and how I will address these in the thesis. Namely, I focus my analysis on the impact of economic conditions on the broad topic of environmental protection which has been overlooked in favour of the effect on global warming and climate change; I broaden the geographical focus beyond the predominantly-used US case with the notable inclusion of the region of South America which has been side-lined in the existing literature on the subject in order to further the generalisability of the findings; I examine the impact of subjective economic perceptions on environmental attitudes which has been under-researched but is of vital importance; and I also use panel-data and an innovative survey experiment to enable me to answer to answer causal questions of interest that cannot be answered from the predominantly used repeated cross-

sectional studies. Thus, the overall thesis contributes to the literature by tidying up gaps in our understanding of the mechanisms that are at work for how environmental attitudes may be affected by economic conditions. I will now explicate each of the gaps and how I address them.

Firstly, the environmental topics of global warming and climate change have received disproportionate attention compared to the broader topic of environmental protection in general. It is thus unclear whether the extent to which the research that has been carried out is applicable just to this sub-topic of environmental protection or if it also applies more broadly. Moreover, it is not only the case that such research has concentrated on these two terms in isolation, but some of the research cited has used both the terms global warming and climate change interchangeably, making claims about one while actually measuring the other. This is despite the fact that public opinion research has demonstrated that these two terms are conceptualised differently by the public and can elicit different responses (Jordan 2013; Leiserowitz et al. 2014; Schuldt, Konrath, and Schwarz 2011). In addition, some of these papers create indices that combine a whole range of expressions/measures of environmentalism to include beliefs, concerns, salience and so forth. Yet as environmental expressions/measures may also operate differently to each other (Dunlap and Jones 2002) and evidence suggests that one may reach different conclusions on attitudes towards environmental protection depending on what measure one is using (Daniels et al. 2013), one may reach more robust and rigorous conclusions if one were to concentrate on examining individual environmental measures. Thus, this thesis will largely focus on the broad environmental topic of environmental protection – with one chapter examining the specific topic of climate change - and it will ensure that the individual integrity of environmental expressions/measures is maintained. The measures will focus on the ‘ranking’ rather than ‘rating’ dimension of environmental protection given that this is theoretically where one would expect to see effects, though the chapter on climate change views will additionally use a measure of anthropogenic climate change beliefs.

Secondly, the literature has primarily focused on empirical data from the United States, and to a lesser extent Europe, to answer research questions on the impact of the 2008 recession on environmental attitudes, but broader comparative analysis has been mostly absent. While providing important insights which have advanced our understanding of the topic, there is a need to look beyond the United States and to see the extent to which the results generalise. This thesis will use longitudinal, cross-national data from the World Values Survey in order to achieve this aim. There is also data available from individual countries that provides ideal case studies to test various aspects of this broad research question that can add value beyond what has been tested in the United States – for various methodological and theoretical details which will be detailed – and so this thesis will also carry out case studies using data from Britain, Ireland and New Zealand.

Thirdly, most research has operationalised economic conditions through objective measures while neglecting subjective measures. Using objective measures has its advantages as such data is more easily accessible and one can save valuable space in surveys by merging one's dataset with readily available macro-economic data rather than asking respondents about their perceptions directly. However, the problem with relying almost exclusively on these measures is that individuals' perceptions on the condition of the economy can be influenced by a variety of factors and so at any point in time there is heterogeneity in individuals' economic perceptions which is ignored when focusing solely on objective measures. As individuals perceiving the economy to be a certain way is a prerequisite for the economy to affect their attitudes, objective indicators may not capture their perceived reality and thus 'subjective perceptions of economic conditions are the best indicators for examining how economic conditions relate to political attitudes' (Gabel and Whitten 1997, 84). In tandem with the analyses focusing on objective economic conditions, it is thus advisable to test for the effects of subjective economic evaluations.

A fourth and related limitation of the existing literature that this thesis seeks to address is its reliance on repeated cross-sectional and pooled data for analysis. While there are again benefits from using such data, it should not be relied on exclusively as it is difficult to make causal claims on the mechanisms at work when analysing it. This is perhaps one of the reasons as to why Mayer and Smith (2017) find mixed results with their subjective economic independent variables as they use standalone, cross-sectional data from 2010. Such data firstly cannot address questions of endogeneity and secondly can introduce additional problems in inferring whether these economic perceptions independently affect environmental attitudes as both of these have been shown to have been influenced by common factors. Such problems can be overcome through the use of experimental and panel-data analysis, but such approaches may also have their limitations.

While panel data analysis has been carried out in the US by Mildemberger and Leiserowitz (2017), their first wave of data was collected after the recession had already started and thus their analysis cannot capture a before and after scenario. As this research question only became of special interest in the aftermath of the recession, there is a lack of panel data that can be utilised for this purpose. And though Kachi, Bernauer and Gampfer (2015) did carry out an experiment in which they primed individuals to feel a certain way about the economy to then test the effects of such a prime on their climate change attitudes, such an experimental approach has also proven difficult due to economic perceptions being difficult to alter in a survey setting and there are good grounds to believe that the null result of their experiment is due to the manipulation not working. To overcome these difficulties, I have firstly identified a three-wave individual-level panel dataset from New Zealand that covers the period before and after the onset of the crisis that is suitable for answering this question. Secondly, I have carried out an online question-order survey experiment that instead of attempting to manipulate

individuals' perceptions on the state of the economy manipulates the salience of their existing perceptions.

CHAPTER OUTLINE

This thesis contains five empirical chapters that each further our understanding of the relationship between environmental attitudes and economic conditions. It is structured in a paper-based format as although each of the chapters is tied into the central theme of the thesis and flow on logically from one another, each chapter can also be read as a standalone piece by themselves. I will now outline each of these chapters, the gap they seek to fill and briefly summarise the results.

Are Environment versus Economy Trade-off Questions More about Environmental or Economic Attitudes?

In the first empirical chapter, using data from the British Election Study, I ask whether environmental-economic trade-off questions capture environmental attitudes or are instead tapping into the economic dimension of the trade-off question. This is an important question to answer for this thesis as such measures will be used in subsequent analysis – primarily as they enable respondents to indicate their support for environmental protection in the presence of scarce resources and thus may capture actual attitudes that are related to support for implementing environmental policies - and it is vital to ensure that such questions are valid measures of environmental attitudes. And yet research is lacking on whether they primarily capture environmental attitudes or whether they are instead picking up on the economic dimension of the trade-off. The results demonstrate that such questions do primarily capture environmental protection attitudes and thus can be used as valid measures for investigating public support for environmental protection.

Macro-economic conditions and Support for Environmental Protection During the Great Recession

The second empirical chapter uses such an environmental-economic trade-off question to examine the effect of changing economic conditions at the time of the Great Recession on the prioritisation of environmental protection using cross-sectional data from waves 5 (2004-2007) and waves 6 (2010-2014) of the World Values Survey covering 21 countries across Western Europe, Eastern Europe, South America, North America, Australasia and a small number of comparable Asian states.

A number of gaps in the literature are addressed here. Firstly, the dependent variable is one that focuses on the broad topic of environmental protection and so it broadens the scope of the topic beyond that of global warming/climate change that has been the predominant focus of the literature. Secondly, a number of studies outlined carried out their data collection once signs of the recession had already started to take hold, but as the fifth wave of this data had finished its data collection the year before the financial crash and the sixth wave was collected once the effects of the recession had taken effect, it provides an ideal timeframe within which to best analyse the full effects of the recession on environmental attitudes. Thirdly, the range of countries used in the analysis enables the results to be generalised beyond the dominantly-used case of the US and to a lesser extent Europe. And as there was a large degree of variation in the extent to which countries were affected by the recession, by leveraging this change in the national variance I have the ideal conditions under which to answer this research question. This chapter will also tackle a neglected aspect of the literature by examining whether different income groups may have changed their support for environmental protection at different rates during the economic difficulties.

I find a strong relationship between changes in the prioritisation of environmental protection and changes in the unemployment rate, with support for environmental prioritisation decreasing when the unemployment rate goes up and increasing when the unemployment rate

goes down, but no significant relationship between changes in the prioritisation of environmental protection and changes in either GDP PPP PC or growth rates. Furthermore, the results suggest that the recession did not alter the way in which individual income levels relate to environmental attitudes.

Environmental protection preferences under strain: an analysis of the impact of changing individual perceptions of economic and financial conditions on environmental public opinion during economic crisis

In the third empirical chapter, the focus of the thesis moves beyond the use of objective measures of economic conditions to instead focus on subjective perceptions of the state of the economy. As it is necessary for individuals to perceive changes in the state of the economy in order for them to affect their attitudes, then subjective perceptions may reduce unnecessary noise in the data and provide more accurate results. Due to issues of endogeneity, the use of standalone or repeated cross-sectional data may not be suitable data to use to answer this research question and so another approach is needed.

This particular chapter uses panel survey data from the New Zealand Election Study during the period of 2002-2008 to analyse the impact of how changes in economic perceptions and perceptions of how one's individual household finances changed in light of the 2008 economic crisis may have affected environmental protection preferences. The availability of individual-level panel data that asks about both environmental protection preferences and about individuals' economic perceptions is quite rare in itself. This dataset is particularly suitable to answer this research question as the timeframe covers both a period of unprecedented economic prosperity for the country between the 2002 and the 2005 waves and a period of severe economic difficulties following successive droughts in 2007 and 2008 that badly affected New Zealand's key dairy industry and contagion from the global economic crisis on New Zealand's economy following the collapse of Lehman Brothers. The results of the analysis show that

neither changing economic perceptions nor changing household financial circumstances can account for the decline in environmental protection prioritisation witnessed in the aftermath of the Great Recession.

The role of economic perceptions in influencing views on climate change: an experimental analysis with British respondents

The fourth empirical chapter continues with the focus on subjective measures of economic perceptions but changes the topic of environmental protection to that of climate change. In order to overcome the difficulties in isolating the effect of economic perceptions on belief in anthropogenic climate change and support for taking urgent action to address it, it uses an online question-order survey experiment – carried out in December 2015 on a national sample of British adults – in which respondents were randomly assigned to receiving a question asking them about their perception of the state of the British economy either before or after being asked about their climate change views. Thus, the experiment does not aim to move the needle on individuals' assessment of the economy – which may be difficult to achieve – but instead manipulates the salience of their economic perceptions.

The results show no effect of the prompting on belief in anthropogenic climate change, but they do show that those with a non-positive view of the economy were less likely to support urgent action in comparison to those who considered the economy to be performing well if they were asked first about their economic evaluations. As the salience of economic evaluations and the direction of such evaluations would not be significant if economic evaluations themselves were not important, the results thus reveal that economic evaluations do indeed affect individuals' sense of urgency for taking action to address the problem of climate change.

The Environmental Dimension of Public Support for Domestic Water Charges

Each of the previous three empirical chapters has focused their attention on examining the impact of economic factors on individuals' stated willingness to take action to protect the environment. However, what they have not done is to test whether during a period of economic crisis individuals' stated willingness is just an empty statement – perhaps flowing from a social desirability to be environmentally conscious – or whether it actually translates into support for environmental policies.

Examining such a question is tricky, especially if there exists a social desirability bias in one's stated willingness to protect the environment as such a bias may also affect individuals' stated support for policies with obvious environmental implications. However, if a policy with tangible environmental effects is predominantly being framed in public discourse through an alternative lens, unless individuals are truly environmentally disposed - in line with Zaller's (1992) RAS model - they would not be expected to have such environmental considerations at the forefront of their minds when answering the question and thus their responses to environmental protection questions should not have an impact on their support for such a policy. However, if they are genuine in their environmental convictions they should be better placed to recognise the environmental implications of the policy and then they may use such an environmental frame when deciding whether to support or to oppose the policy.

In this final empirical chapter, I thus make use of an ideal case study in which such a question can be answered: support for the introduction of domestic water charges in Ireland at the time of the 2011 general election. The environmental benefits of such a policy would have included encouraging water conservation as well as providing finances through which the country's outdated water infrastructure system – a key factor for water pollution due to partially or untreated sewage being returned to the rivers and seas – could be improved. However, due to the extremely harsh economic climate at the time with the country having just entered into

an EU-IMF bailout, the environmental benefits of the policy were largely sidelined in the public discourse and it was primarily being framed as an austerity measure. Supporters emphasised the income that it could raise to help address the country's lack of finances while those who opposed the policy emphasised the social implications of the policy as it would add additional financial burdens to individuals and families who were already struggling.

Using data from the 2011 Irish National Election Study, this chapter finds that while individuals' willingness to prioritise environmental protection over economic growth at the policy level did not affect their support for water charges, their willingness to make individual sacrifices for the environment – through either being willing to reduce their standard of living or to pay higher taxes for the environment - did. As the policy proposal is one that would indeed have an impact on individuals' pockets, then this demonstrates a sophistication by individuals in the way in which their environmental attitudes relate to their support for the introduction of water charges and, by extension, that individuals' environmental attitudes can have a tangible impact upon support for environmentally beneficial policies.

CONCLUSION

Each of the outlined chapters is bound together by their common focus on analysing the relationship between environmental protection preferences and economic conditions. Using different but complementary datasets and methodologies that have been chosen to suit the specific sub-research questions and to overcome unresolved issues in the existing literature, they each provide important insights into how and in what ways the two factors relate to each other. Taken together, they fill in crucial gaps and deepen our understanding of the way these two factors relate to each other, while also shining a light on what future research should focus on. Such issues are discussed in detail in the concluding chapter of the thesis.

Empirical Chapter 1: Are environment versus economy trade-off questions more about environmental or economic attitudes?

ABSTRACT

Environmental-economic trade-off questions are commonly used in survey research as they enable respondents to indicate their support for environmental protection in the presence of scarce resources. Thus, they may capture attitudes that are directly related to actual support for the implementation of environmental policies. However, research is lacking on whether these questions primarily capture environmental attitudes or whether they are actually picking up more on the economic dimension of the trade-off. This is especially important to clarify for electoral research if one is to use such questions to test the effects of environmental issue voting. Using data from the British Election Study, this chapter finds that such questions are primarily measures of environmental protection attitudes rather than the economy. Thus, such measures can be used in survey research to capture environmental protection preferences and, substantively, the findings also suggest that citizens' environmental attitudes are separable from their broader economic attitudes.

KEYWORDS: British Election Study, Economic Attitudes, Environmental Attitudes, Question Validity

INTRODUCTION

There are many important research questions that seek to examine how individuals' environmental protection preferences affect various aspects of electoral research from the role that such preferences can have on environmental issue voting in elections and the impact that such issue voting can have on election outcomes to whether and under what circumstances parties respond to such preferences among the electorate. Equally, there is still a debate on the factors that influence individuals' support for environmental protection itself. In order to be able to answer such questions, it is necessary to have valid measures of support for environmental protection.

When it comes to support for environmental protection, there is not one but many dimensions (Diekmann and Franzen 1999; Dietz, Stern, and Guagnano 1998; Dunlap and Jones 2002). These include supporting the principle of addressing environmental problems, being

willing to make personal sacrifices for the environment and undertaking political action for the environment. These dimensions are not equivalent and the measure one uses may affect the results that one gets during analysis (Dietz, Stern, and Guagnano 1998).

This chapter focuses on a trade-off dimension of being willing to have society prioritise action on environmental protection over the economy. Though individuals may have certain levels of overall concern for the environment, resources in society are limited and it is through trade-off measures that one can draw out individuals' prioritisation of environmental protection in the presence of scarce resources (Diekmann and Franzen 1999). However, it has not been established whether in this trade-off dimension it is environmental preferences that are coming through or whether one could predict respondents' answers to this question based on their attitudes towards the other part of the trade-off. As Klineberg, McKeever & Rothenbach (1998, 737) remark, 'The consistent differences between liberals and conservatives on these [trade-off] items may have at least as much to do with their reactions to increased government intervention in general as with differences in their concerns about environmental issues per se'.

The question of the validity of environmental protection trade-off measures is investigated in this chapter using British Election Study (BES) internet panel data. The BES has been chosen as it has a large, national sample that combines active sampling with post-survey statistical weights to aid representativeness and contains environmental protection measures in addition to a range of various other attitudinal questions that tap into the economic dimension of the trade-off. One of these environment questions is an explicit trade-off question which presents respondents with the following and asks them to place themselves on an 11-point scale between the contrasting statements: 'Some believe that protecting the environment should have priority even if that reduces economic growth. Others believe that economic growth should have priority even if that hinders protecting the environment. What is your opinion?'. In the other environmental question, respondents are asked on a 5-point scale: 'Do

you think that [measures to protect the environment have] gone too far or not far enough?’.

The chapter will begin by examining the previous literature in this area, it will then detail the data and methods being used and present the results of the analysis before arriving at a conclusion. With the analysis demonstrating that the environmental trade-off questions are valid measures of environmental protection, this dataset contains a wealth of measures of voter attitudes and preferences upon which future work can test important hypotheses relating to individuals’ prioritisation of environmental protection.

LITERATURE

Questions on environmental protection were almost completely absent from public surveys until the mid-1960s, reflecting the low level of societal salience given to the issue. The earliest questions tended to focus on the perceived seriousness of the issue and the amount of attention government should give to it (Dunlap 1991). It was not until the 1970s that explicit trade-off questions presenting a trade-off between environmental protection and the macro-economy started to be asked. These were initially in the form of a binary statement in which respondents would need to choose an issue priority, such as this question asked by Cambridge in the United States from 1976, ‘Which of these two statements is closer to your opinion: We must be prepared to sacrifice environmental quality for economic growth. We must sacrifice economic growth in order to preserve and protect the environment’ (Dunlap 1991, 294/295). The asking of such questions came at a time when the previously accepted inherent benefit of economic growth started to be questioned due to the realisation of its undesirable environmental effects (Inglehart 1981, 895). Such a realisation also led to Inglehart (1981, 1995) incorporating environmentalism into his seminal postmaterial thesis as an instance of a concern that people in Western societies tended to develop once their need for economic security had been satisfied, though this incorporation has been criticized by some scholars who argue for various reasons that the postmaterialist explanation is unsatisfactory for accounting

for changing environmental values (Brehin and Kempton 1994; Dunlap and Mertig 1997). While work also existed that compared environmental protection concerns and the dominant social paradigm of concern for various social, political and economic needs by measuring these two concepts on separate Likert scales, it was in the work of Cotgrove (1982) where such items were first placed opposite each other on the same Likert scale and individuals were required to choose where their relative priority lay (Dunlap 2008, 8). While the exact phrasing of these has since evolved, such questions have been commonly adopted in survey research and these questions are the focus of this current study.

These trade-off measures may allow one to understand the degree of prioritisation a respondent gives to environmental protection, especially when it is unfeasible to include a larger battery of environmental protection questions to compose scales such as the New Environmental/Ecological Paradigm Scales (Dunlap et al. 2000; Dunlap 2008) or when one wants to ensure that one is picking up on a single dimension of environmental concern. Indeed, Daniels et al's (2013, 462) - who identify 16 different categories of environmental survey questions - evidence leads them to conclude that 'each [environmental] measure has integrity and would be best examined on its own, rather than combined with other measures into indexes seeking to describe higher-order constructs'. In examining the trade-off measures, previous literature has noted that one does not know whether responses are capturing environmental attitudes or whether answers are being given primarily in response to the opposing dimension (Klineberg, McKeever, and Rothenbach 1998).

Rather than examining how patterns to these questions relate to patterns in questions that capture the non-environmental element of the trade-off, research thus far has focused on whether different socioeconomic or societal characteristics explain the various environmental measures differently through regression analysis. Among Klineberg, McKeever & Rothenbach's (1998) findings using data from Texas are that while age and education are

related to all their dimensions of environmentalism, political ideology is most consistently related to the macro-level trade-off dimension and income is only significantly related when individuals are asked to make personal contributions to address environmental issues. Dietz, Stern & Guagnano (1998) meanwhile find using data from the 1993 General Social Survey that while younger generations are more likely than older generations to agree with government environmental spending, to prioritise the environment over the economy and to display an awareness of the consequences of environmental damage, they are less likely to engage in pro-environmental consumer behaviour or sign environmental petitions. They also show that females are less likely than males to be willing to make personal financial sacrifices for the environment but are more willing to engage in environmental consumer spending, to display an awareness of the consequences of environmental damage and to believe in the fragility of nature. At the macro-level, it has been found that while individuals in poorer countries are more likely to express a concern for the environment, individuals in richer countries are more likely to make personal sacrifices to tackle the problem or to prioritise the environment over the economy (Diekmann and Franzen 1999; Dunlap and Mertig 1995).

These studies make a substantial contribution to the literature as they display the multifaceted nature of environmental attitudes and behaviours by showing how certain sociodemographic factors may be significantly related to some dimensions but not others. By doing so, they illustrate that different environmental measures are not necessarily equivalent to each other. Despite this, such studies do not further our understanding of whether environmental trade-off questions capture more of the environmental or economic dimensions, as they do not show which element of the trade-off is the most prominent for respondents when answering them and whether and how such differences and similarities in their sociodemographic characteristics may relate to this. Additionally, there are issues with some studies – as Dunlap & Jones (2002) point out – where they not only vary the expression of

environmental concern but also the topic of environmental concern¹ that they use to make comparisons, and thus one cannot know whether it is the expression of environmental concern or the topic of environmental concern that is at work.

This chapter assesses the validity of environmental trade-off questions. As Carmines and Zeller (1979, 12) note, ‘An indicator of some abstract construct is valid to the extent that it measures what it purports to measure’. If environmental trade-off questions predominantly capture respondents’ economic attitudes, then this would deem them an invalid indicator of environmental protection preferences. Equally, validity is a question of degrees and so the questions would be deemed a non-valid measure of environmental protection preferences if they were found to *only* measure the non-environmental dimension of the trade-off. Thus, the primary concern of this chapter is to assess the construct validity of such questions for measuring environmental attitudes.

DATA & METHODS

This chapter primarily uses the wave 7 panel data of the 2014-2018 BES which was fielded online through YouGov from 14th April to the 4th May 2016 (Fieldhouse et al. 2016b). It contains a total sample of 30,895 individuals and a core sample of 22,337 individuals, the latter of which I use as it is more representative when analysing the data as a stand-alone cross-sectional wave. This large sample size permits me to not only have a more than adequate size to make overall inferences but, thanks to the range of demographic data contained in the survey, also to carry out analysis on specific sub-groups while still having a large enough sample to make valid deductions. One issue with the BES internet panel survey data is that respondents are far more politically interested than the population as a whole (Mellon and Prosser 2017) which may bias results if not corrected for. To deal with this, I combine the survey weights provided in the dataset with weights created to match the national level of political interest.

¹ Different environmental topics could include nature, pollution, toxic waste and so on.

With the data being collected in 2016, the target data for this weight is taken from both the 2015 and 2017 British Election Study face-to-face surveys which are nationally representative using the average responses between these two years to a question asking on a scale of 0-10 ‘How much attention do you generally pay to politics’ (Fieldhouse et al. 2016a, 2018) which was also asked in wave 7 of the panel study data². The combined weight has a value of .24 at the 10th percentile and 2.28 at the 90th percentile.

Wave 7 has specifically been chosen as it is the only wave to date to concurrently contain three questions specifically on environmental issues, of which two relate to the general topic of environmental protection and the third relates to climate change. Having a multitude of environmental measures is desirable to robustly test not only how they behave with other measures, but also whether each environmental protection measure coherently relates to the others. These questions are also similar to the types of environmental questions commonly asked in survey research more generally, and this should enable the findings of this research on the behaviour of these questions to be generalised to questions capturing environmental attitudes in other datasets in countries that are comparable with Britain. As the two main environmental measures were also asked in wave 4 (Fieldhouse et al. 2015) which was carried out between 4th and 30th of March 2015, this wave will also be briefly used to examine the stability of the measures over time. In total, 21,019 individuals responded to both waves 4 and 7 of the survey³. It must be iterated that the focus of these environmental questions – and thus of this analysis – is on a willingness to make policy rather than personal sacrifices to protect

² See Table A1.1 in the appendix for further details on how this weight was calculated.

³ Analysis of wave 4 is being primarily confined to looking at the stability of the measures because, in addition to the climate change question not being asked in wave 4, a number of the questions which are detailed later in this chapter that capture a libertarian dimension are also not included. As a robustness check, the analysis has also been carried out on the wave 4 data using the more limited range of questions available and the results remain robust. These tests will be discussed in the results section.

the environment. Thus, conclusions from the results will necessarily be confined to this policy-level dimension.

Within the dataset, I utilise sets of questions that aim to capture three additional dimensions to the environment. The first two – financial/economic hardship and redistribution preferences - relate to the economic dimension. Meanwhile, even if the environmental questions are found to be distinct from these, it is possible that they may primarily be capturing a libertarian dimension rather than a distinct environmental dimension, with previous research finding that libertarians are more likely than authoritarians to support environmental measures (Flanagan and Lee 2003) and thus I also utilise a set of libertarian questions. I will now detail the questions being used under each of these categories. The exact question wordings and breakdown of responses can be found in the appendix.

Environmental Questions

The first environmental question asks respondents ‘Some believe that protecting the environment should have priority even if that reduces economic growth. Others believe that economic growth should have priority even if that hinders protecting the environment. What is your opinion?’ with responses ranging from 0 ‘economic growth should have priority’ to 10 ‘protecting the environment should have priority’. This makes the policy level trade-off explicit.

The second environment question asks respondents ‘Do you think that [measures to protect the environment have] gone too far or not far enough?’ with responses ranging from 1 ‘gone much too far’ to 5 ‘not gone nearly far enough’. As most people agree that protecting the environment is a desirable principle and so at a basic level can be conceived as a valence issue (Clarke et al. 2009, 5), going too far could reasonably be understood as too much money being spent on the issue that could be spent elsewhere rather than people considering that the environment is in too good of a condition. A key similarity between this question and the

previous question is that they both focus on the same environmental topic of general ‘environmental protection’.

Finally, the third environmental question asks respondents, ‘On the subject of climate change do you think...’: (1) ‘The world’s climate is not changing’, (2) ‘The world’s climate is changing but not due to human activity’ or (3) ‘The world’s climate is changing due to human activity’ and was asked to 25 per cent of the sample. While a belief rather than an attitudinal question and focusing on the environmental topic of climate change rather than environmental protection in general, this is an important indicator of environmentalism but one without an economic or a trade-off dimension. Thus, if the initial environmental questions capture environmental dispositions, one would expect the environmental questions to correlate reasonably with this climate belief question. Due to this question being asked to a proportion of the sample as well as the focus on a different environmental topic, results will be calculated both including and excluding the climate belief question. It should also be noted that all three of these environmental questions were asked in different parts of the survey.

Financial/Economic Hardship Questions

The questions used to capture hardship are divided into personal hardship and macro-economic hardship and have all been coded so that the highest values represent the greatest amount of hardship. For capturing personal hardship, the first two capture respondents’ expected risk of experiencing poverty and unemployment over the next 12 months. The third question focuses on retrospective change in household financial conditions. It may be however that individuals’ perceptions of the state of the economy are more salient to how individuals answer the questions. To capture respondents’ perceived state of the economy, I use a question capturing perceived changes in the cost of living, a question on whether it is a good or bad time to buy major household items and a question on current macro-economic evaluations.

Redistribution Questions

To capture redistribution preferences, I use a number of different types of questions. Each of these is coded so that the highest value reflects the greatest support for redistribution. The first three respectively ask whether respondents think that cuts to local services, public spending in general and the NHS have gone too far or not far enough. Next, I use a question that gathers views on whether the government should make greater efforts to address income inequality. Lastly for this set of questions, I use a scale composed of five elements that captures the socialist-Laissez Faire dimension – often referred to as the left-right dimension (Evans and Heath 1995, 191) - using an index composed of five elements. This scale has been shown to have high levels of both reliability and validity and to perform better than questions asking respondents to self-place themselves on a left-right scale as a substantial percentage of respondents understanding of what the scale means differs from the social science understanding of what it is meant to capture (Evans, Heath, and Lalljee 1996, 98/99).

Libertarian Questions

To capture the libertarian value dimension, I utilise a variety of measures. Each of these is coded so that the highest value reflects the greatest degree of libertarianism. Three questions measure attitudes towards immigrants and asylum seekers with previous research finding a strong correlation between attitudes towards immigration and libertarian values where libertarians are more favourable towards immigrants than authoritarians (McLaren and Johnson 2007). The first question asks whether immigration undermines or enriches Britain's cultural life. The subsequent questions ask whether more or fewer immigrants and asylum seekers respectively should be allowed into Britain. Next, I use a libertarian-authoritarian scale derived from five individual measures. Finally, I use a measure that taps into respondents' sense of European identity, with libertarians having been found to identify more strongly as European than authoritarians (Patterson and Sobisch 1994).

Thus, with these three dimensions of financial hardship, redistribution and libertarianism, I will be able to analyse the extent to which the environmental questions get absorbed into one or more of these dimensions, or if a distinct environmental dimension emerges. To do this, I run a number of Pearson correlation tests to assess whether there are notable correlation patterns at the bivariate level between the environmental questions and the questions that measure the other three dimensions⁴. Following this, exploratory factor analysis using the principal factoring method and a Kaiser normalisation rotation is carried out in order to assess what latent factors emerge from these questions. As the climate change belief question was only asked to a proportion of respondents, the factor analysis will be carried out both with and without this question. Finally, regression analysis will be carried out to examine whether the environmental questions are predicted by different demographic characteristics than the socialist-laissez faire or the libertarian-authoritarian indices; if so this would strengthen claims that the environmental questions are capturing a distinct environmental dimension. In all of the analysis - unless otherwise stated - where respondents have answered 'don't know' this has been treated as missing data.

RESULTS

Before examining the validity of the measures, it is first worth examining the stability of the environmental protection questions over time. This can be done as both of the environmental protection questions were asked previously in wave 4 for which data was collected in March 2015. By doing so, this will give an insight into how reliable the questions are. If the patterns of answers to the questions prove to be coherent over time – and one would expect that individual environmental attitudes should not change very quickly especially given

⁴ While Spearman's rank correlation tests may be deemed more appropriate, the use of Pearson's correlation tests allows me to utilise survey weights provided. Given the very large sample size, one would not expect that these tests would provide very different correlation coefficients. As a robustness check, I have carried out the correlation tests on the unweighted data using both Pearson's and Spearman's rank correlations tests and this confirms that both provide almost identical results.

the similar political and economic climate in Britain at the times these surveys were administered - then one can have greater confidence in extrapolating conclusions when making claims on their validity.

Tables 1.1 and 1.2 present the transition probabilities for one's responses to the environment versus economy and the environmental protection not gone far enough questions respectively in wave 7 based on their responses in wave 4⁵. In both cases, one can see that individuals have the highest probability of choosing the same response as they did the previous year. Respondents have a higher tendency to give the exact same response for the 5-category response than the 11-category response which one would expect, though when the 11-category variable is recoded into a 5-category variable (see Table A1.23 in the appendix) one sees a more similar pattern emerge. One also sees that people are most likely to give the exact same response in the subsequent wave if they answered on either the extremes or the midpoint of the scale in the previous wave. When individuals change their responses, they are most likely to switch to an adjacent response category or categories and are extremely unlikely to move from leaning towards an environmental response to a non-environmental response. This suggests that while people's environmental leanings on both of these questions are quite stable, at least within the space of the 14-month timeframe between these two surveys, the strength of their responses can vary.

To quantify their overall stability, tabulations indicate that the environmental protection has not gone far enough question has a total within value of 68 per cent while that of the environment versus economy (using the 5-category response for direct comparison) is 66 per cent⁶. As a comparison, these values are similar to the stability seen for whether too many

⁵ This procedure does not allow survey weights to be applied. However, as the purpose of this exercise is to gain an indication of the stability of the responses rather than make representative claims, this should not affect the core claims.

⁶ The value is 59 per cent if the 11-category coding is used.

people rely on government handouts (67 per cent), while being slightly less stable than satisfaction with UK democracy (70 per cent) and slightly more stable than perceptions of changes in the state of the national economy (63 per cent)⁷.

Table 1.1: Transition Probabilities for Prioritising Environmental Protection Not Gone Far Enough Between waves 4 (March 2015) and 7 (April/May 2016) (%)

Environment Not Far Enough	1 (Much Too Far)	2	3	4	5 (Not Nearly Far Enough)	DK	Total
1 (Much Too Far)	49	24	17	3	2	4	100
2	14	38	36	5	1	5	100
3	4	13	57	15	4	8	100
4	2	6	34	39	14	5	100
5 (Not Nearly Far Enough)	2	2	15	24	53	4	100
DK	5	7	26	7	4	51	100
Total	10	16	38	16	9	10	100

Note: n=21,019

Table 1.2: Transition Probabilities for Prioritising Environment v. Economy Between waves 4 (March 2015) and 7 (April/May 2016)

Environment v. Economy (Economy)	0	1	2	3	4	5	6	7	8	9	10 (Env)	DK	Total
0 (Economy)	43	14	13	7	3	9	2	2	1	1	1	4	100
1	14	20	18	14	9	12	3	2	1	1	1	5	100
2	9	11	21	18	12	14	5	3	2	0	1	5	100
3	4	5	15	23	16	18	7	4	2	1	1	6	100
4	2	3	9	15	21	23	11	7	3	1	0	6	100
5	3	2	4	8	9	37	13	8	4	1	3	9	100
6	1	1	3	6	8	24	22	15	8	3	3	7	100
7	1	1	2	4	5	17	17	23	15	5	5	6	100
8	1	1	3	2	3	14	10	18	23	9	11	4	100
9	1	1	1	2	3	9	7	14	21	17	22	4	100
10 (Env)	1	0	0	1	1	7	5	7	12	7	53	4	100
DK	4	1	2	5	4	17	6	5	3	1	3	51	100
Total	6	4	7	9	9	20	10	9	7	3	7	10	100

Note: n=21,019

While the previous analysis displays the stability of these two questions between 2015 and 2016 and thus suggest they are reliable measures to use to answer this chapter's key question, they do not reveal the relationship between the questions themselves. Focusing solely on the wave 7 data from here on in, Table 1.3 displays the correlation between these two

⁷ Each of these questions were asked on a 5-point scale.

environmental protection questions. It shows that those who think that measures to protect the environment have gone much too far are most likely to prioritise economic growth over the environment at the extremes of the scale and that those who think that environmental protection has gone too far are most likely to place themselves moderately in favour of economic growth over environmental protection. The same holds through vice versa for those who think environmental protection has not gone far enough and stating a preference to prioritise environmental protection over economic growth. Thus, as expected, these two questions appear to share a similar pattern of responses, though with capturing slightly different facets of environmentalism they are not identical.

Table 1.3: Crosstabulations Between Environment V Economy and Environment Not Far Enough (%)

	Environment Not Far Enough				
	Much Too Far		Not Nearly Far Enough		
	1	2	3	4	5
Environment Versus Economy					
0 (Economy)	34	11	6	2	2
1	11	8	5	1	1
2	10	14	10	4	1
3	8	16	14	6	2
4	3	11	13	9	3
5	13	16	27	24	12
6	6	7	11	17	9
7	2	8	7	15	14
8	5	5	4	12	14
9	2	2	1	4	11
10 (Env)	6	2	1	6	32
Total	100	100	100	100	100

Note: Excluding Don't Know Responses; n=18,598

To further expand on the relationships between these and the other variables, the bivariate relationships between the environmental questions and each of the individual questions within the financial hardship, redistribution and libertarianism categories are presented. Table 1.4 displays the Pearson correlation coefficients between the environmental questions and the hardship questions, with all of the hardship questions coded so that higher

values represent greater hardship⁸. The first thing to note is that the two environmental protection questions correlate at a decent level with each other at 0.47. There is also a much higher correlation between belief in climate change and considering that environmental protection has not gone far enough than there is between belief in climate change and prioritising environmental protection over economic growth⁹, which may suggest that individuals think more of climate change when they are asked the environmental protection has not gone far enough question. All of these environmental questions are very weakly correlated with each of the hardship questions, though it is notable that the environment versus economy question generally has a slightly higher correlation with the hardship variables¹⁰ and that there is virtually no correlation between belief in climate change and the hardship questions. The hardship questions themselves vary in the strength of their relationship to each other, but the direction of their relationships is as expected. It is also clear that the strengths of their relationships with each other are generally of a higher magnitude than the strength of their relationships with the environmental questions. Perhaps most notably, feeling at risk of falling into poverty and becoming unemployed in the next 12 months – which one would expect to be strongly correlated – correlate at approximately the same level as the two main environmental protection questions do with each other which strengthens the claim that – in the context of this survey – the correlation coefficient between the environmental questions is quite decent.

⁸ Due to the high number of cases in the sample, most bi-variate correlations appear as statistically significant and thus it is not instructive to display significance levels.

⁹ A test of equality between these two correlation coefficients produces a z score of 4.91 at $p=0.00$

¹⁰ Carrying out tests of equality confirms that the coefficients relating to the 'Bad Time Purchase' variable are the only ones in which there is not a statistically significant difference at the $p<0.05$ level in the correlations between the two environmental trade off questions and the hardship indicators.

Table 1.4: Pearson's Correlation Matrix – Environmental Protection Measures & Hardship Indicators

	Env v Econo my	Env Not Far Enough	Climate Belief ⁺	Risk Poverty	Risk Unemplo y	Change Finance s	Cost of Living	Bad Time Purchase	Econ Change
Env v Economy	1.00								
Env Not Far Enough	0.47	1.00							
Climate Belief ⁺	0.29	0.38	1.00						
Risk Poverty	0.06	0.01	0.00	1.00					
Risk Unemploy	0.07	0.04	-0.02	0.46	1.00				
Change Finances	0.03	-0.01	-0.02	0.41	0.26	1.00			
Cost of Living	0.08	0.10	0.09	0.23	0.13	0.21	1.00		
Bad Time Purchase	0.05	0.03	0.02	0.24	0.20	0.24	0.16	1.00	
Econ Change	0.09	0.06	0.02	0.29	0.16	0.41	0.25	0.27	1.00

⁺ Asked to 25% of the sample;

Table 1.5 displays the Pearson correlation coefficients between the environmental and the redistribution questions, with all of the redistribution questions coded so that higher values represent greater preferences for redistribution. All of the environmental questions are weakly correlated with each of the redistribution questions while the redistribution questions themselves all correlate at a moderate to strong level with each other. The 0.70 correlation between cuts locally and cuts nationally is a strong one, but given that these are often inseparable in many peoples' minds one may have expected these to be stronger especially given that they were asked in the same battery of questions. Therefore, it may be that one may not expect to find correlations of much greater than this magnitude in this survey. In this context, it makes the correlation of 0.47 between the environmental questions relatively more impressive. These results thus indicate that the environmental trade-off questions are not primarily capturing the redistribution element of the trade-offs, but instead represent a separate environmental dimension.

Table 1.5: Pearson's Correlation Matrix – Environmental Protection Measures & Redistribution Preferences

	Env v Economy	Env Not Far Enough	Climate Belief ⁺	Cuts Local Too Far	Cuts National Too Far	Cuts NHS Far	Redistribute Too Incomes	Socialist- Laissez Faire
Env v. Economy	1.00							
Env Not Far Enough	0.47	1.00						
Climate Belief ⁺	0.29	0.38	1.00					
Cuts Local Too Far	0.11	0.08	0.05	1.00				
Cuts National Too Far	0.14	0.13	0.09	0.70	1.00			
Cuts NHS Too Far	0.11	0.13	0.14	0.56	0.62	1.00		
Redist Incomes	0.12	0.17	0.13	0.35	0.40	0.30	1.00	
Socialist-Laissez Faire	0.10	0.08	0.05	0.43	0.46	0.40	0.50	1.00

⁺ Asked to a subset of the sample (25%)

In Table 1.6, one can see the Pearson correlation coefficients between the environmental protection and the libertarian questions, with all of the libertarian questions coded so that higher values represent higher libertarian responses. These libertarian questions correlate more steadily with the environmental questions than either the financial hardship or the redistribution questions. However, the correlations are still at a lower magnitude than that seen between the environmental questions themselves. The libertarian questions also correlate more strongly with each other than any of them do with the environmental questions. This is as one would expect if the environmental questions capture a distinct environmental protection dimension. The highest correlation is between attitudes towards accepting more immigrants and more asylum seekers at 0.76; given the lack of distinction in many people's minds between the categories of non-nationals entering countries, this leads further credence for expecting that this level of correlation may be the highest one can expect to reach in this survey.

Table 1.6: Pearson's Correlation Matrix – Environmental Protection Measures & Libertarian Values

	Env v. Econ	Env Not Far Enough	Climate Belief ⁺	Immigration Culture	Immigration More	Asylum More	Authoritarian- Libertarian	European- ness
Env v. Econ	1.00							
Env Not Enough	0.47	1.00						
Climate Belief ⁺	0.29	0.38	1.00					
Immigration Culture	0.23	0.25	0.18	1.00				
Immigration More	0.24	0.25	0.17	0.70	1.00			
Asylum More	0.26	0.27	0.18	0.63	0.76	1.00		
Authoritarian- Libertarian	0.19	0.23	0.15	0.48	0.52	0.51	1.00	
European- ness	0.19	0.20	0.17	0.44	0.43	0.38	0.29	1.00

⁺Asked to 25% of sample

These initial crosstabulations would appear to show that the environmental questions are capturing a distinct environmental protection dimension rather than merely reflecting the financial hardship or redistribution side of the questions. They also appear to show that the libertarian questions are related but still distinct from the environment questions. In order to more robustly test this, exploratory factor analysis with a Kaiser normalisation rotation is carried out firstly on all questions excluding the belief in climate change question due to this question only being asked to a proportion of the sample (leaving a sample of 11,988 individuals once 'don't know' responses to all questions are excluded) and then once more including the belief in climate change question in the analysis (leaving a sample of 2,951 individuals once 'don't know' responses to all questions are excluded). Four factors are retained in the rotation following the production of scree plots that suggest this is the optimal number.

In Table 1.7, one sees the results from the rotated factor loadings for the questions when the climate change belief question is not included. Both factors 1 and 2 have a very similar variance. Factor 1 emerges as a libertarian factor while factor 2 meanwhile emerges as a redistribution factor. In terms of the environmental questions on these dimensions, it is notable that the libertarian factor has both of the environmental questions at approximately double the loadings than for the redistribution questions. Though this points to the environmental

questions correlating more with a libertarian dimension than a redistribution one, the loadings on this dimension for the environmental questions are still much lower than for the pre-identified libertarian questions and thus that the libertarianism is distinct from environmentalism¹¹.

Table 1.7: Rotated Factor Loadings – Without Climate Change Belief

Variance					
	Variance	Difference	Proportion	Cumulative	
Factor 1	2.80	0.14	0.41	0.41	
Factor 2	2.67	1.05	0.39	0.80	
Factor 3	1.62	0.95	0.24	1.03	
Factor 4	0.67	...	0.10	1.13	
Loadings					
	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Env v Econ	0.26	0.11	0.07	0.49	0.64
Env Not Far Enough	0.26	0.12	0.01	0.53	0.67
Risk Poverty	-0.05	0.14	0.64	0.01	0.57
Risk Unemployment	0.08	0.01	0.55	-0.00	0.68
Change Finances	-0.07	0.21	0.54	-0.01	0.66
Cost of Living	-0.05	0.23	0.29	0.11	0.84
Bad Time Purchase	0.02	0.13	0.37	0.03	0.84
Econ Change	-0.06	0.43	0.41	0.09	0.64
Cuts Local Too Far	0.04	0.77	0.14	-0.00	0.39
Cuts National Too Far	0.09	0.81	0.14	0.04	0.31
Cuts NHS Too Far	0.03	0.73	0.09	0.06	0.46
Redistribute Incomes	0.04	0.47	0.27	0.21	0.66
Socialist-Laissez Faire	-0.07	0.57	0.29	0.15	0.56
Immigration Culture	0.77	0.01	-0.03	0.10	0.39
Immigration More	0.85	0.01	-0.00	0.07	0.27
Asylum More	0.81	0.04	-0.02	0.11	0.33
Authoritarian-Libertarian	0.60	-0.02	0.00	0.13	0.62
Europeanness	0.53	0.02	-0.01	0.13	0.70

Note: Scores of above 0.30 are in bold; n=11,988

The third factor is a financial/economic hardship factor. The environmental questions have the lowest loading thus far on this factor which gives a strong indication that they are not merely picking up on an economic or financial dimension. It is however worth noting that – though still very low – the environment versus economy question loads higher on this dimension than the environmental protection has not gone far enough question by a magnitude

¹¹ If the factor analyse is run in which the component questions of the libertarian-authoritarian scale are used instead of the scale as a whole, a unique environmental factor still emerges. The main difference is the libertarian factor is split into one factor composed of this five component parts and one factor containing the rest of the questions tapping into libertarianism.

of 0.07. Finally, an environmental protection factor emerges as factor 4. In this factor, both the environmental protection questions emerge with high loadings, while all other questions load weakly onto this factor.

One potential concern is that the results from the factor analysis may be biased by the large proportion of the sample dropped due to the collective number of don't know answers across the eighteen questions¹². To address this, I have used maximum likelihood with the expectation-maximization (EM) algorithm approach to impute the values of the missing variables and carry out the factor analysis (Graham 2008). The attention respondents pay to politics was used as the auxiliary variable and the column-wise minimum approach was used to specify the nominal sample size for the factor analysis. Though this approach does not allow the application of weights, Table A1.24 in the appendix shows the same four factors emerge with the main difference being that the eigenvalue for the environmental factor is stronger and the environmental protection has not gone far enough question has a higher loading on the environmental factor.

I additionally carried out the factor analysis adding the climate belief question on the proportion of the sample who were asked this question¹³. One would expect this belief question – one without an economic or a trade-off dimension - to load with the two other environmental questions on an environmental factor if the environmental questions are primarily tapping into an environmental dimension. When this is done, the same four factors emerge with the climate belief question loading onto the environmental factor. One also cannot overlook the possibility that certain subsets of the sample may interpret the questions differently which may then impact upon the emergent factors. For instance, it may be that higher income individuals may be more likely to latch onto the environmental element of the questions, whereas lower income

¹² The tabulations in the appendix display the percentage of 'don't know' responses for each individual question.

¹³ See Table A1.25 in the appendix

individuals may be more likely to latch onto the financial dimension. To test this, I carried out the factor analysis sub-dividing the units by education (maximum of a secondary education; university education), self-identified class (lower; middle), partisanship (Conservative; Labour; Liberal Democrat) and income (<£25,000; £25,000-£49,999; >£50,000). In each case, the same four factors emerged as above which adds further merit to the presence of a unique environmental factor and that the trade-off question is primarily capturing an environmental dimension.

Additionally, if these environmental measures are distinct as the analysis thus far suggests they are, then they should be predicted by somewhat different individual characteristics than either economic attitudes or libertarian values. The literature does suggest that both libertarianism and environmentalism share some common socio-demographic correlates – such as higher levels of education being associated with higher levels of both – and so one would not expect to find that every socio-demographic characteristic relates differently to both of these either. To test this, Table 1.8 carries out ordered logistic regressions on the socialist-laissez faire scale, the libertarian-authoritarian scale and both of the environmental measures including the individual characteristics of educational attainment, gender, region, age, partisanship and how one perceives their household finances to have changed over the previous year¹⁴. These display key differences in the predictors of the variables.

While higher levels of education are associated with weaker socialist attitudes, they are associated with higher levels of libertarianism and environmentalism. Moreover, whereas

¹⁴ For robustness, these were also carried out using OLS regression though, apart from the strengths of associations with the region variable where there are some noticeable differences, the results are broadly similar. See Table A1.26 in the appendix for the OLS regressions. Moreover, while the ordered logistic regressions use the same sample size as that used for the factor analysis in Table 7, in Table A1.27 in the appendix the analysis is run on a larger sample (16,598) in which only those who responded don't know to the four dependent variables and the household finances variable have been treated as missing. Again, the findings remain broadly similar.

significant positive correlations are seen between educational attainment and libertarian values for those who have achieved secondary education, for the environmental attitudes the key division is between those who have achieved a university education and those that have not and the magnitudes of the coefficients are less. Females are less likely than men to be socialist or libertarian, but more likely to report environmental responses. Regionally, the north, Wales and Scotland are generally less environmental than London and the south, whereas notably residents of Scotland are more libertarian than residents of London. A negative relationship is seen between age and both libertarianism and environmentalism, whereas older individuals are more likely to display socialist attitudes.

Conservative party supporters are generally less socialist, libertarian and environmental than supporters of all other parties, with the exception of UKIP supporters who are the least libertarian of all. UKIP supporters are also notable for being more willing than Conservative supporters to prioritise the environment over the economy, yet less likely - albeit not at a $p < 0.05$ level - to think that environmental protection has not gone far enough. Supporters of all other political parties display a remarkable consistency in their coefficients for both of the environmental protection questions controlling for the other variables. Finally, those who perceive their household finances to have worsened are more socialist and less libertarian while having no significant relationship with either of the environmental variables at a $p < 0.05$ level. The borderline significance with the environmental versus economy variable and not the environmental protection has not gone far enough variable is consistent with the loadings of these questions on the financial/economic hardship factor in Table 1.7. Thus, while there are some similarities between these predictors of environmental protection and of the other two dimensions, there are also key differences that consolidate the claim that these measures of environmentalism are distinct from economic attitudes and libertarianism.

Table 1.8: Ordered Logistic Regressions

VARIABLES	(1) Socialist-Laissez Faire		(2) Libertarian- Authoritarian		(3) Env v. Econ		(4) Env Not Far Enough	
	Coef	se	coef	se	Coef	Se	coef	se
Education (No Formal)								
GCSE (D-G Grade)	-0.46***	(0.15)	0.28*	(0.15)	0.00	(0.15)	-0.33**	(0.15)
GCSE (A*-C Grade)	-0.43***	(0.11)	0.30***	(0.11)	0.09	(0.11)	-0.01	(0.11)
A-Level	-0.64***	(0.11)	0.65***	(0.11)	0.16	(0.11)	-0.01	(0.11)
Undergraduate	-0.80***	(0.11)	1.14***	(0.11)	0.24**	(0.10)	0.21*	(0.11)
Postgraduate	-0.98***	(0.13)	1.75***	(0.13)	0.43***	(0.12)	0.33**	(0.14)
Other Technical, Professional or Higher Qualification	-0.87***	(0.12)	0.82***	(0.11)	-0.02	(0.11)	-0.04	(0.12)
Don't Know/Prefer Not to Say/No Answer	-0.33	(0.21)	0.38*	(0.21)	0.39**	(0.17)	0.17	(0.19)
Female	-0.22***	(0.05)	-0.28***	(0.05)	0.21***	(0.05)	0.20***	(0.05)
Region (London)								
North East	-0.04	(0.13)	-0.08	(0.13)	-0.06	(0.15)	-0.17	(0.13)
North West	0.00	(0.11)	-0.15	(0.12)	-0.22*	(0.12)	-0.41***	(0.12)
Yorkshire and the Humber	-0.08	(0.11)	0.07	(0.12)	-0.27**	(0.13)	-0.12	(0.11)
East Midlands	-0.10	(0.11)	-0.00	(0.11)	-0.04	(0.12)	-0.18	(0.11)
West Midlands	-0.11	(0.11)	0.01	(0.12)	-0.07	(0.11)	-0.21*	(0.11)
East of England	-0.22**	(0.10)	-0.00	(0.12)	-0.06	(0.12)	-0.20*	(0.11)
South East	-0.27***	(0.10)	0.26**	(0.11)	0.09	(0.11)	-0.13	(0.11)
South West	-0.17	(0.11)	0.22*	(0.11)	0.11	(0.11)	0.00	(0.11)
Wales	0.08	(0.13)	0.02	(0.12)	-0.30**	(0.13)	-0.32**	(0.15)
Scotland	-0.26**	(0.11)	0.28**	(0.12)	-0.24**	(0.12)	-0.20*	(0.11)
Age (18-25)								
26-35	0.30***	(0.10)	-0.77***	(0.12)	0.03	(0.11)	-0.26**	(0.12)
36-45	0.43***	(0.10)	-1.13***	(0.11)	-0.28***	(0.10)	-0.31**	(0.12)
46-55	0.67***	(0.10)	-1.29***	(0.11)	-0.48***	(0.10)	-0.38***	(0.11)
56-65	0.78***	(0.09)	-1.26***	(0.11)	-0.42***	(0.10)	-0.53***	(0.11)
66+	0.56***	(0.10)	-1.41***	(0.11)	-0.46***	(0.10)	-0.71***	(0.11)
Partisanship (Conservative)								
Labour	1.88***	(0.06)	0.67***	(0.06)	0.66***	(0.06)	0.74***	(0.06)
Liberal Democrat	1.03***	(0.09)	1.05***	(0.09)	1.10***	(0.08)	1.11***	(0.10)
SNP	2.37***	(0.13)	0.59***	(0.13)	0.89***	(0.14)	1.01***	(0.14)
UKIP	1.40***	(0.10)	-0.33***	(0.09)	0.45***	(0.10)	-0.16*	(0.10)
Green Party	2.21***	(0.15)	1.59***	(0.15)	2.50***	(0.15)	2.61***	(0.17)
Other	1.77***	(0.22)	1.02***	(0.26)	0.95***	(0.16)	1.08***	(0.27)
None	1.39***	(0.11)	0.22**	(0.10)	0.41***	(0.11)	0.58***	(0.12)
Don't Know	1.17***	(0.16)	0.03	(0.18)	0.58***	(0.20)	0.56***	(0.20)
Change in Finances (-)	0.33***	(0.03)	-0.08***	(0.03)	0.05*	(0.03)	-0.01	(0.03)
Log Pseudolikelihood (Null)	-26,575.11		-27,001.31		-22,781.33		-13,989.71	
Log Pseudolikelihood	-25,103.47		-25,878.81		-22,243.20		-13,393.70	
Pseudo R ²	0.06		0.04		0.02		0.04	
Observations	11,988		11,988		11,988		11,988	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Analysis thus far has focused on wave 7 of the BES data. For robustness, it would be desirable to test whether the results are the same when analysed at a different time period. While the exact same analysis cannot be carried out on another wave of the BES data due to all of the same questions not being asked concurrently, wave 4 contains the main two environmental protection questions as well as all of the questions that capture economic hardship and redistribution attitudes, however it is missing some of the questions capturing the libertarian dimension. As a robustness check, I have thus carried out similar factor analysis to what was produced in Table 1.7 for the wave 7 data for the wave 4 data with the only difference being that the libertarian questions are not included (see Table A1.28 in the appendix)¹⁵. The results confirm that an environmental factor still emerges as a distinct factor. If the five components of the libertarian-authoritarian scale are added to the factor analysis (see Table A1.29 in the appendix) the results also remain robust. Lastly, the ordered logistic regressions that are displayed in Table 1.8 for the wave 7 data were replicated exactly for the wave 4 data (see Table A1.30 in the appendix) and the results display the same patterns as were found in the wave 7 data. This thus consolidates the finding that the environmental questions are predicted by some different individual characteristics than the socialist-laissez faire of the libertarian-authoritarian scales.

CONCLUSIONS

This research set out to assess the validity of environmental protection trade-off questions for capturing individuals' environmental protection preferences. With individuals having to rank their prioritisation of the environment against their prioritisation of other competing societal aims, it has been unclear whether these questions are truly tapping into a dimension of environmental concern or if they are picking up to a large extent on the economic dimension. Analysis of wave 7 of the 2014-2018 BES panel data strongly suggests that such

¹⁵ The core sample of wave 4 contained 170 individuals under 18, and these have been dropped from this analysis for comparability with wave 7 where every individual was 18 or over.

questions do primarily capture an environmental dimension and that the questions thus have construct validity. The two main environmental protection questions contained in the survey correlate decently with each other while correlating weakly with individuals' perceptions of both individual and macro-level financial hardship and individuals' preferences towards redistribution, in addition to a weak to moderate correlation with indicators of libertarianism. This interpretation of a unique environmental protection dimension is further strengthened by factor analysis and by logistic regression models. These results remain robust to similar analysis on the wave 4 data.

The importance of this finding is that, as one is able to accept that these measures are capturing environmental protection preferences, then one can safely use them as both valid explanatory and response variables in analyses to investigate various questions in electoral research regarding the role of environmental attitudes. Substantively, it also suggests that citizens' environmental attitudes are separable from their economic attitudes. While this pertains to waves 4 and 7 of the BES, it should also apply to other waves of the dataset and to other surveys in similar contexts where such questions are asked. This does come with the caveat however that 'construct validation ideally requires a pattern of consistent findings involving different researchers using different theoretical structures across a number of different studies' (Carmines and Zeller 1979, 24). Thus, it is advisable for further research to be carried out on other datasets across both time and region to assess the generalisability of the findings of this study. Additionally, the focus of this study is on trade-off measures where the non-environmental part of the question concerns macro-level policy. Future research should apply similar analyses to examining environmental trade-off questions where the focus is on individual-level trade-offs such as contributing part of one's income or paying higher taxes towards tackling environmental protection.

Empirical Chapter 2: Macro-economic conditions and Support for Environmental Protection During the Great Recession?

ABSTRACT

Over the past decade, there has been an increase in research examining the effect of economic conditions on environmental protection preferences. It has been hypothesised that during periods of economic difficulties support for environmental protection may decline as economic concerns come to dominate public discourse and individuals re-evaluate their immediate priorities. Using data from the World Values Survey (WVS) from before the onset of and in the aftermath of the Great Recession, this paper provides further evidence of how the Great Recession affected environmental protection preferences. Notably, it finds that while increases in unemployment had significant, negative effects upon prioritisation of environmental protection, changing growth rates had no significant impact. Thus, if policymakers wish to maintain public support for implementing environmental protection measures, they may be better to prioritise low unemployment over economic growth.

KEYWORDS: Economic Recession; Environmental Attitudes; Unemployment; Public Opinion; World Values Survey

INTRODUCTION

The Great Recession of 2008 was unprecedented in both its suddenness and its scale. Comparable to the Great Depression of the 1930s (Almunia et al. 2010), it resulted in a dramatic decline in economic fortunes at both the individual and country levels creating a vicious circle in which reduced consumer demand and lower production went hand-in-hand and unemployment spiralled. This not only adversely affected those who lost their jobs - with increases in financial hardship seen by rising poverty, debt and bankruptcy - but many of those who remained in employment witnessed a reduction in their standard of living when faced with higher levels of job insecurity and declining wages (United Nations Department of Economic and Social Affairs 2011). Not all countries were equally affected though and some saw improvements in their economic fortunes during this period (Lane and Milesi-Ferretti 2011). Thus, with a desirably large amount of variation in macro-economic conditions, the aftermath

of the crisis provides the ideal opportunity to investigate this chapter's research question on how changes in economic conditions may affect the prioritisation of environmental protection.

Existing evidence highlights how recessions may adversely affect environmental protection policy in a manner that permeates throughout society. One may see the increased destruction of ecosystems, decreased investment in clean energy and government policy that prioritises economic development over environmental protection (Elliot 2011), as part of a 'grow now, clean-up later' approach (World Bank 2005, 5). Companies, under the pressure of strained resources, are more likely to circumvent environmental standards to reduce costs (Dauvergne 2000) with Bae (2017) finding that industrial plants' pollution reduction efforts decreased during the 2008 recession when unemployment and plant closing rates were high. At the same time, periods of weak economic activity may have some benefits for the environment as with reduced levels of production air pollution may fall (Davis 2012), though in the long-term these short-term gains may be outweighed by policies during the crisis focusing on economic growth which may later exacerbate environmental protection problems (Tienhaara 2010; Lekakis and Kousis 2013).

The crisis may also have affected individuals' environmental protection preferences. It is well documented that there was a decline in environmental concern and an increase in climate change scepticism in the final years of the 2000s (Nielson 2009; Pew Research Centre 2009; Ratter, Philipp, and von Storch 2012). Coinciding with the occurrence of the financial crisis, it has been hypothesised that the two phenomena could be related, with a special Eurobarometer (2009, 16) report for instance stating that 'it is again likely that the perceived seriousness of the economic downturn has led to a decline in the level of concern for climate change'. As individuals only have a limited amount of concern that they need to divide up amongst a range of often competing priorities, the increased economic and financial insecurity may have caused a downwards shift in their environmental prioritisations while they focused on the economic

and financial needs of both themselves and their country. Though some of this decline in environmental concern occurred prior to 2008 and could be unrelated to macro-economic circumstances, Nordhaus and Shellenberger (2009) remark that the global economic crisis appears to have exacerbated the decline and facilitated people to prioritise economic concerns over environmental concerns. Existing research on the effects of the crisis on environmental attitudes has predominantly focused on attitudes towards climate change and global warming and it largely supports that the crisis had a negative impact upon them (Kahn and Kotchen 2011; Scruggs and Benegal 2012; Shum 2012), with key studies focusing on American and European data.

This chapter contributes to the literature in a number of ways. Firstly, rather than restricting the analysis to within a particular country or region, data from a broad spectrum of comparable countries across the world will be used to test the generalisability of the hypotheses. Secondly, the chapter examines whether changes in environmental protection preferences that came about during the recession are particularly sensitive to changes in economic conditions in general or to changes in particular economic indicators, finding that such changes were particularly sensitive to changes in unemployment rates. Thirdly, it examines whether the severe changes in macro-economic conditions resulting from the 2008 recession may also have affected the way in which individual financial circumstances relate to environmental protection preferences, with the results showing such an outcome not to have occurred.

LITERATURE REVIEW

Environmental protection as a goal can widely be regarded as desirable. In some respects, the achievement of a clean and healthy environment can be thought of as a valence issue (Clarke et al. 2009, 5). Many individuals agree that it is a worthwhile goal to pursue and few would advocate for the destruction of the environment as an attractive policy. There may be certain

individuals who see deliberately harming the environment as desirable, but as Butler and Stokes (1974, 371) note for a valence issue ‘such views are the perquisite of a tiny minority’. At the same time, agreeing in principle with environmental protection does not necessarily equate to strong support for it, and this may especially be the case when it is perceived to conflict with economic needs. Where one has a disposition towards environmental concern in the absence of a trade-off element this can be deemed as ‘rating’ whereas the stronger ‘ranking’ taps into the economic dimension of priority for scarce resources (Diekmann and Franzen 1999). While economic needs are important for individuals even during periods of regular economic activity, their salience rises under increasingly insecure economic circumstances and such needs are ‘more likely to dominate other issue concerns under conditions of economic recession, volatility and economic underdevelopment’ (Singer 2011, 284).

Relatedly, environmental protection can be presented as a ‘luxury good’ which may be seen as a desirable policy when the economy is doing well, but whose prioritisation is overshadowed by higher-order economic needs during times of economic instability (Kayser and Grafström 2016; Abou-Chadi and Kayser 2017). Given that environmental degradation often occurs at too slow of a pace for individuals to notice change occurring and may be perceived as a non-immediate problem (Kollmuss and Agyeman 2002, 253) individuals may through a rational calculation decide that it is in societies’ best immediate interests to put environmental protection lower down the agenda to focus attention on improving the state of the economy. The postmaterialist thesis of Inglehart also posits that events such as recessions can have an adverse effect on postmaterialist values – of which he identifies environmentalism to be a component of – as they may temporally lead individuals to prioritise their material concerns¹ (Inglehart 1977, 1983, 2008). Additionally, during economic contractions, the media

¹ It should be noted that for Inglehart’s thesis, recessions should only have a lasting effect on one’s environmental values – or indeed broader postmaterial values – if they are experienced during one’s formative years or if they are prolonged.

are less likely to report on environmental issues due to increased coverage of economic issues and this may contribute towards explaining why individuals may be less concerned about the environment during recessions (Carmichael and Brulle 2017).

With the theoretical expectation of a conflict between environmental and economic priorities, there have been a number of studies resulting from the 2008 crisis that have examined the effect of changing economic conditions on environmental protection attitudes. These have notably focused on attitudes towards climate change and global warming. Examining data from US states, it has been found that an increase in state unemployment rates has a negative effect on people's views and beliefs in global warming and climate change (Kahn and Kotchen 2011; Scruggs and Benegal 2012; Brulle, Carmichael, and Jenkins 2012). In contrasting studies during this period that also use US data, Krosnick and MacInnis (2012, 15) find that 'no evidence supported the hypothesis that people living in states with economies that were struggling more² manifested larger declines in [global warming mitigation] policy endorsement' while Mildemberger and Leiserowitz (2017) find little evidence using panel data that changing individual economic fortunes or local economic conditions affected changing climate change attitudes though they do find evidence that shifting political cues did. Panel data analysis of New Zealand data also suggests that neither changing economic perceptions nor changing household financial circumstances can account for the observed decline in environmental protection attitudes (Kenny 2018a). In Europe, support has been found for a negative effect of increasing unemployment rates (Scruggs and Benegal 2012) and decreasing growth rates (Shum 2012) on attitudes towards climate change, with a survey experiment carried out in Britain demonstrating a link between macro-economic perceptions and support for urgent action to tackle climate change (Kenny 2018b). A special issue of the *Environmental Politics* journal also somewhat supports the claim using data from the International Social

² Calculated using unemployment rates.

Survey Programme (ISSP) concluding that there are, ‘subtle signs that the economic recession has diminished support for environmentalism’ (Dalton and Rohrschneider 2015, 528), though on balance the issue finds that environmental concerns among the public were resilient to change.

While the literature on the relationship between macro-economic conditions and environmental concerns suggests that such concerns are lower when the economy worsens, there is also notable evidence to the contrary that questions the robustness of this relationship to warrant further investigation. While there is much literature on the effects of the recession on declining views towards global warming and climate change, there is less research on its effect on environmental attitudes perceived more broadly. This is important as both the topic of environmental protection used and the way in which environmental protection is expressed or measured in surveys can lead to very different conclusions on the state of environmental attitudes (Dunlap and Jones 2002; Daniels et al. 2013).

What will also be investigated in this chapter is whether changes in environmental attitudes may be sensitive to different economic indicators. Economic indicators not only capture different economic phenomenon, but individuals may also respond differently to changes in each. There is however a tendency within this literature to choose a particular economic indicator as capturing a broader ‘state of the economy’ without justifying theoretically why it is the most appropriate one to use or, where justifications are provided, to not test empirically whether they are correct on that other economic indicators are less relevant. As such indicators are not functionally equivalent to each, this may lead to incorrect inferences being made on the effect of worsening economic conditions on environmental attitudes given the possibility that one may reach an alternative conclusion with a different economic indicator.

This chapter will analyse the effect of changes of three different indicators: GDP PPP PC, growth rates and unemployment rates. Firstly, the absolute level of growth in the country's per capita income may play a role with increasing levels of GDP being associated with increased prosperity and economic security which, in turn, may lead to changing societal values which put less of a prioritisation on economic needs (Inglehart 2008). Secondly, the change in the given rate, rather than the levels, of economic growth may also be important as if a country is experiencing high economic growth it may signal a healthy and buoyant economy and thus act as an heuristic for economic security. However, it has also been hypothesised that higher economic growth does not necessarily make the average citizen feel more economically secure and may even increase economic insecurity if such growth comes at the expense of job security (Duch and Taylor 1993, 752). If the former is the case, one would expect increasing economic growth to correlate with an increase in environmental concern whereas if the latter is the case one would not expect such a relationship. It is also worth pointing out that economic growth by itself may not necessarily be good or bad; individuals may benchmark when making such evaluations by comparing the current rate of growth to rates over time as well as to growth rates in neighbouring countries (Kayser and Peress 2016, 90/91).

There are good reasons to believe that changes in environmental concerns would be particularly sensitive to changes in unemployment rates. Higher unemployment rates lead to heavier burdens for society in the forms of shrinking tax revenue and increased government expenditure on unemployment insurance and social programmes (Goldsmith, Veum, and Darity 1996, 333). They are also extremely important to the public as 'perhaps no single indicator carries as much weight in the public mind as the unemployment rate – monthly unemployment numbers provide a widely publicized and easily understood measure of how hard times are' (Borges et al. 2013, 398). Scruggs and Benegal (2012, 510) similarly advocate for the use of unemployment as the most appropriate economic indicator to use due to it being

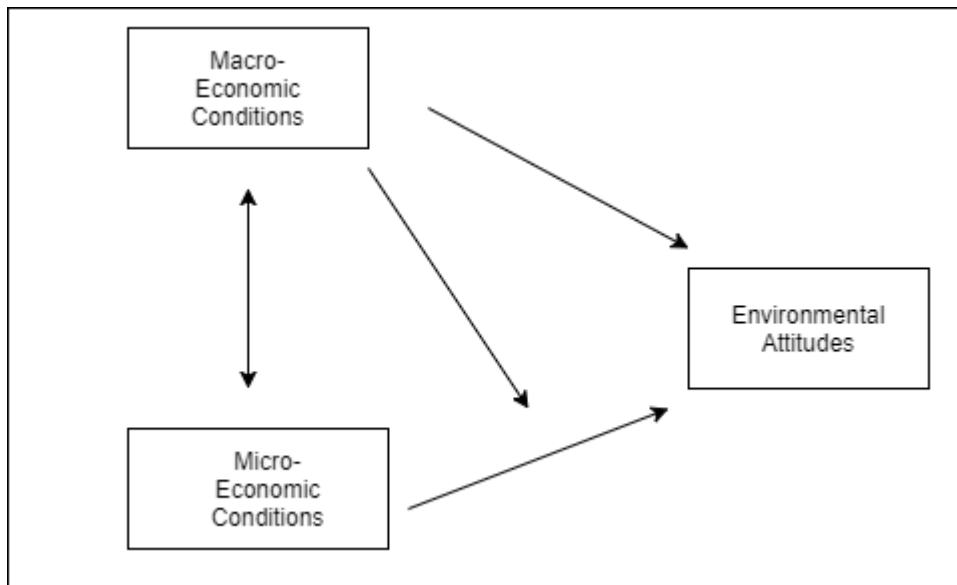
vital for household material well-being and happiness, whereas very small segments of the population – at least within the US - have disproportionally benefited from the positive effects of economic growth. There is also evidence from Britain in the aftermath of the recession to suggest that higher unemployment rates can affect voter preferences while growth and other economic attitudes may not (Clarke et al. 2016, 144/145).

In addition to the direct effects of the recession on environmental attitudes, what has not received as much attention is whether the crisis may have altered the relationship between individual characteristics and environmental attitudes. There is a robust list of individual characteristics that correlate with an environmental disposition. One of these is social class, with the middle class being presented as the most environmental (Tognacci et al. 1972; Rosenbaum 1973). This is based on the assumption that having one's material needs satisfied is conducive to developing an environmental consciousness. As members from higher social classes tend to have higher incomes, have their material needs met and have attained higher standards of education, then the supposition is that they should be in a better position to develop a concern for the environment (Dunlap, Grieneeks, and Rokeach 1983). Higher standards of education have been shown as being important (Honnold 1981) due potentially to education giving people the skills by which they can better understand what may be complicated environmental issues (Diamantopoulos et al. 2003, 472). This link between class and environmental attitudes may also explain why higher social classes are also more likely to be aware of and have a greater knowledge of environmental issues (Arbuthnot and Lingg 1975; Lyons and Breakwell 1994). Though not conclusive, females have generally been found to be more supportive of taking action to protect the environment than males and younger individuals more likely than their older counterparts to have a stronger preference for environmental protection (Van Liere and Dunlap 1980; Honnold 1981), though the stable relationship between age and environmental concern has been questioned by Dietz, Stern and Guagnano (1998, 463)

as their research suggests that ‘depending on the indicator, the youngest group in the sample may be most pro-environmental or least’.

It is possible that the crisis affected how individual characteristics relate to support for environmental attitudes, with prior literature giving reasons to believe that the individual characteristic of income may be altered. As displayed in Figure. 1, both macro-economic and micro-economic conditions are related to each other and evidence suggests that both may in turn affect environmental attitudes. However, what warrants further investigation in light of the 2008 financial crisis is the remaining arrow in the diagram; whether changing macro-economic conditions alter the way in which micro-economic conditions affect environmental attitudes. As changing macro-economic circumstances may differentially affect different segments of society, it is plausible that individual-level characteristics that are related to environmental attitudes during regular economic circumstances may alter during a recession. For instance, Buttel (1975) hypothesises that those who are the most vulnerable will be the first to deprioritise environmental protection in favour of the economy when economic conditions are perceived to have worsened. From an alternative perspective though, in a country with a decent welfare system, under conditions of economic recession those with higher levels of income may see a larger comparative drop in their resources and standard of living – as the safety net of the welfare system means that those towards the bottom end of the scale will have less space to fall. Such a psychological effect is evidenced by Cooper’s (2014) qualitative study of Silicon Valley families during the recession where she found that better-off families were constantly worried that their plentiful resources may not provide them with enough security. From this, one might expect larger declines in environmental attitudes among these groups during the recession than during more regular times when they would be expected to be among the biggest proponents.

Figure 2.1: Environmental Attitudes and Economic Conditions



Of particular note is a study of Jones and Dunlap (1992) in which they examined whether the social determinants of support for environmental protection in the US changed from 1973-1990 using annual surveys³. They find that their main social determinants of support – being younger, more educated, affiliating with the Democrat party and either currently living or living while aged sixteen in an urban area – consistently remained positively associated with environmental protection support during this period even while the economy was under strain. However, contrary to their expectations, they found that during the period of the second oil crisis those higher on the socioeconomic scale – as measured by household income and occupational prestige – saw the direction of their coefficients change so that they were negatively associated, albeit at a statistically insignificant level, with environmental support levels relative to those lower on the socioeconomic scale. Following the end of the crisis, both of these characteristics returned to being positively associated with environmental support up until 1990 when their analysis ends. This points to the potential importance of a change in economic conditions rather than absolute levels for the prioritisation of environmental concerns

³ Surveys present for each year in this period except 1979 and 1981.

and how an economic crisis may have differential effects on different segments of society. In particular, it provides some initial empirical indication that higher income groups may be more likely to reduce their support for environmental protection during a severe economic crisis, but that this may be temporary and they may be willing to update their priorities once more when the crisis dissipates.

With the more recent 2008 economic crisis being the most severe global economic shock since arguably the Great Depression of the 1930s, it is reasonable to assume that if an economic recession is going to impact upon environmental attitudes that it would occur here. Using data in the aftermath of the recession from the 2010 General Social Survey, Newman and Fernandes (2016) show in their social demographic factors, intention and behaviour models that higher incomes are significantly and positively associated with signing an environmental petition or being a member of an environmental group – which may be due to higher classes being more politically active (Mohai 1985) - but that it has no impact at all on being willing to make sacrifices for environment. Using an environmental index combining indicators of environmental concern, behaviour, agency and scientific advances from the 2010 International Social Survey Programme (ISSP), Franzen and Vogl (2013) alternatively find that individuals' equivalent income⁴ within a country is positively and significantly associated with their environmental index⁵. While these studies at a particular moment in time are important and worthwhile contributions, without comparing post-crisis data with equivalent data from before the crisis, one cannot ascertain what the effect of the crisis on altering the determinants of support for environmental attitudes has been. Conroy and Emerson (2014) do investigate the interaction between macro-economic conditions and individual level circumstances in the US from 1974-2012 and find that having higher incomes offsets the negative effect of recessions

⁴ Calculated by dividing household income by the number of individuals living in the household.

⁵ They additionally carry out fixed-effects models for macro-level country variables over the three environmental waves of the ISSP, though they did not include individual-level variables in their longitudinal analysis.

on preferences for environmental spending, however there is a lack of cross-national research on this question in a cross-national context in light of the 2008 recession.

This chapter will incorporate both individual-level and country-level data from before and in the aftermath of the 2008 economic crisis to examine concurrently the effect of the macro economic situation and the effect of individual level factors on attitudes towards environmental protection in the face of dramatic changes in material conditions in a cross-national context. The following hypotheses will be tested:

H1a: As unemployment rates increase, support for the prioritisation of action to tackle environmental protection should decrease.

H1b: As economic growth decreases, support for the prioritisation of action to tackle environmental protection should decrease.

H1c: As GDP per capita decreases, support for the prioritisation of action to tackle environmental protection should decrease

H2: The effect of individuals' income levels on the prioritisation of environmental protection is moderated by changing macro-economic circumstances.

DATA

The data I use comes from the World Values Survey (WVS) (Inglehart et al. 2015) where analysis will be carried out on the pre-recession wave 5 with country data covering the period 2004-2007 and wave 6 which was undertaken in its immediate aftermath from 2010-2014. These waves all include a question in which respondents are forced to prioritise environmental protection or economic growth and it is the only environmental question capturing a ranking dimension to be included in both waves. The countries being used are confined to those in Western Europe (Cyprus, Germany, Netherlands, Spain, Sweden), Eastern Europe (Poland, Romania, Slovenia, Ukraine), South America (Argentina, Brazil, Chile, Peru, Uruguay), North

America (Mexico, United States), Australasia (Australia, New Zealand) plus a small number of Asian countries (Hong Kong, Japan, South Korea). Each of these countries has been included in both the pre- and post-recession waves. Economically, this sample contains countries that had mixed experiences of the economic crisis. As an example of a country that was deeply affected, consider the US where – from September 2008 to December 2009 – the crisis cost the country an estimated \$648 billion due to slower economic growth and an estimated 5.5 million jobs were lost resulting from this (Swagel 2010). Spain was one of the worst affected countries in Europe suffering particularly from the bursting of its property bubble. Countries like Germany and South Korea however suffered initial shocks, but saw their economies quickly recover in a very short timeframe (Kulich 2010; Lim 2010). Uruguay meanwhile remained prosperous, maintaining continuous economic growth and a steady decline in unemployment (World Bank 2015).

Environmentally, the regions included are where awareness of global warming and climate change is almost universal, which is not the case in Africa and most of Asia (Pugliese and Ray 2009; Lee et al. 2015), and analysis from Rohrsneider, Miles and Peffley (2014) demonstrates that increased affluence in the traditionally low-income countries in the sample has facilitated the emergence of a similar environmental attitudes structure between them which permits comparative analysis.

My dependent variable asks respondents to choose between prioritising protecting the environment even if it causes slower economic growth and some loss of jobs (1) or prioritising economic growth and job creation even if the environment suffers to some extent (0). Where responses to this question have been recorded as ‘missing’, ‘don’t know’, ‘no response’ or ‘other’ in the dataset, these have been treated as missing variables. This question forces respondents to choose between one or the other and so taps into people’s environmental protection priorities at a high level. This thus captures an extremely strong commitment to

environmental protection as it makes it clear in this hypothetical scenario that one cannot further both environmental protection and economic growth policies concurrently. It is important to note that this question behaves differently from an individual's willingness to make individual sacrifices for the environment as Dunlap and York (2008) demonstrate when they analysed it in the third and fourth waves of the WVS, and thus it is capturing an individual's policy prioritisation rather than the dimension of their individual willingness to make personal sacrifices.

For independent variables, I utilise a mixture of individual and contextual level variables. The first individual-level variable is household income where individuals are presented with the spectrum of income deciles in their country, and they indicate which income decile their household income falls under on a scale from 1 (lowest) to 10 (highest). This is used as a continuous variable, with those whose responses are coded as 'don't know', 'missing' or 'no answer' being recoded as missing. It should be noted that there is a measurement issue with this variable as in some countries respondents were given the specific values of the incomes associated with each bracket whereas in others they had to make a subjective self-placement for which income decile they thought they would be in (Donnelly and Pop-Eleches 2018). However, it is the only income variable available in the dataset and will be used with a note of caution.

Secondly, a number of demographic variables that have previously been shown to relate to environmental protection are included. The first of these is education, categorised as 'no formal education', 'elementary and below', 'incomplete secondary', 'complete secondary', 'incomplete university' and 'complete university'. Age is included categorised as 18-24, 25-

34, 35-44, 45-54, 55-64 and 65+⁶ and gender is included categorised as female (0) and male (1)⁷. Finally, employment status is added which includes the categories of working full-time, working part-time, self-employed, retired, housework, student, unemployed and other. I use three macro-economic variables which are taken from the World Bank (2015) database: unemployment rates, GDP growth rates and GDP PPP PC.

RESULTS

To begin with, I examine how levels of environmental support changed across countries from before the recession to its aftermath. In table 2.1, one can see the percentage of people in each country per wave who would choose to prioritise the environment⁸. The first column represents the percentage of people who would choose to prioritise environmental protection in the pre-recession wave and the subsequent column represents the percentage change in the post-recession wave.

While the country-mean level of expressed prioritisation for environmental protection is 58% in the pre-recession wave, there is a notable level of variation among individual countries ranging from 40 per cent in South Korea and Hong Kong to 78 per cent in Argentina. It should be noted that this is out of the percentage of those who expressed a priority rather out of the entire group of individuals sampled – an approach chosen for comparability reasons⁹ -

⁶ Those who are aged under 18 in the dataset have been excluded for comparative purposes as they were not supposed to be sampled, and thus while they are present in some countries in some waves they are not present in all countries in all waves.

⁷ For all of the individual-level variables, other than household income which is used as a continuous variable, responses that are coded as ‘don’t know’, ‘missing’ ‘no answer’ or ‘not applicable’ have been grouped together and included as a standalone category in the analysis. This crucially prevents the loss of cases that would happen if one treated these as missing variables and a decrease in sample size. While these will be included in the analysis, they will not be displayed in the tables so as not to unnecessarily clutter them.

⁸ Utilising weights provided in the dataset that weight the data to be representative at the national level and applying additional weights to ensure that each country is given equal weight to each other. Such weights are used in all subsequent analysis.

⁹ Some countries allowed don’t know and/or ‘other’ responses to this question, whereas others did not. For measuring within country change, there are also some countries in the sample that allowed don’t know and/or other responses in one wave but not the other which is problematic. This is thus why these figures represent those who would prioritise the environment out of those who expressed a prioritisation rather than out of the full sample in the respective countries.

and so environmental prioritisation as a percentage of the overall sample is slightly lower in most cases. Over the whole sample, just under 90 per cent of respondents provided one of these responses and so the response rate is quite high.

Table 2.1: Percentage and Percentages Point Changes of Respondents between Waves 5 & 6 that would Prioritise Environmental Protection over Economic Growth and Job Creation

	Wave 5 Pre-Recession 2004-2007	Wave 6 - Wave 5 Recession Aftermath 2010-2014
Hong Kong	40%	+21%
Uruguay	51%	+20%
South Korea	40%	+16%
Germany	42%	+13%
Chile	69%	+4%
Peru	67%	+1%
Sweden	66%	+0%
Brazil	67%	-0%
Mexico	66%	-0%
Poland	44%	-1%
Ukraine	56%	-5%
Slovenia	57%	-6%
Australia	66%	-6%
Netherlands	52%	-7%
New Zealand	65%	-13%
Argentina	78%*	-14%
Romania	53%	-15%
Cyprus	65%	-16%
United States	54%	-16%
Japan	61%	-18%
Spain	66%	-28%
Mean	58%	-3%

* Argentina did not have the key question on household income asked in this wave, and so while the country will be included in the initial macro-level analysis presented in figures 2-4, it cannot be included in the rest of the analysis.

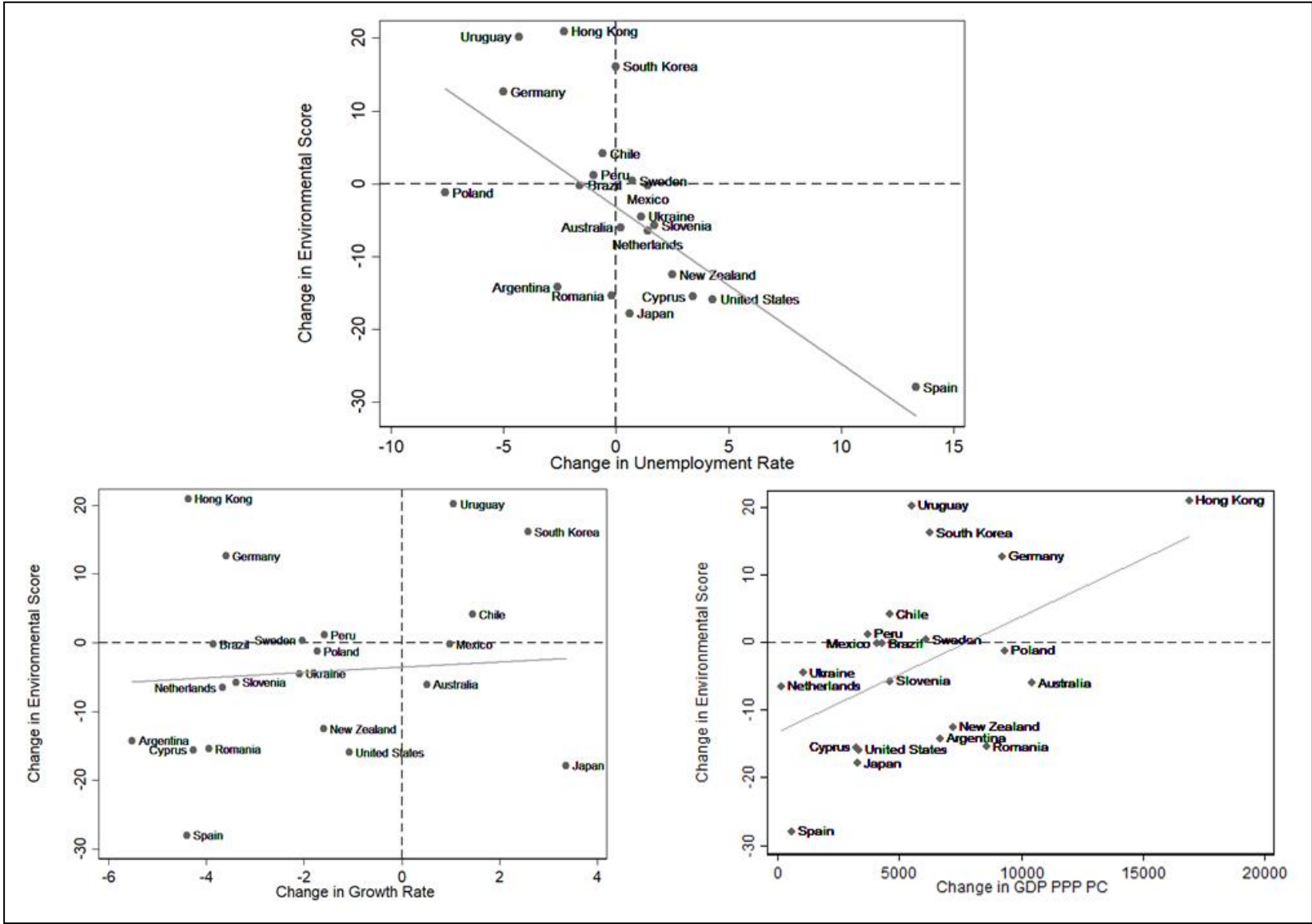
It is the change in environmental prioritisation from the pre-recession wave to the wave that occurred in its aftermath that is the primary interest of this chapter. The change in the direction of environmental priorities varies from country to country in both its range and magnitude. While in total fourteen countries saw a decrease and seven an increase in the proportion of individuals prioritising environmental protection, in five of these cases the magnitude of this change was less than 2 per cent while another three cases reached an alternative extreme with a change of 20 percentage points or more. The countries that saw the

greatest increase in environmental prioritisation are those which had a low baseline to begin with in the pre-recession wave. So while the overall direction of the change in environmental prioritisation was downwards – as indicated by the overall country-mean change – there is visible cross-country variation.

Following on from the literature review, one would expect that this variation could be at least partly accounted for by being exposed to different economic conditions whereby countries that had undergone the greatest economic difficulties would be the ones that witnessed the biggest decrease in environmental tendencies. As an indication of this, figure 2.2 shows the change in environmental protection prioritisation in each country from the pre- to the post-recession wave of the WVS plotted against the raw change in each country's unemployment rates, growth rates and GDP PPP PC, from the respective years in which the countries' survey data was collected.

The figure for the change in unemployment rates demonstrates a strong relationship. In countries where the unemployment rate increased the most individuals' environmental protection score also decreased accordingly. No country saw an increase in unemployment rates accompanied by an increase in levels of environmental protection prioritisation and Argentina is the only country where one sees a noticeable decrease in unemployment rates accompanied by a decrease in environmental prioritisation. This anomaly in Argentina could potentially be attributed to the misreporting of economic data by the Argentinian statistics institute (Economist 2014, 2016). The cases of Germany and Hong Kong are particularly illustrative as both countries saw an increase in their aggregate levels of support for the prioritisation of environmental protection between these two waves, yet while their GDP growth rates were lower in the post-recession wave than in the pre-recession wave they saw decreases in their unemployment rate. The slope of the line for unemployment itself is quite remarkable in indicating the strength of the relationship, with the line almost passing through

Figure 2.2: % Point Change in Environmental Scores x Change in Macro-Economic Indicators between Waves 5 & 6 of the WVS



the point (0,0). While one may wonder whether this is driven by the extreme conditions witnessed in Spain, when one removes Spain from the calculation of the fitted line the slope barely changes. While increases in a country's GDP PPP PC displays a strong, positive correlation with increases in the prioritisation of environmental protection, increases in the given growth rate are only weakly correlated with environmental prioritisation preferences. This initial analysis thus provides support for hypotheses H1a and H1c, though only very weak support for H1b.

There are primarily two different methods that I can utilise for the main data analysis. The first involves carrying out a country fixed-effects logistic regression using a country dummy variable in which the standard errors are clustered at the country level and the second involves using multilevel modelling techniques for logistic dependent variables in which the country is used as the higher-order variable allowing for random-effects due to shared common country-level factors and fixed-effects for the independent variables. Both of these sets of models have been undertaken and there is little substantial difference between them, and thus I have chosen to report only the multilevel models in the chapter given space constraints¹⁰.

The results of these models are presented in table 2.2. Model 1 has the environmental prioritisation question regressed on gender, education, age, employment status, income and a wave dummy, model 2 contains only the three macroeconomic indicators and a wave dummy, model 3 includes all of these variables in the one model while model 4 includes interactions between the macroeconomic indicators and income. While some previous studies (Kahn and Kotchen 2011) have omitted such period effects from their models, this is inadvisable because, as Mildenberger and Leiserowitz (2017, 810) note when examining the relationship between unemployment rates and the related topic of climate change belief during this period, 'There is

¹⁰ Table A2.1 in the appendix provides the results for the main models when the county-dummy fixed approach with clustered standard errors for each country is used instead.

Table 2.2: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection

VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables</u>								
Male	-0.08**	(0.04)	...	...	-0.09**	(0.04)	-0.09**	(0.04)
Education (Elementary or Less)								
No Formal	-0.03	(0.09)	...	...	-0.02	(0.09)	-0.02	(0.09)
Incomplete Secondary	0.07	(0.05)	...	...	0.09*	(0.05)	0.09*	(0.05)
Complete Secondary	0.22***	(0.04)	...	...	0.22***	(0.04)	0.22***	(0.04)
Incomplete University	0.50***	(0.07)	...	...	0.52***	(0.06)	0.52***	(0.06)
Complete University	0.64***	(0.07)	...	...	0.65***	(0.07)	0.65***	(0.07)
Age (18-24)								
25-34	0.04	(0.06)	...	...	0.05	(0.06)	0.05	(0.06)
35-44	0.09	(0.07)	...	...	0.10	(0.06)	0.10	(0.07)
45-54	0.04	(0.08)	...	...	0.05	(0.08)	0.05	(0.08)
55-64	-0.00	(0.10)	...	...	-0.00	(0.10)	0.00	(0.10)
65+	-0.06	(0.13)	...	...	-0.05	(0.13)	-0.05	(0.13)
Employment Status (Full Time Employed)								
Part-Time Employed	0.05	(0.06)	...	...	0.05	(0.06)	0.05	(0.06)
Self-Employed	0.05	(0.07)	...	...	0.05	(0.07)	0.06	(0.07)
Retired	-0.05	(0.07)	...	...	-0.04	(0.07)	-0.04	(0.07)
Housework	-0.05	(0.05)	...	...	-0.04	(0.05)	-0.04	(0.05)
Student	0.09*	(0.05)	...	...	0.11**	(0.05)	0.10*	(0.05)
Unemployed	-0.20***	(0.04)	...	...	-0.13***	(0.04)	-0.14***	(0.04)
Other	0.01	(0.08)	...	...	0.02	(0.08)	0.01	(0.08)
Income	0.00	(0.01)	...	...	-0.00	(0.01)	0.05	(0.05)
<u>Macro-Economic Variables:</u>								
Unemployment	...	...	-0.08***	(0.02)	-0.08***	(0.03)	-0.07**	(0.03)
Unemployment*Income	...	...	...	...	...	...	-0.00	(0.00)
GDP Growth	...	...	0.02	(0.04)	0.03	(0.04)	0.03	(0.06)
GDP Growth*Income	...	...	...	...	...	...	-0.00	(0.01)
GDP PPP PC (Per 1000)	...	...	0.02	(0.03)	0.01	(0.03)	0.02	(0.03)
GDP PPP PC *Income	...	...	...	...	...	...	-0.00	(0.00)
Wave 6	-0.14	(0.13)	-0.13	(0.21)	-0.14	(0.19)	-0.14	(0.19)
Constant (Individual)	0.10	(0.13)	0.37	(0.96)	0.17	(0.84)	-0.10	(0.85)
Country-Level Variance	0.12	(0.03)	0.21	(0.27)	0.23	(0.23)	0.24	(0.24)
Observations	44,315		44,315		44,315		44,315	
Number of groups	20		20		20		20	
Log Likelihood	-20,118		-20,213		-19,995		-19,991	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

no rationale for omitting these period fixed effects; since unemployment levels trended in parallel to climate beliefs throughout the panel period, omitting these effects risk finding spurious results'. Thus, by controlling for the period in the model one help to avoid making a type I error and have more confidence in the findings.

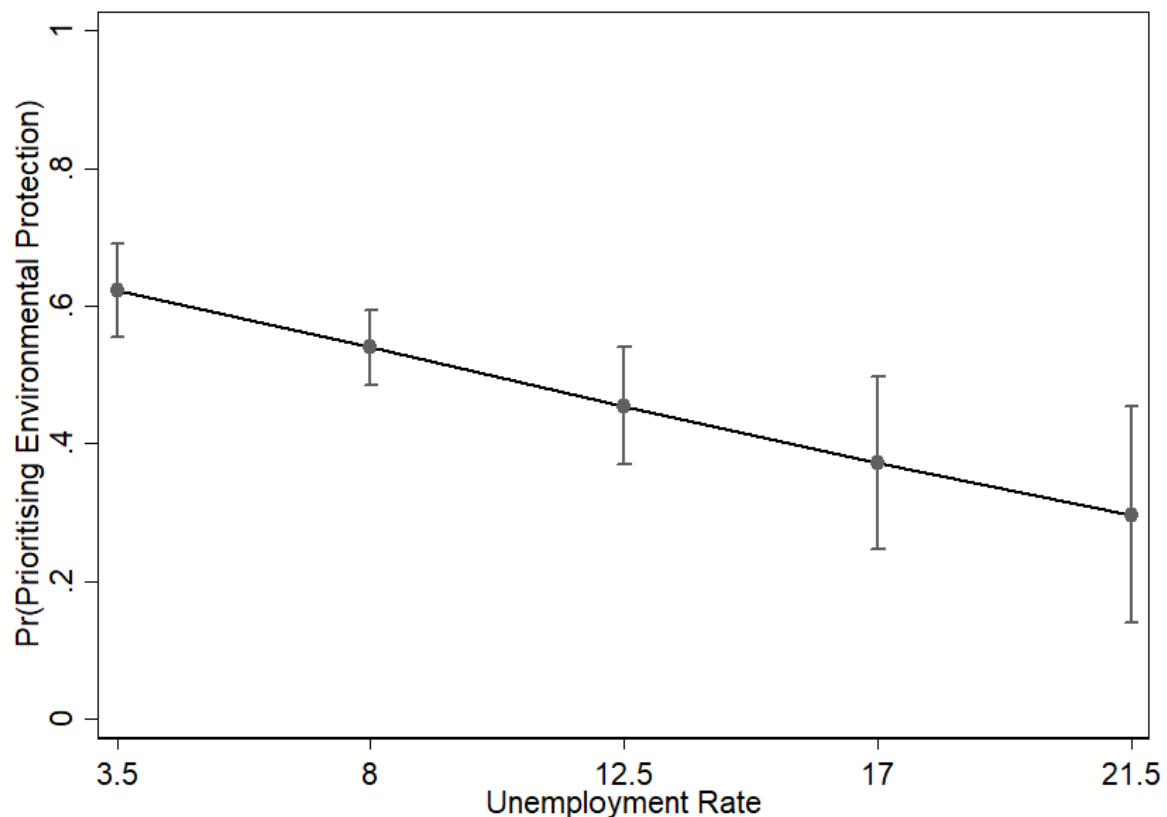
The first thing to observe is the consistency in the results from the individual-level variables whether they are included on their own or whether macroeconomic indicators are being controlled for. Being female and having achieved a higher level of education are significantly related to being more willing to prioritise environmental protection, while being 65+ is correlated with a lower willingness to prioritise environmental protection although such a relationship is not statistically significant. In terms of employment status, those who are unemployed are far less likely than those in full-time employment to prioritise environmental protection at the $p \leq 0.01$ level, and there is some indication that students are the most environmentally disposed. Incomes levels do not have any effect on environmental protection support in these models which challenges the idea that environmental protection preferences can be at least partly explained by changing individual wealth.

Turning to the macroeconomic variables, changes in environmental protection prioritisation appear to be particularly sensitive to changes in unemployment. An increase in unemployment rates between the two waves of these surveys is associated with a decrease in support for environmental protection with a $p \leq 0.01$ in models 2 and 3. As an indicator of the state of the national economy that is very visible to the public, this provides support for the adverse effect of harsh economic circumstances on support for environmental protection. However, while changes in growth rates and GDP PPP PC are positively associated with increased prioritisation of environmental protection as hypothesised this relationship is not statistically significant. Given the steep line found in figure 2.2 when changes in countries' environmental protection were plotted against changes in their GDP PPP PC, one may wonder

why it is that such a relationship is not replicated in these regressions. Table A2.2 in the appendix sheds more light on this in which the models are run once more excluding the unemployment variable. In these models, the GDP PPP PC variable appears as a statistically significant variable with a higher magnitude, though both the wave dummy variable and the individual constant are also statistically significant. Thus, the initial appearance of a relationship between increasing prioritisation of environmental protection and GDP PPP PC would appear to be spurious due to omitted variable bias as the significance disappears when unemployment is introduced into the models as demonstrated in table 2.2. Such findings mirror the results at the individual level with both individual- and macro-level unemployment being significant predictors, whereas individual-level incomes and macro-level growth rates are not. Thus, H1a is accepted while H1b and H1c are rejected. Finally, in model 4 none of the macro-economic and individual income interactions are statistically significant and thus H2 is rejected.

To give an indication of the magnitude of these effects and based on model 3 in the previous table, figure 2.3 displays the predicted probabilities for prioritising environmental protection under different unemployment rates – ranging from 3.5 per cent to 21.5 per cent which have been chosen as they fall within the range of actual unemployment rates recorded in the countries surveyed - keeping all other variables at their mean values. Under an unemployment rate of 3.5 per cent, there is a 62 per cent probability of prioritising environmental protection, whereas when the unemployment rate is at 12.5 per cent the probability of prioritising environmental protection has dropped to 45 per cent and the confidence intervals between these two estimates have stopped overlapping. While the probabilities of prioritising environmental protection further decrease at unemployment rates of 17.5 and 21.5 per cent due to few cases within the sample of countries experiencing this level of unemployment the confidence intervals around these estimates are quite large.

Figure 2.3: Predicted Probabilities with 95% Confidence Intervals for Prioritisation of Environmental Protection under Different Unemployment Rates



ROBUSTNESS

A number of tests have been run to test the robustness of the findings. Firstly, models 3 and 4 from table 2.2 were run multiple times in which each country from the sample was omitted one time to check whether one specific country may be driving the macro-level results. At the macro-level, changing growth rates and GDP PPP PC remain statistically insignificant at the $p \leq 0.05$ level in each case. Unemployment retains its statistical significance in each case, though when Spain is excluded the significance level drops from $p \leq 0.01$ to $p \leq 0.05$. As for the individual level variables, Spain appears to be suppressing the impact of being a student on support for environmental protection as when Spain is excluded – relative to the baseline of those in fulltime employment – the significance levels changes from $p \leq 0.10$ to $p \leq 0.01$. When this procedure is carried out for model 4 in which interaction effects are introduced, the only

notable difference to be seen is when Spain is removed from the model the unemployment-income interaction term becomes significant at the $p \leq 0.05$ level with a magnitude of -0.01. However, such significance is not robust to removing a sizeable number of countries in addition to Spain and thus a null result for this interaction term would appear to be the best and most robust conclusion.

The next test examines whether the effect of income may be non-linear by using income quintiles as a categorical variable instead of using income deciles as a continuous variable. As can be seen in Table A2.3 in the appendix, the effect of income remains statistically insignificant. While this chapter has concentrated on using waves 5 and 6 of the WVS data due to the occurrence of the Great Recession in between, one may wonder whether such models may be equally applicable over a longer time period. One way in which this can be checked is by utilising the previous waves of the WVS data. However, one is left with an issue of a reduction in sample size as due to a combination of not having the same countries to track change in in the previous waves and some countries not asking some of the individual-level questions, these models can only be run on eight countries when analysing waves 4, 5 and 6 and thirteen countries if one analyses waves 3, 5 and 6. This lower sample size is certainly problematic for making generalisable conclusions in multilevel models and the longer timeframe may also mean that there are other period-relevant factors that one may wish to include or that the answers given the environmental protection question may be influenced by the salience of different environment problems. Nonetheless, as a robustness check, I run the models my models extending the time period to wave 4 (table A2.4 in the appendix) and wave 3 (table A2.5 in the appendix) separately ensuring only to include countries in the models where data is available for all the waves. Emphasising that one should not extrapolate too much from these given the cautions just iterated, it is notable that at the macro-level the significant impact of unemployment rates and the insignificance of growth rates and GDP PPP PC remains in

both cases. At the individual level, the statistical significance of education and the statistical insignificance of age and income also remain. In looking at the interactions, a small interaction effect between GDP growth and income does appear in both cases but with the coefficient running in different directions thus leading to an overall inconclusive assessment.

There may also be non-economic macro-level factors that may impact the models and these are included in the models in table A2.6 in the appendix. One of these factors is the increase in overall levels of tertiary education within the country. As has been shown in this analysis as well as others, higher education is highly correlated with an increased environmental disposition. Thus, if one has more individuals with a tertiary education within a country, that country may be expected to be more environmental overall. Given the relatively short time frame between these waves, it would be optimistic to find an effect of overall increases in societal education however it is still worth testing. Annual data for the number of people within a country between the ages of 25 and 64 with a tertiary education completed is obtained from the OECD (2017), however only for 12 countries within my sample. For the remaining countries, given that the WVS carries out representative national surveys, I take the figures based on responses to the education question within the WVS as a proxy. Whether I use only the sample for which the annual OECD educational data is available or whether I include all countries in which the WVS figures are added in where OECD data is not available, one does not see any effect of education however.

Another factor that one may wish to control for is the shifting success of Green Parties given that this may indicate either the resonance or the appeal of environmental issues within a country. This can be a problematic indicator in this context as it does not take into account that Green parties – while still having environmental protection as their primary issue - have reduced their overall emphasis on environmental issues over the decades in an attempt to gain electorally while non-Green parties have increased their environmental programmes in an

attempt to woo environmental voters (Spoon, Hobolt, and de Vries 2014). Also, the absence of a Green party may not mean that there is not a party that emphasises environmental issues but it could mean, as in Spain, that a non-Green party has become the environmental standard bearer (Carter 2013). The changing fortune of Green parties may also be endogenous to changing economic conditions. Nevertheless, with this word of caution noted, model 3 in table A2.6 includes a variable with the percentage of votes that Green Parties received in the lower house of a country's parliament for the sitting parliament in the given year that the country's data was collected with data taken from the Comparative Political Dataset (Armingeon et al. 2018) where available and by searching individual election results for countries which are included in the WVS but not in the Comparative Political Dataset. Like education however, this variable does not have any substantial impact on the models.

Finally, 'don't know', 'no response' or 'other' responses for the dependent variable had been coded as missing for the analysis. As an additional robustness check to test whether removing these impacted the results, the models from table 2.2 were run again where the dependent variable was still coded 1 if individuals prioritised environment protection, but the 0 category was recoded so that it included all those did not explicitly choose to prioritise environmental protection¹¹. These results are shown in table A2.7 in the appendix. Apart from gender which is statistically insignificant in this table, using this alternative iteration of the dependent variables does not substantially change anything else in the models.

CONCLUSION

In this chapter, I set out to examine the effects of the Great Recession on the prioritisation of environmental protection. Namely, I sought to test not only whether dramatically worsening economic circumstances may have been responsible for a deterioration in environmental

¹¹ With the exception of the 8 people in the dataset for which data is coded as 'missing' as one does not know the reason for why this data is missing.

protections preferences – and if so which economic indicator they were most sensitive towards - but also whether the recession altered the way in which income levels relate to its support. Through using a dependent variable in which by choosing to protect the environment one accepts that it will have negative consequences on economic growth, it captures a commitment to environmental protection at the strongest level.

There is no compelling evidence from this chapter to suggest that the recession changed the way in which individual wealth relates to environmental protection prioritisation, however this finding could be influenced by the discussed measurement issues with the income variable. And while the results demonstrate a lack of an effect between changing growth levels or GDP PPP PC and environmental protection prioritisation, they show an extremely strong and robust relationship at the aggregate level between decreases in such support and increasing unemployment levels. Given the spread of countries across different world regions in this study including countries where unemployment rates both increased and decreased during this period, this makes a key contribution to the literature by showing that support for the prioritisation of environmental protection increased when unemployment rates went down and decreased when unemployment rates went up. This finding on the relationship between environmental protections and unemployment rates follows the same pattern that was largely found by researchers examining the impact of the recession on climate change/global warming attitudes. While the null effect of growth contrasts with the findings of Shum (2012), there are some possible explanations for this. Firstly, the environmental topic differed as Shum was investigating climate change, but the expression also different as his paper was looking at how worried respondents were about the issue rather than their prioritisation of it. Additionally, given the finding of this current chapter that not including unemployment rates in one's models may lead to omitted variable bias and other macro-economic indicators mistakenly being attributed significance, it is possible that Shum's results may have been affected by using

economic growth as his only macro-economic indicator and not controlling for changing unemployment rates.

Learning from these findings, future research should pay greater attention justifying the economic indicators that they use to tackle this and related questions. In particular, the results suggest that the unemployment rate is the most relevant indicator to use. Moreover, more work is required to investigate the mechanism through which higher unemployment rates affects the prioritisation of environmental protection. As the required solutions to tackling environmental problems have traditionally required trade-offs with economic activity, these findings present a challenge for maintaining support for action on environmental issues during periods of serious economic difficulties when unemployment rates are spiralling. While the increasing cost-efficiency of renewable energies may lessen the perceived tension between economic growth and environmental protection, this may still take some time for such a perceived tension to lessen. The results also point to the importance of tackling environmental protection during periods of low unemployment when public support behind such initiatives are likely to be at their highest. Furthermore, if policymakers wish to manage the economic costs of environmental protection without losing public support these results also suggest that they should prioritise keeping unemployment rates low over increasing economic growth where possible.

Empirical Chapter 3: Environmental protection preferences under strain: an analysis of the impact of changing individual perceptions of economic and financial conditions on environmental public opinion during economic crisis

ABSTRACT

This chapter uses panel survey data from 2002-2008 - covering a period of economic prosperity and intense economic difficulties - to analyse the impact of changing levels of economic and financial security from the 2008 economic crisis on individuals' environmental protection preferences. Declining economic conditions in the aftermath of the crisis have been thought to produce lower levels of support for environmental protection and previous literature has predominantly supported this claim. Due to the availability of data, most analyses undertaken to date have focused on aggregate changes using repeated cross-sectional data and various economic indicators. Research looking at individual-level change and how individuals' perceptions of changing economic conditions may affect their prioritisation on environmental protection has however been lacking. This chapter finds that neither changing economic perceptions nor changing household financial circumstances can account for the decline in environmental protection prioritisation witnessed in the aftermath of the great recession.

KEYWORDS: Environmental public opinion; economic recession; panel-data analysis; New Zealand

The work contained in this chapter has previously been published in the Journal of Elections, Public Opinion and Parties (Vol. 28, No.1; pp 105-124).

INTRODUCTION

A sudden and substantial increase in climate change scepticism and drop in concern for environmental issues was witnessed across the western world in the final years of the 2000s (Nielson 2009). As this phenomenon coincided with the occurrence of the global financial and economic crisis, it has been suggested that declining economic conditions may have been at least partly responsible. This is steeped in the idea that individuals have a finite pool of worry and thus will value the environment less during dire economic conditions while they concentrate on immediate material considerations.

However, more empirical evidence is required to be able to ascertain the mechanism through which the recession may have affected environmental support. Is it that when

individuals perceive the state of the economy to be worsening that they reflect on the challenges it poses for their country's prosperity, its ability to upkeep frontline services and the negative effects for the general health of the country's finances, and so may be likely to consider the restoration of a healthy economy as paramount even if such a recovery would involve environmental damage? Or is it because a deep recession negatively affects individuals' personal financial wellbeing? This could be through factors such as lower incomes or losing one's job which may then result in people struggling to keep up with their household expenses. In such a scenario, environmental degradation may be seen as a price worth paying in the short-term if it restores their ability to maintain a decent standard of living. Neither of these two scenarios is mutually exclusive and it may be a combination of both. There is also the possibility that the co-occurrence of the great recession and the decline in environmental concern is spurious. As well as the recession, other potential factors for this lowering of support include issue fatigue (Gough 2011, 29), declining attention to the issue in the media or media coverage of climate sceptic arguments (Boykoff and Mansfield 2008; Leiserowitz et al. 2013), and increasing partisan polarisation on the issue in certain contexts (McCright, Dunlap, and Marquart-Pyatt 2016; Dunlap, McCright, and Yarosh 2016) during this period.

Many studies have analysed this puzzle during this timeframe with the vast majority finding, using various measures and indicators, that more severe declines in economic conditions are associated with greater declines in environmental prioritisation and that the crisis can be held responsible for declining environmental concern in general (Kahn and Kotchen 2011; Scruggs and Benegal 2012; Shum 2012; Conroy and Emerson 2014). Not only does the literature suggest that the recession affected prioritisation of environmental issues, but also that it could have changed people's belief in the anthropogenic cause of climate change and increased their uncertainty of the damage being done (Scruggs and Benegal 2012; Hennes et al. 2016). While some research challenges such claims (Kachi, Bernauer, and Gampfer 2015)

or suggests that the effect of recessions on environmental concern has weakened over time (Harring, Jagers, and Martinsson 2011), the evidence so far overwhelmingly points to worsening economic conditions resulting from the crisis having an adverse effect on environmental attitudes.

Despite the prevalence of this viewpoint in the literature, most of this research has relied on repeated cross-sectional data to examine the research question which is problematic. While repeated cross-sectional analysis allows for an examination of the role of changing economic circumstances on environmental protection preferences at the aggregate level, it comes with deficiencies for the establishment of causality. A fundamental requirement for establishing causality is that any association between variables must not be the result of another omitted variable (Frees 2004, 11). While this is often a shortcoming of cross-sectional data, panel data are better equipped to deal with omitted variable bias as by tracking the same individuals over time, one can essentially ‘use each individual as his or her own control’ (Allison 2009, 2). This approach also enables one to gain a more insightful understanding of the effects of changing individual characteristics on the variable of interest as opposed to the aggregate understanding one gets through analysing repeated cross-sectional data (Frees 2004, 7/8). However, while becoming more frequent, the dissemination of panel data studies that contain questions about environmental protection preferences has not been very common. This is especially the case in obtaining such panel data that covers not only both before and after the onset of the economic crisis but also where the post-crisis collection has occurred before the 2009 Climategate scandal.

I have identified such a dataset in the New Zealand Election Study (2008) (NZES). This has a panel of respondents beginning in 2002 and continuing through 2005 to late 2008. The dataset contains a question on individuals’ environmental protection priorities as well as both their perceptions of the national economy and their own household financial conditions.

Analysing these data allows for a unique opportunity to examine the effect of the crisis on individuals' environmental protection priorities.

LITERATURE REVIEW

Changing perceptions of the general health of the economy and one's own financial situation are expected to affect individuals' environmental protection preferences for a number of reasons. There is a long-standing view in much of the literature that individuals in advanced industrial societies will have a higher likelihood of developing a deep concern for the environment when they are financially secure (Dunlap, Grieneeks, and Rokeach 1983). This is based somewhat on Maslow's (1970) hierarchy of needs which proposes that individuals need to fulfil their lower-order needs – including financial security – before turning attention towards higher-order needs. Inglehart builds on this in his postmaterialist thesis where though he proposes that postmaterialist value orientations – of which he considers environmental dispositions to form part of – are formed prior to adulthood and remain relatively fixed thereafter, he also notes that period effects from events such as economic recessions can produce short-term, downward fluctuations in such values due to the renewed prioritisation of material needs (Inglehart 1983). While it is arguable that protecting the environment so that it is clean, safe and secure should be regarded as a basic need, many individuals perceive environmental degradation to be a problem distant in both time and space as it often occurs slowly and so do not rank it as an immediate priority (Kollmuss and Agyeman 2002). They may also have difficulty in psychologically accepting the seriousness of environmental problems as by doing so it may compel them to accept solutions to ameliorate these that may challenge their own assumptions on economic prosperity, material needs and their standard of living (Nordhaus and Shellenberger 2009). This can be regarded as an egocentric explanation for why individuals may deprioritise environmental protection during periods of economic difficulties.

The issue can also be looked at through the lens of diminishing marginal returns. In good times in prosperous countries wealth in itself may be valued less as there is plenty of it and so there may be a greater willingness to use it to fulfil other societal goals, whereas in times of (perceived) economic scarcity citizens may value it more relative to other non-economic goods and thus may be less supportive of liberal policy aims that would require redistribution (Durr 1993, 159). This thus can capture more of a socio-centric viewpoint for why environmental protection prioritisation may decline when the economy is worsening and is a reason drawn upon by Elliot, Regens and Seldon (1995) for their finding that as real incomes increase individuals are more willing to support increased public spending on environmental protection, and vice-versa when real incomes decrease. The individual-level and societal-level explanations are not necessarily mutually exclusive either, with Conroy and Emerson (2014) finding that individuals with higher incomes tend to see less of an effect of poor macro-economic conditions on their concern for the environment.

The testing of hypotheses examining the connection between worsening economic conditions and public opinion on environmental protection following the 2008 recession has been undertaken in various studies, however as mentioned they have been limited by their reliance on repeated cross-sectional data. By using panel data from the NZES, I will make a novel contribution to this literature. Firstly, the panel element enables me to overcome the limitations in establishing a causal relationship that accompanies the cross-sectional analysis that has been the most prominent thus far. Secondly, the timings of the survey waves – occurring during a period of economic prosperity and while the worst effects of the recession were still being felt – should provide a desirably large amount of variation in economic conditions to examine the effect of economic perceptions on environmental protection viewpoints. Thirdly, it allows me to examine the effect of individuals' perceived changes in both their own financial circumstances and the national economy on their environmental

protection priorities over the use of objective economic indicators which, as Kachi, Bernauer and Gampfer (2015) note, have been dominant in much of the research undertaken thus far. The issue with objective indicators is that they may poorly proxy for individuals' actual economic sensitivities' (Gabel and Whitten 1997, 82). This is because one cannot make use of the fact that even in 'objectively' good or bad economic times, there is heterogeneity in how individuals perceive the economy to be performing as economic perceptions are influenced by a number of different factors including partisanship (Evans and Andersen 2006), cues from one's local area (Reeves and Gimpel 2012) and the media (Duch, Palmer, and Anderson 2000). Individuals need to perceive economic conditions in order for them to affect their political attitudes, but if the measure one is using is an objective measure that does not capture an individuals' perceived reality, then one may have too much noise and thus 'subjective perceptions of economic conditions are the best indicators for examining how economic conditions relate to political attitudes' (Gabel and Whitten 1997, 84). Through the questions contained in the NZES, in combination with its panel data structure, I will be able to capture such variations in individuals' perceptions and test the following hypotheses:

H1: As individuals feel less positive about the state of the national economy, their level of support for prioritising environmental protection will decrease.

H2: As individuals experience a negative change in their household financial situation, their level of support for prioritising environmental protection will decrease.

DATA

I use panel data from the 2002, 2005 and 2008 NZES in this chapter. The panel data wave that began in 2002 was issued by mail following the general election and has a total of 1,741 respondents¹. In total, 664 individuals remained in the panel for all three waves

¹ I have excluded individuals who were sampled by telephone following the postal survey as they were not asked the environmental protection question.

representing a retention rate of 36%. 623 of these provided responses in all three waves to the environmental protection question that serves as the dependent variable in this analysis.

The timing of these waves makes them particularly useful for tackling this chapter's research question given the changing economic conditions between them. From the period of 1999 to 2007, New Zealand experienced an unprecedented and sustained level of economic prosperity². The 1999-2002 parliamentary period saw New Zealand's best export figures for decades (Grafton 2003, 111) and strong economic conditions continued going into the 2005 general election where the country had the lowest unemployment rate in the OECD at 3.7%, an annual growth rate over the previous years of over 4% and a budget surplus of NZ\$7 billion (Knox 2005). Thus in both 2002 and 2005 individuals were living in an era of unusually high levels of economic security.

By 2008 however, conditions had declined dramatically. The country entered into recession in the first quarter, with consecutive summer droughts in 2007 and 2008 adversely affecting the key dairy industry and high prices for food and fuel greatly reducing consumer consumption. New Zealand's economy suffered further from the ripple effect of the collapse of Lehman Brothers and the advent of the global financial crisis, with reduced business and consumer confidence, restricted access to international capital and an overall contracting of economic activity (The Treasury 2010, 11). The severity of the crisis became particularly apparent just as campaigning for the general election began (Edwards 2009, 1057) and it was in such a setting of extreme economic instability that the 2008 data was collected³. Thus, this panel should provide a desirable amount of variation in perceptions of economic and household

² It is also worth noting that the country was led by Labour government from 1999 up until 2008, and thus the Labour Party could expect to receive but the credit for this economic growth as well as the blame when the condition of the economy worsened.

³ It should also be noted that, though the environment was a salient issue in political discourse in New Zealand at this time, it was also an issue in which there was 'increasingly ... consensus' (Edwards 2009, 1058) among the political parties and so it did not play a defining role by itself in the election.

financial security to allow me to investigate the impact of such changes on individuals' environmental protection preferences.

One of the first questions to ask is whether those that dropped out of the panel in 2002 are characteristically different to those that remained. To do this, I carry out a logistic regression in which a range of factors are regressed upon remaining in the sample until 2008. This displays two key ways in which the retained sample differs from those that dropped out. Firstly, those who rented or lived rent free/boarded in 2002 are less likely to have remained than those who own their homes outright or have a mortgage. As the method of distribution is a postal survey, this should be expected – as the former categories contain individuals who may be living in temporary accommodation and so the sampling design is more likely to lose those who move in between. Previous studies have also found that non-home owners are more likely than home owners to be lost in subsequent panel waves (Zabel 1998). Secondly, age is significantly related to attrition, with the 18-25 group being the least likely to remain. This also corresponds with other studies that find that young adults are the most likely to drop out, but this panel does not suffer from an additional common problem of high attrition among the elderly (Ribisl et al. 1996). While these are the two biggest issues, additionally those who respond with the highest environmental response on an environmental protection versus safeguarding incomes question⁴ are more likely to have dropped-out of the panel. This is likely to be related to age attrition as younger individuals tend to have stronger support for the environment (Van Liere and Dunlap 1980). Finally, on media consumption, readers of the Dominion newspaper are more likely to remain in the sample than readers of the New Zealand Herald.

⁴ This question will be used as the dependent variable in the analysis and is detailed below.

To deal with this, I created inverse probability weights in which one's housing situation, age group, environmental protection score and newspaper readership were used as covariates being the variables that are significantly related to attrition. Weighting the data with these inverse probability weights, post-stratification weights were then calculated – using reference data from Statistics New Zealand (2016) - that correct the 2002 sample to match the New Zealand population on age and gender⁵. The post-stratification weights, the inverse probability weights and the design weights included in the survey that account for the Maori oversample were then multiplied together to produce the final weight. Thus, this weight should ensure that the analysis accounts for differential attrition, the population's basic demographic characteristics and the survey's sampling design.

Variables:

The dependent variable asks respondents to place themselves on a 7-point scale ranging from 'That we should safeguard our income levels before we seek to protect the environment' (recoded as 1) to 'That we should concentrate more on protecting the environment, even if it leads to considerably lower incomes' (recoded as 7). This is a strong measure as it captures prioritisation of environmental protection in the presence of scarce economic resources (Diekmann and Franzen 1999). The mid-point response category can be interpreted either as respondents giving an equal weighting to both options or that they cannot decide which they would prefer to see prioritised. As the question makes it clear that one is answering in a scenario where both options cannot be pursued at once, then this response '4' can be deemed as functionally equivalent to don't know and I have thus relabelled these as 4. Unfortunately, there was a labelling mistake in the questionnaires in both 2002 and 2005 that may introduce extra error but, while not ideal, there are very good reasons to believe that the questions do capture

⁵ While the survey itself is of voters rather than the population, as voter registration is compulsory in New Zealand this justifies using gender and age data from the population to weight the data.

what they were meaning to with reliable indicators of environmental concern (educational attainment, membership of an environmental organisation and one's left-right placement on the political spectrum) correlating as one would expect them to with the question responses. This issue is detailed in appendix 3.

There are two independent variables that will be used as measures of individuals' feelings of economic and financial security. The first asks 'How do you think the general economic situation in the country now compares with a year ago?' while the second asks 'How does the financial situation of your household now compare with what it was 12 months ago?' with the answers ranging on a 5-point scale from 'a lot better' (recoded as 5) to 'a lot worse' (recoded as 1) in addition to a 'don't know' option. It is expected that as individuals perceive the state of the national economy and their household financial situation to be worsening, the lower their prioritisations will be for prioritising environmental protection.

In addition, I include a number of control variables. For the model using fixed effects, there will be three. I use a measure of partisanship through a question that asks which party the respondent voted for on the party list ballot and, if one did not vote, which party they would have voted for had they voted due to partisanship being closely related to environmental protection preferences (Ivanova and Tranter 2008; McCright and Dunlap 2011). The categories used are Labour, National, Greens, New Zealand First, other party and no party. Household income was measured using a question asking respondents to pick the income bracket their household income fell under, with the exact amounts changing in each of the waves of the survey to account for national increases in incomes. As not many individuals change income brackets from wave to wave, it is not expected that this measurement provided in the survey will have much of an effect. I have also included a variable asking whether the respondent is in receipt of unemployment benefits. For the models not using fixed effects, I additionally include the following controls. Education will be added using a question that asks for one's

highest formal education attainment coded under categories of primary or less, secondary education, nondegree professional trade or technical tertiary qualification, incomplete university degree or university degree. Gender will be controlled for, as well as newspaper readership as an indicator of media consumption. Newspaper readership was not asked in 2008; however, given the high level of stability between 2002 and 2005, the newspaper that individuals read in 2005 will be used as a proxy⁶.

METHODS

There will be three steps taken to analyse the data. Firstly, descriptive statistics will be presented to examine both the aggregate and individual-level change in environmental attitudes and retrospective economic/household financial perceptions and the relationship between them. Secondly, to test whether the magnitude of change in individuals' economic and household finance perceptions affects their prioritisation of environmental protection, a first differences approach will be taken. While the first differences approach will give an initial indication of the relationship, it is not sufficient due to the dependent variable being of an ordinal nature as the first differences approach assumes that the distance between each category is of an equal quantifiable value which may lead to heteroskedastic errors. Hence, a more robust method that will be the third step in the analysis is to carry out an ordered fixed effects logit model on the data.

This will be done using Baetschmann, Staub and Winkelmann's (2015) blow-up and cluster (BUC) estimator. While there is as yet no consensus for the best approach to take to carry out fixed effects ordered logit models and standard statistical software packages do not have built-in commands for these (Longhi and Nandi 2015, 208/209), there are a number of desirable reasons for choosing this particular estimator. The estimator works by replacing each

⁶ Additionally, where individuals did not respond to the newspaper question in 2005, their answers from 2002 have been used.

observation in a sample with an ordinal dependent variable of k categories by $k-1$ copies of itself, dichotomising each of these copies at a different cut-off point and getting the estimates by applying conditional maximum likelihood estimation on the full sample where the standard errors are clustered at the individual level (Baetschmann, Staub, and Winkelmann 2015, 690). Running Monte Carlo simulations on a number of alternative methods, Riedl and Geishecker (2014) find the BUC estimator to provide the most efficient, consistent and unbiased estimator irrespective of the sample size for analysing ordinal dependent variables using fixed effects. Additionally, Dickerson, Hole and Munford (2011) find the estimator to be preferred when there are some response categories with a very low number of responses, as is the case for the environmental question in the NZES.

RESULTS

Table 3.1. Change in response to environmental protection v. income question 2002-2008 (%)

Environment v. Income	2002	2005	2008
1. Safeguard Incomes	4	2	7
2.	5	5	13
3.	13	11	25
4.	40	32	24
5.	21	26	16
6.	10	14	9
7. Protect Environment	7	9	6
% Column Total	100	99	100

Note: Figures rounded to the nearest whole number; $n=623$

To begin with, I present descriptive statistics. Table 3.1 displays the aggregate change in responses to the environmental protection versus income question over the course of the panel. The change in the prioritisation of environmental protection is consistent with theoretical expectations. Under conditions of sustained economic growth between 2002 and 2005, there was an increase in the number of people who would prioritise environmental protection, rising from 38% who would lean this way in 2002 to 49% in 2005. In 2008, during the period of economic strife, one witnesses a clear decline in the prioritisation of environmental protection with a plurality of individuals who would lean towards the prioritisation of incomes instead.

At 45% of respondents opting to prioritise safeguarding incomes, this is 2.5 times the level of such responses in 2005. This is the first time since the question was asked in the 1990 study (New Zealand Election Study 1998) that more individuals would prioritise safeguarding incomes over environmental protection which shows a real shift in public opinion.

Table 3.2 displays how aggregate responses to the economic and household financial perception questions have varied in the panel over the 2002-2008 period. Between 2002 and 2005, the overall change in individuals' retrospective economic evaluations and their view of their own household financial situation remained relatively static, with pluralities in both cases regarding the situation to be unchanged from 12 months beforehand. This is to be expected given that both periods were during similar periods of economic prosperity. Yet the changes in 2008 clearly demonstrate an increase in feelings of economic and financial insecurity. Only 3% of people thought that the economy had improved while almost 90% believed the state of the economy had gotten worse. This is evenly split between those who consider the economy to have gotten a little worse and a lot worse – the latter of which has a slightly lower proportion. People's opinions on how their household finances have changed show a similar, though less severe, pattern. Thus, the shifts in responses to these questions over the course of the panel are in line with what one would expect.

Table 3.2. Change in retrospective economic evaluations and household finances 2002-2008 (%)

	Economic Evaluations			Household Finances		
	2002	2005	2008	2002	2005	2008
Lot Better	2	2	0	3	5	6
Little Better	24	21	3	16	19	14
Same	44	46	7	48	45	33
Little Worse	20	22	46	25	24	33
Lot Worse	3	1	42	4	5	13
Don't Know	6	7	1	2	2	0
No Response	2	1	0	2	1	0
% Column Total	101	100	99	100	101	99

Note: Figures rounded to the nearest whole number; n=623

The previous tables demonstrate the aggregate changes that have occurred in individuals' environmental protection prioritisation, their retrospective economic perceptions and their household finances. To ascertain whether these occurrences are related, I make use of the panel structure of the data to look at whether the individuals who become more insecure are also those whose environmental protection priorities lessened. Table 3.3 shows the percentage of individuals whose response to the environmental protection versus income question increased, stayed the same or decreased according to whether their economic evaluations and their reported household finances worsened or stayed the same/got better in 2008 compared to their previous response in 2005. The focus is on the change in the 2008 wave as that is where the aggregate responses suggest change occurred. There are two contrasting outcomes. Individuals whose economic evaluations worsened have a higher number of responses – by 3 percentage points – of individuals whose environmental protection score decreased and a lower number of responses – by 9 percentage points – of individuals whose environmental protection score increased. In looking at the figures under the household finances column however, one sees that there is virtually no difference between the group of individuals whose situation did and did not worsen. This tabulation only takes into account a binary distinction between whether one's viewpoint changed or not rather than the magnitude of such changes, and thus this will now be examined.

Table 3.3. Individual changes in environmental protection response by their changes in their retrospective economic evaluations and household finances from 2005-2008 (%)

Environmental Protection Score	Economic Evaluations		Household Finances	
	Worsened	Did not worsen	Worsened	Did not worsen
Decreased	56	53	56	55
Same	32	26	30	31
Increased	12	21	14	14
% Column Total	100	100	100	100
Number of Respondents	481	133	262	356

Note: Individuals who responded 'don't know' or did not respond to the economic evaluation or household finance questions in either wave are not included in this table as one cannot ascertain how their views changed.

Table 3.4. Regression of the change in environmental protection v. income question

	2005	2008
Change in Retrospective Economic Evaluation	-0.01(0.07)	-0.06(0.08)
Change in Household Financial Situation	-0.03(0.06)	0.02(0.06)
Gender (Male)	0.32(0.14)*	-0.06(0.14)
Newspaper (None/No Response)		
Bay of Plenty Times	0.15(0.44)	0.36(0.45)
Daily News	0.82(0.58)	-0.63(0.58)
Dominion	0.36(0.42)	-0.24(0.40)
Hawkes Bay Today	0.17(0.48)	-0.53(0.46)
Manawatu Evening Standard	0.14(0.40)	-0.44(0.48)
New Zealand Herald	0.38(0.40)	-0.15(0.39)
Otago Daily Times	0.75(0.47)	-0.63(0.44)
The Press	0.68(0.41)	-0.25(0.42)
Waikato Times	0.26(0.44)	-0.18(0.49)
Other	0.43(0.44)	-0.30(0.42)
Education (Completed University)		
Incomplete Primary/None	0.69(0.40)	-1.18(0.33)**
Secondary	-0.08(0.20)	-0.10(0.19)
Non-Degree Professional Trade/Technical Tertiary	-0.07(0.19)	-0.22(0.21)
Incomplete University	0.41(0.30)	0.12(0.33)
Partisanship (Labour)		
National	-0.54(0.16)**	-0.19(0.16)
Greens	-0.35(0.28)	0.02(0.31)
New Zealand First	0.07(0.30)	-0.30(0.32)
Other	-0.53(0.24)*	0.39(0.24)
None	-0.67(0.52)	-0.87(0.49)
Household Income Group (Bracket 1 - Lowest)		
Bracket 2	0.22(0.33)	-0.06(0.30)
Bracket 3	-0.02(0.36)	-0.38(0.40)
Bracket 4	0.04(0.40)	-0.05(0.33)
Bracket 5 (Highest)	0.21(0.33)	-0.25(0.31)
Receives Unemployment Benefit	0.59(1.11)	-0.93(0.98)
Constant	-0.22(0.54)	-0.13(0.51)
R ²	0.10	0.09
Number of Respondents	563	577

**p ≤ 0.01; * p ≤ 0.05; standard errors in parentheses

Note: Individuals who responded 'don't know' or did not respond to the economic evaluation or household finance questions in either wave are not included in this table as one cannot ascertain how their views changed. Don't know/no response responses for other questions are included in the model where available, though not displayed in the table.

Table 3.4 displays the results of regressions that utilise a first differences approach to examine the hypotheses whereby the environmental protection question and both the economic and household finance evaluation questions are treated as continuous responses and the changes in these – as well as a number of undifferenced controls – are then regressed on the changes in the environmental protection questions. While it was not expected to find an effect of changing household financial perceptions on environmental protection prioritisation based on the crosstabulations in table 3.3 - which is confirmed - what is clear is that neither do changing economic evaluations have any significant relationship with the dependent variable. While the change in retrospective economic evaluations are negatively associated with the change in environmental protection preferences as hypothesised and this association is stronger in 2008 than 2005, this association is not statistically significant⁷.

The results from ordinal fixed effects models using the BUC estimator to further investigate this are displayed in Table 3.5⁸. In model 1, I regress the environmental protection dependent variable on retrospective economic evaluations, perceived changes in one's household financial situation, income, partisanship and being in receipt of unemployment benefit. This model shows a lack of a statistically significant relationship between the explanatory variables of interest and prioritisation of environmental protection⁹. Keeping every other variable at their mean value, the marginal effect of macro-economic perceptions varies from 0.32 [95% CI: 0.11-0.53] to 0.26 [95% CI: 0.01-0.51] and for household financial

⁷ Table A3.2 in the appendix carries out these regressions with the variation that the change in retrospective economic evaluations and household financial situations are introduced separately. These models do not display any substantive differences.

⁸ If respondents provided a don't know response or no response at all to either the retrospective economic evaluation or household financial situation question in any of the three waves, they were dropped for the analysis for reason described above. A further 13% of this reduced sample were omitted as the BUC estimator drops observations for which the value of the dependent variable did not change throughout the panel, hence the final number of respondents of 484. Table A3.3 in the appendix carries out the initial regression in Table 3.5 with the variation that both the retrospective economic evaluation and the household financial situation variables are introduced separately, yet there are no substantive differences by doing so.

⁹ The coefficient for the change in retrospective evaluations variable is -0.07 [95% CI: -0.29-0.15] while the coefficient for the change in one's household financial situation variable is 0.11 [95% CI: -0.10-0.31].

Table 3.5. Fixed effect ordered logistic regression of environmental protection v. safeguarding income question (2002-2008)

	(1)	(2)	(3)
Retrospective Economic Evaluation	-0.07(0.11)	0.24(0.23)	-0.38(0.26)
Household Financial Situation	0.11(0.10)	0.37(0.21)	0.02(0.38)
Economic Evaluation*Household Financial Situations	...	-0.11(0.07)	...
Income Group (Bracket 1)			
Bracket 2	0.19(.40)	0.18(0.41)	-0.93(1.20)
Bracket 3	-0.56(0.53)	-0.58(0.52)	-1.96(1.24)
Bracket 4	-0.15(0.46)	-0.18(0.46)	-0.27(1.15)
Bracketed 5	0.13(0.52)	-0.14(0.51)	-1.43(1.14)
Income Group (Bracket 1) *Retrospective Economic Evaluations	...	...	0.48(0.31)
Bracket 2			0.31(0.43)
Bracket 3			-0.01(0.36)
Bracket 4			0.41(0.30)
Bracket 5			
Income Group (Bracket 1) *Household Financial Situation			
Bracket 2	...	...	-0.04(0.43)
Bracket 3			-0.20(0.50)
Bracket 4			0.06(0.43)
Bracket 5			0.10(0.43)
Partisanship (Labour)			
National	-0.52(0.28)	-0.51(0.28)	-0.54(0.28)
Greens	1.41(0.58)*	1.43(0.59)*	1.39(0.56)*
New Zealand First	0.02(0.37)	-0.00(0.37)	0.01(0.34)
Other	-0.14(0.34)	-0.15(0.34)	-0.18(0.32)
None	0.80(0.82)	-0.81(0.82)	-0.74(0.68)
Receives Unemployment Benefit	-0.79(0.51)	-0.80(0.51)	-0.60(0.52)
Year (2005)			
2002	-0.58(0.15)**	-0.58(0.15)**	-0.59(0.15)**
2008	-1.59(0.22)**	-1.57(0.23)**	-1.65(0.22)**
Log Pseudolikelihood	-2,221.01	-2,214.23	-2,167.46
Pseudo R ²	0.19	0.19	0.21
Number of Respondents	484	484	484

**p≤ 0.01; * p≤ 0.05; standard errors in parentheses

Note: Don't know/no response responses are included in the model where available, though not displayed in the table.

circumstances the marginal effect goes from 0.26 [95% CI: 0.08-0.43] to 0.34 [95% CI: 0.06-0.63] respectively as perceptions go from much worse to much better. Though not reaching statistical significance, given how few people receive unemployment benefit in the sample, it is notable that the being in receipt of unemployment benefit coefficient is negatively associated with the environmental variable with a relatively low p-value of 0.13. Lastly, the year dummy variables confirm an increase in individuals' environmental protection priorities from 2002 to 2005 and a subsequent decrease in 2008.

It could be that changes in the prioritisation of environmental protection may be related to concurrently feeling that both the national economy and one's individual financial circumstances have both got worse. To test this, in model 2 I add an interaction between these two variables. This interaction term is again statistically insignificant. A final test is to see if the effect of changing economic/household financial perceptions on environmental prioritisation differs depending on one's level of income. To do this, in model 3, I instead add interactions between these two variables and one's income bracket. The coefficients of these interaction terms demonstrate no clear pattern though and are statistically insignificant.

While it appears that on the whole individuals' dispositions towards environmental protection dropped at the same time as aggregate economic perceptions and household finance conditions declined, these results show that the relationship between these is spurious as individual changes in economic perceptions and household finances do not correspond with individual changes in the prioritisation of environmental protection. Thus, I reject both H1 and H2.

To check the robustness of these results, I have carried out three further tests on the models in Table 5. Firstly, I ran the models without using the survey weights. Secondly, I ran the models using a variable capturing how respondents expect the economy to change in the

next 12 months instead of their retrospective economic evaluations. Thirdly, I condensed the dependent variable into three categories (income leaning, neither income nor environment leaning or environment leaning) and carried out linear fixed effect models with clustered standard errors. None of these tests alters the main findings from any of the models.

CONCLUSION

This chapter set out to examine whether changes in individuals' feelings of economic and financial security resulting from the global economic and financial crisis of 2008 impacted upon their prioritisation of environmental protection. While the occurrence of the crisis provides the ideal variation in economic conditions under which to examine this, previous studies that have made use of these changes to analyse their effect on environmental public opinion have mostly concentrated on aggregate rather than individual change. Through using NZES panel data that covers a period of economic prosperity preceding the crisis and a period of economic anxiety in the midst of the crisis, this chapter was able to focus on change at the individual level.

Despite the presence of dramatic changes in economic conditions during the course of this panel – changes that the data shows are perceived by the public – there is no indication that increasing feelings of economic and financial insecurity affect prioritisation of environmental protection. While at the aggregate level the measures of increasing economic and financial insecurity correspond with a lower prioritisation of environmental protection, at the individual level there is no connection between deteriorating household finances and environmental protection preferences. The small correlation between deteriorating economic perceptions and environmental protection preferences is not statistically significant and cannot account for the magnitude of the decline witnessed.

Even though the correlation at the aggregate level appears to be coincidental, this is not to say that one can rule out the recession from playing a role in the lessening of the prioritisation

of the environmental protection. If it did however, it is likely to have been through other mechanisms such as crowding out environmental issues from public discourse due to the attention given towards economic issues in a scenario where there is limited issue space (Downs 1972; Brulle, Carmichael, and Jenkins 2012, 185). One may also look to other notable events that occurred between 2005 and 2008 that may provide alternative explanations. The highly-publicised 2006 documentary *An Inconvenient Truth* warned of the severe dangers facing the planet from global warming and urged for urgent action to be taken. This could have provoked a system justification response among sections of the public who could have become less likely to prioritise economic and lifestyle changes to protect the environment when presented with an apocalyptic message in order to fulfil a psychological need to maintain a positive view of the existing social order (Nordhaus and Shellenberger 2009). The subsequent release of the controversial climate change denial documentary *The Great Global Warming Swindle* – which received large amounts of public attention and was broadcasted in an edited form on New Zealand television – could also have contributed through sowing the seeds of doubt on whether global warming/climate change is anthropogenically caused which may have affected support for mitigation measures (Mellor 2009, 135). The testing of these alternative explanations is however beyond the scope of this current study.

Though the preponderance of prior literature suggests that increasing feelings of economic and financial insecurity from the great recession were responsible for declining public prioritisation of environmental issues, this chapter makes an important contribution by demonstrating that such a straightforward relationship may not exist. As the first piece of research to examine the issue using individual panel data from either side of the onset of the crisis, it is a key finding that changing feelings of economic and financial security on environmental protection prioritisation at the aggregate level is not matched at the individual level.

Empirical Chapter 4: The role of economic perceptions in influencing views on climate change: An experimental analysis with British respondents

ABSTRACT

Existing analysis suggests that individuals may reduce their concern for and belief in climate change as a result of macro-economic difficulties. Such conclusions are predominantly based on repeated cross-sectional and pooled data making it difficult to separate out the effects of economic conditions from other explanatory factors. Approaching this question through experimentally priming individuals to feel a certain way about the economy has also proven difficult due to economic perceptions being difficult to alter in a survey setting (Kachi, Bernauer, and Gampfer 2015). This chapter thus investigates a related question on the effect of the salience of economic perceptions on climate change views using an online question-order experiment, whereby salience denotes the prominence of the issue in the mind of the respondent. Respondents were randomly assigned to receiving an economic prompting question before or after being asked about their climate change views. The results show no effect of the prompting on belief in anthropogenic climate change, but they do show an effect of prompting on prioritization of taking urgent action to address climate change. Those with a non-positive view of the economy were less likely to support urgent action in comparison to those who considered the economy to be performing well if they were asked first about their economic evaluations. The salience of economic evaluations and the direction of such evaluations would not be significant if economic evaluations themselves were not important, and thus the findings also reveal that economic evaluations do matter.

KEYWORDS: Britain; climate change; economic perceptions; survey experiments

The work contained in this chapter has previously been published in Climate Policy (Vol. 18, No.5; pp 581-592).

INTRODUCTION

This chapter investigates the role of perceptions of the state of the national economy in influencing individual views on climate change. The coincidence of a substantial increase in climate change scepticism across the western world with the 2008-2009 Great Recession has renewed interest in analysing the relationship between economic conditions and views on climate change (Kahn and Kotchen 2011; Scruggs and Benegal 2012). However, this shift in climate change views began prior to the recession and, while economic insecurity may have exacerbated this pre-existing trend (Nordhaus and Shellenberger 2009), isolating the role of economic perceptions from other explanatory factors – such as perceptions of weather changes

(Krosnick 2010), issue fatigue (Downs 1972; Gough 2011, 29), attention to the issue in the media (Boykoff and Mansfield 2008; Leiserowitz et al. 2013; Karlsson-Vinkhuyzen, Friberg, and Saccenti 2017), and increasing partisan polarisation on the issue (McCright, Dunlap, and Marquart-Pyatt 2016; Dunlap, McCright, and Yarosh 2016) - remains to be satisfactorily achieved. Limitations of existing studies in making causal claims include the predominant reliance on repeated cross-sectional or pooled survey data and a focus on objective at the expense of subjective economic evaluations, thereby ignoring the heterogeneity in economic perceptions at any given time.

In this chapter, the findings from an online randomly-assigned question-order survey experiment carried out on a representative sample of 1,751 British adults are presented. These findings address the question of whether economic perceptions affect respondents' views on climate change, specifically, belief in anthropogenic climate change and support for urgently addressing it. The study achieves this by focusing on the salience of economic perceptions, whereby salience is used to denote the prominence of economic perceptions in respondents' minds. After detailing the psychological mechanisms that may lead economic perceptions to affect climate change views, the next section discusses the difficulties in establishing a causal link between the two and expands upon the suitability of a question-order experiment for tackling this question. The data are then presented and analysed before concluding by discussing the implications of the findings.

LITERATURE REVIEW

While the simultaneous occurrence of declines in economic fortunes and increases in climate change scepticism may suggest a connection between the two trends, what is it about feeling economically insecure that may trigger this? Cognitive dissonance theory provides one explanation. It proposes that individuals unconsciously seek consistency in their beliefs and

mental frameworks and thus selectively interpret information. If information supports existing values and mental frameworks it will be readily accepted, but if it undermines beliefs it may be resisted, avoided or not perceived at all (Festinger 1957). During periods of economic difficulties, people's value orientations may change, or at least fluctuate temporarily, as individuals prioritize their short-term material needs as their most immediate concern (Inglehart 1983, 2008; Maslow 1970). To reduce dissonance, individuals may downplay the threat that climate change poses or re-evaluate their beliefs about its existence (Scruggs and Benegal 2012) so they can justify to themselves their own actions that prioritize economic recovery over climate change mitigation.

Relatedly, system justification theory proposes that individuals have a psychological need to maintain a positive view of the existing social order which 'manifests itself, not surprisingly, in the strong tendency to perceive existing social relations as fair, legitimate and desirable, even in contexts in which those relations substantively disadvantage the person involved' (Nordhaus and Shellenberger 2009). As the economic and lifestyle changes that are advocated for tackling climate problems – and environmental problems generally - may contradict basic assumptions on the quality of life, economic prosperity and material needs (Kollmuss and Agyeman 2002, 255), system justification responses may be triggered whereby people are more willing to believe that the current system is working well rather than accept that there is a climate problem that may threaten life as they know it (Feygina, Jost, and Goldsmith 2010). And during times of economic instability, system justification responses may temporarily increase as individuals have a heightened motivation to defend a threatened system (Hennes et al. 2016, 756).

It may also be that when prioritising action on climate change, individuals make a rational trade-off between what they perceive as two competing goals. Possessing only a finite capacity to worry, their concerns over climate change may be crowded out by economic anxiety

during times of perceived economic difficulties. These explanations are facilitated by the fact that climate change is seen as a distant threat in time and space for many (Kollmuss and Agyeman 2002; Spence, Poortinga, and Pidgeon 2012) and so the issue may be relatively easier to deprioritize. During economic contractions, the media are also less likely to report on climate change as it focuses more on the economy and - with media coverage being a strong predictor of public concern for climate change - this may contribute towards individuals being less concerned about climate change during recessions (Carmichael and Brulle 2017).

Studies carried out in the aftermath of the Great Recession show – using repeated cross-sectional or pooled survey data from the US – that increases in unemployment rates are significantly related to decreased levels of belief in global warming (Kahn and Kotchen 2011; Scruggs and Benegal 2012). Using US panel data from 2008 and 2011, Mildemberger and Leiserowitz (2017), however, find no effect on belief in global warming of changing objective state economic indicators or perceptions of the impact of the economic downturn on one's household. Other research finds that negative economic conditions have a correspondingly dampening effect on concern over climate change. For example, Kahn & Kotchen (2011), Brulle, Carmichael & Jenkins (2012) and Scruggs & Benegal (2012) find that increases in unemployment rates are associated with decreased concern at the aggregate level, with Brulle, Carmichael and Jenkins (2012) additionally finding that increases in GDP have the opposite effect and Shum (2012) showing a positive relationship between economic growth rates and concern over climate change. Contrastingly, both Mildemberger & Leiserowitz's (2017) and Krosnick & MacInnis' (2012) analysis display no evidence that global warming attitudes are impacted by changing economic conditions, while Mayer & Smith (2017) find that economic satisfaction does not significantly relate to one's willingness to pay higher taxes to combat climate change.

Rather than examining the impact of objective economic indicators, as has been the focus of much of the literature, this study examines the role of economic *perceptions*. Objective economic indicators can be problematic as they cannot take into account that, even in ‘objectively’ good or poor economic conditions, there will be heterogeneity in economic perceptions depending on the various individual factors that influence their formation. Such factors include partisanship - with individuals whose preferred party are in government having a tendency to perceive the state of the economy to be better (Evans and Andersen 2006) - and the use of cues from one’s local area (Ansolabehere, Meredith, and Snowberg 2014; Reeves and Gimpel 2012), as well as perceptions being mediated by exposure to the media, personal experiences and various demographic characteristics (Duch, Palmer, and Anderson 2000). As individuals need to perceive economic conditions in order for them to impact upon their political attitudes, objective economic indicators may not capture their perceived reality. Thus ‘subjective perceptions of economic conditions are the best indicators for examining how economic conditions relate to political attitudes’ (Gabel and Whitten 1997, 84).

However, as the factors that influence economic perceptions have been shown themselves to affect views on climate change, inferring whether economic perceptions influence climate change views independently of these is problematic. While most studies approach the issue using objective economic conditions - predominantly with repeated cross-sectional or pooled data - the use of subjective economic measures is preferable for the reasons outlined above. Additionally, whether using objective or subjective economic measures, the reliance on repeated cross-sectional data is problematic for being able to address the risk of endogeneity. Notably, Kachi, Bernauer & Gampfer (2015) attempted to address this through an online survey experiment in which they presented individuals with facts portraying the economy as either good or bad to see if economic perceptions impact upon climate policy support, but found no effects. This approach is limited though because, as the authors

themselves note, individuals tend to have stable views of the state of the economy which may not be easily manipulated through an experimental information treatment. Thus, to overcome these issues and advance the state of the literature, an alternative approach is warranted.

This chapter presents findings from an online randomly-assigned question-order experiment examining the impact of economic perceptions on climate change views. The experiment focuses on manipulating the salience of respondents' economic perceptions, whereby salience denotes the prominence in respondents' minds of their economic perceptions. Such question-order survey experiments have recently been used by Heath et al. (2015) to overcome a similar problem of endogeneity between subjective economic perceptions and partisanship. While experiments have been used in explaining various aspects of climate change attitudes¹ they remain underutilized. Drews & Van Den Bergh (2016, 869) have advocated that 'future research may use more experiments to better identify the causal relation between factors and [climate] policy support'. In this experiment, respondents are randomly assigned to receiving a question on their economic perceptions either before or after being asked about their climate change views. There is a 'tendency for people to respond to questions at least partly on the basis of whatever ideas are imminently salient to them' (Zaller 1992, 79) and so being asked the economic question should prime individuals to bring their economic perceptions to the forefront of their minds. The salience of economic perceptions is expected to affect climate change views as per the reasons discussed, but there is no reason to believe that the salience of climate change to the respondent should alter economic perceptions thus the question-order effects should be partially non-separable (Lacy 2001). As people may perceive a trade-off between economic prosperity and protecting the climate which may lead

¹See Malka et al. 2009; Hardisty, Johnson, and Weber 2010; Parag, Capstick, and Poortinga 2011; Schuldt, Konrath, and Schwarz 2011; Bolsen, Leeper, and Shapiro 2014.

to conflicting views, this makes such an experiment an ideal and appropriate method (Tourangeau et al. 1989).

Given the sample size, there is not enough statistical power to test these effects within the economic evaluation response categories; instead, the tests will concentrate on identifying overall interaction effects where statistical power will be greater. The following are the hypotheses that will be tested:

H1: The effect of prompting on belief in anthropogenic climate change will be different according to one's economic evaluations, with those who think the economy is doing well on average having higher levels of belief than those who do not upon prompting.

H2: The effect of prompting on prioritization of action on climate change will be different according to one's economic evaluations, with those who think the economy is doing well on average having higher support for prioritization than those who do not upon prompting.

Bringing positive economic perceptions to the forefront of respondents' minds is expected to result in higher reported levels of belief in the anthropogenic cause of climate change and support for taking urgent action to address it and vice versa for those who have their gloomy economic perceptions primed, and it is the difference between these that this study is interested in. While actual economic realities cannot be manipulated, if economic realities affect climate change views it ought to depend on the salience of such realities to the respondent. Thus, this experiment does not seek to move the needle on individuals' assessment of the economy – which may be difficult to achieve - but instead manipulates the salience of their economic perceptions. It should also be noted that though different theoretical mechanisms are proposed for why economic perceptions may adversely affect climate views,

this current research is not designed to test which mechanisms provide the most appropriate explanation but rather to test what ought to happen to climate change views if people are affected by the salience of their economic orientations. While both H1 and H2 test a relationship between climate change views and the salience of economic perceptions, they each have a distinct focus. It is more onerous for the salience of economic perceptions to affect belief in, than prioritization of, climate change. Given this and the subtleness of the prompting, it is optimistic to expect H1 to be confirmed but as previous studies have identified a link between economic conditions and climate beliefs (Kahn and Kotchen 2011; Scruggs and Benegal 2012) it will be tested.

DATA

An online randomly-assigned question-order experiment was carried out on 9-10 December 2015 in conjunction with YouGov on a sample of 1,751 British adults from their online panel, weighted to be representative of the British adult population². Respondents were asked, ‘In your opinion, how good or bad is the state of Britain’s economy at the moment?’. The treatment group were first primed with this question followed by questions about their belief in anthropogenic climate change and how urgent an issue they perceived addressing it to be³. The control group was asked the same questions but had the climate change questions placed before the economic perception question. Responses to the economic perception question were almost identical among the treatment and control groups, supporting the expectation that economic perceptions should not be affected by climate change views. These responses are displayed in Table 4.1.

² YouGov is an online polling company that utilises active sampling and weights their data by age, gender, social class, region, level of education, vote at the previous election and political interest with their target data derived from four sources. Further information on their methodology can be found on their website (YouGov 2017).

³ See appendix for exact wording.

Table 4.1: Economic Evaluations by Control and Treatment

<i>Economic Evaluation</i>	Control		Treatment	
	%	N	%	N
Very Good	1.5	12	1.5	13
Quite Good	28	253	27.5	232
Neither Good Nor Bad	34	311	35	294
Quite Bad	26	238	26	219
Very Bad	6.5	58	6	51
Don't Know	4	37	3.5	31
N	100	909	99.5	842

Note: Due to rounding from weights, the total N in the Treatment group does not exactly match the addition of its components

These questions have previously been fielded by YouGov and have proved reliable measures of public opinion on climate change. Their repeated use furthers the consistent tracking of climate change views. In addition to capturing authentic rather than contrived economic perceptions, the subtleness of the prompt increases the chances of respondents being consciously unaware of it. This is the ideal scenario as otherwise respondents can decide whether they will go along with the prompt or suppress it (Kubovy 1977; Schwarz and Clore 1983; Strack 1992). Furthermore, the ‘harm our standard of living’ wording in the second response to the second question aids the association with the economic perception questions. This economic priming also mimics actual framing on the issue to which people may be exposed and, akin to the question-order effects that are being tested, such framing is often only effective if it resonates with its targets’ pre-existing interpretations (Nisbet 2009, 17).

To begin with, it is necessary to assess whether the randomisation process balanced individual characteristics across the treatment groups (Angrist and Pischke 2009, 18). Chi-square tests of independence were carried out on a range of characteristics to assess this⁴. In all cases, no significant relationship was found ($p \leq 0.05$). A borderline imbalance of gender at the

⁴ Age, class, education, ethnicity, gender, gross household income, industry, newspaper readership, region, urban/rural area, vote at previous general election and work status.

$p=0.06$ level was however noted⁵. As females have been shown to express greater concern about climate change than males (McCright 2010), the results have been checked carefully to verify whether this may have an impact upon them and the outcomes are outlined below. Crucially for verifying that climate change views do not affect economic evaluations, there is no significant difference in the distribution of economic evaluations across treatment and control groups.

Furthermore, tests were carried out restricting the samples to those within each of the economic evaluation categories. The only case of concern arises with an imbalance of Green Party voters among those with ‘very bad’ economic evaluations⁶. This is problematic given the relationship between partisanship and climate change attitudes (Linde 2017), especially given that Green Party supporters tend to be strongly supportive of environmental protection measures and critical of the Conservative’s handling of the economy (Dennison 2017). Regardless of this identified imbalance, the small number of respondents who consider the economy to be very bad (6 per cent) behave oddly in subsequent tests and display outlying patterns which questions whether valid inferences can be made from this particular group. Thus, those with very bad economic evaluations have been excluded from further analyses⁷.

ANALYSIS:

To give a preliminary indication of patterns within the data, crosstabulations are presented displaying the aggregate responses to the climate change questions by economic evaluation for the control group, and how the aggregate responses for the treatment group differ

⁵ While the control group has a gender balance, the treatment group is made up of 46.5 per cent males (402 cases) and 53.5 per cent females (462 cases). Further investigating this by carrying out tests within each of the economic evaluation categories, there are no imbalance issues between treatment and gender conditional on having good economic evaluations. While not approaching the $p \leq 0.05$ level, it is within the categories of quite negative and neither good nor bad economic evaluations conditional on treatment where there is a potential imbalance issue just outside this significance level.

⁶ While within every other economic evaluation response Green Party voters are balanced between the treatment and control groups, within the very negative economic evaluation response they are absent from the control yet make up 13 per cent (seven cases) of the treatment group.

⁷ Tables A4.1 and A4.2 in the appendix present the results for the main analysis if these groups are included.

from these. Table 4.2 displays responses to the question about belief in anthropogenic climate change. Looking at the percentage figures on the left-hand side, it initially shows that those with quite bad economic evaluations have a higher proportion of respondents than the other economic evaluation categories who believe in anthropogenic climate change. Rather than being counter-intuitive, this should be expected in the aggregate responses due to the role of partisanship. Conservative Party supporters tend to view the economy more favourably with their party being in government while traditionally being more climate-sceptic and Labour Party supporters tend to view the economy less favourably with their party being in opposition while traditionally being more sympathetic to climate change issues (Carter and Clements 2015, 206; 218).

It is the difference between the treatment and control groups that should reveal an isolated effect of the salience of economic perceptions, but the figures display little evidence of any. While receiving the prompt among those with good economic perceptions is associated with higher levels and among those with quite bad economic perceptions is associated with lower levels of belief in anthropogenic climate change and thus is in the hypothesised direction, the magnitude is quite low at three and one percentage points respectively. The observed differences in the neither good nor bad category between treatment and control groups can be attributed to a gender imbalance within this economic response category where males show no noticeable differences, yet females – who are more concerned about the climate – are overrepresented in the treatment group. Thus, the initial results from the descriptive statistics do not suggest a large effect, if any at all.

Table 4.2. Crosstabulation of Climate Change Beliefs with Economic Evaluations by Treatment (%)

	Control(C)			Treatment (T)-Control			n(C+T)
	Economic Evaluations			Economic Evaluations			
	Good	Neither	Quite Bad	Good	Neither	Quite Bad	
<i>Climate Change Belief:</i>							
Changing as a result of human activity	57	58	71	+3	+6	-1	1089
Changing but not because of human activity	27	23	14	0	-6	0	358
Not Changing	4	3	5	-1	0	-3	61
Not Sure	13	15	10	-2	-1	+4	243
Sum	101	99	100				1751

Note: 'Very Bad' (n=109) and 'Don't Know' (n=69) responses to the economic evaluation question are not displayed

Table 4.3 displays crosstabulations between one's perceived urgency of addressing climate change and respondents' economic perceptions by control and treatment groups⁸. Focusing on the difference between the responses of the control and treatment groups, the crosstabulations provide support for an effect of priming on one's perceived sense of urgency to address climate change. Those with good economic evaluations have higher proportions of respondents that would prioritize urgent action if they have been primed with their economic evaluations first. Similarly, those with neither good nor bad or quite bad economic evaluations have lower proportions of respondents that would prioritize urgent action if they receive the economic prompt. Looking at the magnitude of the difference in the percentage point change in the treatment minus control columns between prioritising action and believing that one should not rush into action, one sees a widening gap between these responses of ten, fifteen and seven percentage points respectively for having good, neither and bad economic evaluations. Unlike for belief in climate change, among the neither good nor bad and quite bad economic categories - where there was a borderline gender imbalance - there is no noticeable

⁸ Due to an author error, the survey was administered with the climate sceptic and climate denier responses pooled as one response category. However, from the previous question, it was possible to separate out these post-survey. As the experiment examines the difference between those who would and would not prioritize urgent action, for which this error should not result in cross-contamination, this should not affect the results.

difference in how males and females responded to the treatment. There is also little difference between the control and the treatment group for those that do not believe in climate change.

Table 4.3. Crosstabulation of Climate Change Action with Economic Evaluations by Treatment (%).

Treatment (T):		Control(C)			Treatment(T)-Control			n(C+T)
		Economic Evaluations			Economic Evaluations			
		Good	Neither	Quite Bad	Good	Neither	Quite Bad	
<i>Climate Change Views:</i>								
Happening and requires urgent action		36	47	56	+7	-6	-3	796
Happening and does not require urgent action		39	29	22	-3	+9	+4	534
Unclear if it is occurring		15	12	10	-3	-5	-2	179
Not happening		4	3	4	-1	0	-1	52
Don't know		7	9	8	0	+3	0	190
Sum		101	100	100				1,751

Note: 'Very Bad' (n=109) and 'Don't Know' (n=69) responses to the economic evaluation question are not displayed

To test whether these differences are statistically significant, logistic regressions are carried out in which the dependent variables are dichotomized⁹ and regressed on receiving the treatment, one's economic evaluations and the interaction between both of these as well as some controls¹⁰. Results for the belief in anthropogenic climate change question are displayed in table 4.4. Regardless of whether control covariates are included or not, the results indicate no significance for the interaction term of interest. This remains the case whether the neither good nor bad economic evaluations category is used as the reference category as displayed or good/quite bad economic evaluations are alternatively used. Thus, H1 is rejected.

⁹ For belief in climate change, the dependent variable is coded as 1 if one believes in anthropogenic climate change and 0 if one does not state this. For urgency of addressing climate change, the dependent variable is coded 1 if one believes that urgent action is needed and 0 if one does not believe this.

¹⁰ Education, partisanship, gender and region.

Table 4.4. Logistic Regression of Treatment and Economic Evaluations on Belief in Anthropogenic Climate Change.

	Model 1 – Without covariates	Model 2 – With covariates
<i>Treated</i>	0.265 (0.187)	0.189 (0.197)
<i>Neither Good nor Bad Economic Evaluations</i> Quite Bad	0.554** (0.204)	0.390 (0.216)
Good	-0.058 (0.191)	0.097 (0.205)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i> Treated*Quite Bad	-0.308 (0.293)	-0.298 (0.307)
Treated*Good	-0.138 (0.276)	-0.009 (0.289)
Constant	0.324 (0.130)	-0.855 (0.335)
ll(null)	-1038.261	-1038.261
ll(model)	-1028.510	-951.890
Observations	1573	1573

Note: Those who responded ‘don’t know’ to the economic evaluation question have been excluded, as have those that responded ‘very bad’ for reasons discussed above. Education, partisanship, gender and region are also included as controls in model 2, but their coefficients are not displayed.

* $p \leq 0.05$; ** $p \leq 0.01$; Coefficients are log-odds ratios; Standard Errors in parentheses

The results for the urgency of addressing climate change question are displayed in table 4.5. The models on the left-hand side are carried out on the full sample¹¹ and in models on the right-hand those who do not believe in anthropogenic climate change, and are thus unlikely to prioritize action on climate change regardless (Krosnick et al. 2006), are removed. Models are additionally displayed showing the results under each of these samples when covariates are and are not included. Firstly, in all models, the negative association between economic evaluations on their own and the dependent variable – which is statistically significant between the good and quite bad categories - is as expected given the role that partisanship plays in the formation

¹¹ Less those who responded ‘don’t know’ and ‘very bad’ to the economic evaluation question for reasons discussed above.

of economic perceptions and how partisanship also impacts upon climate change views as discussed previously¹².

Table 4.5. Logistic Regression of Treatment and Economic Evaluations on Urgency of Addressing Climate Change

	Full Sample		Among Anthropogenic Climate Change Believers	
	Model 1 – Without covariates	Model 2 – With covariates	Model 3 – Without covariates	Model 4 – With covariates
<i>Treated</i>	-0.264 (0.183)	-0.346 (0.191)	-0.585* (0.247)	-0.606* (0.257)
<i>Neither Good nor Bad Economic Evaluations</i>				
Quite Bad	0.378* (0.192)	0.265 (0.201)	0.067 (0.266)	0.100 (0.269)
Good	-0.436* (0.194)	-0.324 (0.202)	-0.548* (0.261)	-0.495 (0.268)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>				
Treated*Quite Bad	0.139 (0.277)	0.176 (0.292)	0.462 (0.381)	0.458 (0.393)
Treated*Good	0.543* (0.275)	0.650* (0.280)	0.914* (0.365)	0.981** (0.370)
Constant	-0.121 (0.129)	-0.661 (0.326)	1.003** (0.183)	1.135* (0.485)
ll(null)	-1084.540	-1084.540	-617.822	-617.822
ll(model)	-1069.993	-1017.485	-610.392	-594.587
Observations	1573	1573	997	997

Note: Those who responded ‘don’t know’ to the economic evaluation question have been excluded, as have those that responded ‘very bad’ for reasons discussed above. Education, partisanship, gender and region are also included as controls in these regressions in models 2 and 4, but their coefficients are not displayed.

*p ≤ 0.05; **p ≤ 0.01; Coefficients are log-odds ratios; Standard Errors in parentheses

It is the interaction term between economic evaluations and receiving the treatment of prior economic prompting that allows such an issue to be overcome. Compared to the baseline group, respondents who receive the treatment and have good economic evaluations are statistically more likely at the $p \leq 0.05$ level to support urgent action to tackle climate change in all models. An indication of the magnitude of these effects can be seen by calculating predicted

¹² Carrying out logistic regression analysis without the interaction term confirms that this negative relationship disappears when partisanship is accounted for.

probabilities for all possible combinations of economic evaluations and being in the treatment/control group, with everything else in the models kept at their mean value. In model 2 – the full sample model that includes covariates - there is an eight percentage point difference between the predicted probabilities of supporting action among those who have good economic evaluations if they have received the treatment (47 per cent) versus if they have not (39 per cent), an eight percentage point difference among those with neither good nor bad economic evaluations if they have received the treatment (39 per cent) versus if they have not (47 per cent) and a four percentage point difference among those with quite bad economic evaluations if they have received the treatment (50 per cent) versus if they have not (54 per cent), in all cases in the hypothesized directions. When non-believers in anthropogenic climate change are removed from the sample, this increases the magnitude of the effect. Predicted probabilities show that treatment in model 4 has a most substantial effect among those with neither good nor bad economic evaluations where there is a fifteen per cent difference between those who received the treatment (59 per cent) and those who did not (74 per cent). Thus, H2 is accepted¹³.

It is also worth examining how the magnitude of this effect compares with the magnitude of the effects of other predictors in the model. When predicted probabilities are calculated separately for the other covariates in the model and holding everything else at their mean value, this eight percentage point effect for model 2 compares quite favourably to the magnitude of the effect of region, where there is an eleven percentage point difference between those from London (51 per cent) and those from the North (40 per cent) – and to education where there is a thirteen percentage point difference in the predicted probability of going from

¹³ For robustness, multinomial regressions were carried out for models 1 & 2 in which the category for not prioritising urgent action on climate change was broken down into those who believe in the occurrence of climate change but do not want to rush into action, those who are either unsure or do not believe in climate change and the ‘don’t know’ category (table contained in appendix table A4.3). Relative to the base outcome of those who prioritise urgent action, the interaction terms indicate that those who received the treatment and have good rather than neither good nor bad economic evaluations are less likely to respond with each of these ‘non-prioritisation’ responses. While only statistically significant for the category of those who do not want to rush into action, this is likely a power issue due to the small sample size in the other two categories.

no formal education (38 per cent) to holding a masters or PhD qualification (51 per cent). All of these are still dwarfed by partisanship where Liberal Democrat voters, as the most supportive of action in the model, have a 64 per cent probability of prioritising climate change action whereas for Conservatives voters this is only 36 per cent¹⁴.

CONCLUSIONS

This research aimed to examine whether the salience of economic perceptions independently affects belief in anthropogenic climate change and support for taking action to address it. This was investigated through the use of an online question-order experiment which allows for the effect to be isolated from other contributing causes.

No association was found between the salience of economic perceptions and belief in anthropogenic climate change. While contrary to the findings of studies investigating the broader link between economic conditions and climate beliefs that have used repeated cross-sectional or pooled data, it is in line with the results of Mildenberger & Leiserowitz (2017) who reached similar conclusions using panel data analysis. As both the panel-data analysis that they used and the experimental method used in this chapter are better equipped to unearth causal mechanisms, this further suggests that there is no direct causal link between economic conditions and belief in anthropogenic climate change.

A statistically significant relationship was, however, found between the salience of economic perceptions and support for urgently tackling climate change. Namely, those who received the economic question first and had good economic evaluations were more likely to support urgent action while the reverse was true for those with neither good nor bad or quite bad economic evaluations. The results suggest that the effects of economic uncertainty on support for action

¹⁴ Predicted probabilities were not calculated for gender as it was not statistically significant.

on climate change are particularly strong. An effect of the salience and direction of economic evaluations on support for action would not occur if economic evaluations themselves were not important, and thus the findings suggest that economic evaluations do matter. While this further strengthens results from cross-sectional data analysis, it runs counter to the findings from the experimental analysis of Kachi, Bernauer & Gampfer (2015) as well as the panel-data analysis of Mildenerger & Leiserowitz. On the former, as mentioned, their manipulation may not have worked as they tried to prime people with economic facts while individuals' economic perceptions at any given point may be relatively stable. As the design of this current experiment used respondents' own economic perceptions, then such an issue was overcome. On the latter, the authors were looking at the effect of subjective evaluations of the recession on one's household rather than the effect of subjective evaluations of the economy itself. Thus, it may be that sociocentric rather than the egocentric perceptions of economic hardship matter more for the prioritisation of action on climate change. Given that Mayer & Smith (2017, 354) find that some but not all types of subjective economic assessments matter for being willing to pay for climate policy, future studies should pay more attention to the measure of subjective economic evaluations being used.

It is worth noting that the experiment took place during a period of unusually high salience for climate change, coinciding with the 2015 Paris Climate Conference. The fact that a subtle prompt affects views on climate change prioritization during a high-profile climate change conference - and thus a rare occasion when climate policy is placed in the public spotlight and is a tangible and immediate public policy issue - indicates that the public are affected by the salience of economic perceptions when deciding whether to prioritize mitigation measures. Future research may examine whether the extent of this relationship would be of a similar magnitude during periods of lower climate change salience. Additionally, to test how long such effects last, the inclusion of attitudinal climate change and economic

perception questions concurrently in longitudinal panel data is necessary. And while one would expect the effect of the salience of economic perceptions on climate change beliefs and attitudes to behave similarly in other developed countries, future research should also test this through similar research in other national contexts.

Overall, the findings highlight that a portion of the public continue to link protecting the climate with economic sacrifices. As a result, they are cautious about undertaking remedial action on climate change during uncertain economic periods. This presents challenges when the economy is not - or at least not perceived to be - performing well. It also highlights how an emphasis on economic woes prior to discussions on climate change in public discourse may reduce support for climate change mitigation. Finding ways to lessen this link – such as by focusing on the economic benefits that can come with climate change mitigation measures through the conversion to a green economy – will be vital if public support for tackling climate change is to last during challenging economic times.

Empirical Chapter 5: The environmental dimension of public support for domestic water charges

ABSTRACT

While research provides evidence that environmental attitudes can have tangible effects on support for policies that are environmentally beneficial, it is unclear whether such attitudes can affect support for such policies when they are not being primarily framed through an environmental lens in the public sphere. This chapter examines this using the case of support for the reintroduction of water charges in Ireland using data from the 2011 Irish National Election Study. This was a contentious issue with debate largely focusing on the proposal as an austerity measure in light of harsh macro-economic conditions, but the proposal also had important environmental implications. The results find that while individuals' willingness to prioritise environmental protection over economic growth at the policy level did not affect their support for water charges, their willingness to make individual sacrifices for the environment did. The findings are particularly important given the struggles that governments are facing in implementing environmental taxes and charges

KEYWORDS: Austerity, elections, environmental attitudes, Ireland, recession, water charges

INTRODUCTION

In the past number of decades, much progress has been made in understanding how environmental attitudes and concerns are formed and the impact that these may have on environmental behaviour (Gifford and Nilsson 2014). In the domain of electoral and policy research, it has been shown that voters' environmental attitudes can have a decisive impact on national election outcomes (Bean and Kelley 1995), US representatives' record of voting in favour of environmental policy in Congress (S. E. Anderson 2011) and the adoption of renewable energy policies by European governments (B. Anderson, Böhmelt, and Ward 2017). The mechanism involves individuals with environmental attitudes becoming aware of a policy's beneficial or harmful environmental implications – most often through receiving information in the public sphere via the media, environmental organisations or other actors¹ - which then affects their views on the policy and, if such an environmental constituency

¹ The obtaining of such knowledge may also play a role in the development of environmental attitudes to begin with.

becomes large enough, may have a knock-on impact on the stances taken by political representatives, parties and governments.

However, there may be policies that have tangible environmental benefits, but where such policies are framed and debated in the public discourse primarily from a non-environmental perspective. In such cases, it is unclear whether the possession of environmental attitudes can impact support for such policies as this would necessitate that individuals who possess environmental attitudes would look beyond the primary non-environmental framing of the policy that is presented to them, recognise the environmental implications and then choose whether or not to bring their environmental attitudes to bear on the question or to continue to see the issue through the dominant, alternative frame. Choosing to see the issue through an environmental lens may be particularly onerous for individuals during a period of austerity as, though they may claim to be willing to support policies to protect the environment, their economic needs may dominate (Singer 2011).

I use public support for the introduction of water charges to answer such a question using data from the 2011 Irish National Election Study (INES). The introduction of water charges formed a substantial point of contention during the election among both voters and parties but as the campaign was ‘dominated by economic issues, unemployment, terms of the financial bailout² and management of the public finances’ (Reidy, Suiter, and Breen 2018, 154), most of the debate on the issue revolved around the policy’s economic and social implications. However, from both the perspective of incentivising the conservation of water and providing finances to deal with outdated infrastructure that could prevent environmental damage, the policy could be expected to have tangible environmental benefits. Thus, this case provides the ideal opportunity to test whether environmental attitudes translate into support for a policy

² Ireland had just entered into an EU-IMF bailout deal months previously.

which would have a positive environmental impact when the policy is primarily being discussed through another frame and when its environmental effects are sidelined in public discourse. It is a particularly hard test as the period is one of harsh economic conditions where austerity measures are being implemented. This is an important subject to examine empirically because, even though progress has been made in the area, as Martinsson and Lundqvist (2010, 520) note, ‘most existing empirical studies concentrate on the attitudinal and value dimension of ecological citizenship, and put less emphasis on whether these attitudes are also translated into environmentally responsible behaviour’. It is also one with important policy implications given the difficulties that governments are facing in implementing environmental taxes and charges which has been exemplified in France by the Gilets Jaunes-led opposition to carbon tax.

I begin by providing a background of the issue of water charges in Ireland and analysing public support for environmental taxes and charges more broadly, before detailing the data, presenting the results and finally providing some conclusions. Specifically, I test whether individuals who professed a higher level of support for the environment were more likely to support water charges, whether any effect found differs depending on the dimension of environmental support being captured and whether support for water charges impacted vote choice. The results suggest that environmental attitudes on the dimension of being willing to make individual sacrifices played a particularly important role in support for the policy and that views on this policy had an impact on party choice.

BACKGROUND

December 1996 saw the announcement of the abolition of domestic water and sewerage charges in Ireland, with the costs of water supply subsequently provided through general taxation. The charges had become unpopular amongst certain sectors for reasons including fixed charges due to the absence of meters and thus the lack of a relationship between charges

and quantity used, the large bills when they arrived due to infrequent billing and a lack of a standardised method for dealing with vulnerable families (Scott 2003). Growing opposition to the charges and the rise in electoral support for anti-water charges candidates as evidenced by by-elections in the run up to a general election placed pressure on the government to react which paved the way for abolition.

Such a policy was detrimental for the financing of water infrastructure. When water systems are operating inefficiently and have an insufficient amount of revenue, one can expect inadequate operation and maintenance of infrastructure which will eventually have a knock-on effect on services (OECD 2009, 50). While Ireland has plentiful water resources, a lack of investment had left the infrastructure outdated and led to serious leakage problems. The average age of Irish water mains is 65-85 years compared to a European average of 36 and the country had a 2011 average leakage rate of 41 per cent compared to the usual OECD range of 10-20 per cent (Expert Commission on Domestic Public Water Services 2016, 7/8; OECD 2009, 49). The infrastructural issues also have a further impact on substandard water treatment, with a report from the Environmental Protection Agency finding that 44 urban areas are directly discharging raw sewage with harmful effects for public health, aquatic ecosystems and the waters' amenity value (Environmental Protection Agency 2017). The decision to abolish domestic water charges also came at the beginning of the *Celtic Tiger* period of rapid economic growth which increased the strain and demand on the system in tandem with government policies that failed to encourage conservation (Zhao and Crosbie 2012, 429). Thus, while a populist policy that may have been electorally pleasing, abolishing domestic water charges was not economically or environmentally beneficial.

While an outbreak of *Cryptosporidium hominis* in the Galway area in 2007 due to inadequate water treatment and its detrimental economic, environmental and social effects (Morris et al. 2016) brought high public salience to the issue of water infrastructure and its

deficiencies, it was not until the economy entered into recession following the 2008 financial crisis that the issue of domestic water charges seriously returned to the political agenda, primarily as a finance-raising mechanism. The speech for the 2010 budget announced that the then Fianna Fáil-Green Party government was preparing to introduce water charges to broaden the tax base which would be based on consumption above a certain free allowance (Lenihan 2009). Upon entering into an EU-IMF bailout deal twelve months later, the coalition government further set out that it was ‘planning to move towards full cost-recovery in the provision of water services’ (Ireland 2010, 8) as well as moving water provision from local government to a centralised water utility. This set the scene for the introduction of water charges to play a major part of the general election campaign of February 2011 with the policy supported by Fianna Fáil, Fine Gael and the Green Party, while opposed by the Labour Party, Sinn Féin and the United Left Alliance.

LITERATURE REVIEW

I will now detail the literature on the factors which may affect whether individuals would be willing to pay taxes or charges on a service to protect the environment. While being in possession of an environmental attitude is important, by its own it will not necessarily spur one into action as there often exists a gap between individuals’ environmental attitudes and their environmental behaviours (Kollmuss and Agyeman 2002). For instance, it has been found that while younger generations are more likely to support government environmental spending, older generations are more likely to engage in pro-environmental behaviour (Dietz, Stern, and Guagnano 1998; Gifford and Nilsson 2014) which evidences such a disjuncture. And there is evidence from Sweden of *hypocritical* individuals who profess green attitudes yet do not follow this through in their behaviour, as well as *coverts* who display environmental behaviour despite not possessing environmental attitudes (Martinsson and Lundqvist 2010).

Environmental attitudes themselves are also not unidimensional and research demonstrates that depending on the aspect of support for environmental protection that one is tapping into, one may see different effects (Diekmann and Franzen 1999; Dietz, Stern, and Guagnano 1998). Given the nature of how water charges would operate, one would expect the dimension of environmental attitudes that relate to making individual sacrifices to be the most relevant dimension, though broader environmental priorities could also play a role.

H1a Individuals who are more willing to make individual sacrifices to protect the environment are more likely to support the introduction of water charges.

H1b Individuals who prioritise the environment over economic growth are more likely to be in favour of the introduction of water charges than those who prioritise economic growth over the environment.

There are additionally a number of important sociodemographic factors that it is advisable to control for due to their relationship with environmentalism. Generally speaking, women report stronger environmental attitudes and behaviours than men with the effect on pro-environmental behaviour being consistently stronger than on pro-environmental attitudes (Zelezny, Chua, and Aldrich 2000). Formal education has also been shown to be a powerful predictor of environmental knowledge, attitudes and behaviours (Diamantopoulos et al. 2003). Moreover, in examining individuals' willingness to pay higher taxes in order to protect the environment in Spain, Torgler and García-Valiñas (2007, 546) find that 'we have to go beyond formal education and includes individuals' interest for current political matters or other proxies of political awareness'.

Economic, Financial and Social Explanations:

Having the financial means to pay may also be a factor, with individuals in poorer countries having been found to rate their environments as being in a poorer condition than individuals in richer countries, but reporting a lower willingness to making financial contributions to protect it (Diekmann and Franzen 1999). Relatedly, it is posited that

environmental protection is a luxury good that people value during good economic times when they feel they can afford it but that they deprioritise when the economy declines (Abou-Chadi and Kayser 2017).

Given the harsh economic climate during the 2011 election, it makes the question on whether there was an environmental dimension in support for water charges all the more interesting. As mentioned, the policy proposal for water charges put forth in the bailout agreement was to aim towards full cost recovery. For altering consumer behaviour, this would be particularly beneficially as it shows the consumer the actual cost and dispels perceptions that it is a cost-free resource which may prove especially productive in encouraging water conservation during the more price-elastic summer months (OECD 2003, 52).

However, despite the potential such a policy has for water conservation, the public may be more sceptical of such an outcome occurring. Dresner et al. (2006, 901) find that the public see environmental taxes more broadly ‘solely as a means of raising revenue, rather than in terms of their incentive effects’ and that ‘many people could not understand that a tax on energy would have benefits for the environment even if the revenues went to labour tax reductions’. In this case, the first point is particularly salient as raising finances was arguably the primary aim. Additionally, focus groups have shown that some people question the point of environmental taxes if they do not have any actual effect on behaviour (Kallbekken and Aasen 2010, 2189), with such reservations having the ability to be offset if the money raised is earmarked for environmental purposes (Kallbekken and Sæælen 2011, 2967). Recent evidence from the UK however finds that the earmarking of such revenue for environmental protection in general does not increase support for environmental taxes, speculating that the specificity of environmental earmarking may be an important factor (Fairbrother 2017).

Though not exclusively committing to using the finances raised for the environment, parties in favour of water charges had promised that at least some of the money raised would be used to address infrastructural issues in the water network of which the environmental benefits of doing so have already been detailed. However, it has also been found users are less willing to pay for water tariffs if they believe they are being charged for inefficiencies within the system (OECD 2009, 50). Thus, the irony of the finding that earmarking money raised by environmental taxes for environmental purposes may increase support with this policy is that it may be necessary to introduce water charges in order to address system inefficiencies, but users may be even less willing to be charged if the inefficiencies have not been addressed first.

While the economic and environmental implications of the proposal for introducing water charges have been discussed, this leads onto another important dimension: the social dimension. Water is needed to provide for basic human needs and thus the introduction of charges may particularly affect households who are already struggling financially. The OECD (2003) notes that if poorer members of society are finding their water bills to be too expensive, they may reduce their consumption to levels that do not provide for their basic needs which in turn may negatively affect public health and/or increase levels of financial stress. While from an income equality perspective one would expect that poorer households should not pay a bigger percentage of their income on water services, in reality water charges inevitably lead to such an outcome. On a related issue, Barth, Finseraas and Moene (2015, 566) posit that when voters below the mean income level experience declining incomes, they may feel the burden of attending to their urgent, material needs and may be less willing to pay higher taxes to finance welfare spending. Thus, especially in the context of increasing financial insecurity, one would expect that lower income households would be among the least supportive of water charges.

H2 Individuals who are most likely to be experiencing the greatest financial hardship will be among the least likely to support the introduction of water charges.

Ideology and Partisanship

The role of ideology and partisanship must also be considered. Traditionally, left-leaning or liberal individuals have been found to be more disposed towards environmental protection than right-leaning or conservative individuals (Van Liere and Dunlap 1980), with research finding that such an effect is largest when individuals are confronted with an explicit environmental-protection and economic growth trade-off (Harring and Sohlberg 2017). Out of nine substantial policy issues, McElroy (2017) finds using the 2011 INES data that the environment is one of only two policy issues³ on which there is a left-right divide among voters. Using data from the Irish module of the Comparative Candidate Survey (CCS) she also shows that such a divide exists among candidates themselves. However, it should be noted that the political parties' environmental positions did not map straight onto a left-right divide. As data from the Comparative Manifesto Project (Lehmann et al. 2017) shows environmental protection was almost completely absent from the manifesto of the left-wing Sinn Féin party as well as the centre-right Fianna Fáil party, yet the centre-right leaning Fine Gael party scored only slightly less than the left-wing Labour Party.

The environmental frame was not the primary frame that most parties chose to justify their stance on water charges however. As Green and Hobolt (2008, 464) show, though parties campaign on issues they have a positional advantage on they also gravitate towards issues that are salient to the public. With the environment being a low salience issue in the election – evidenced by only one respondent in the 2011 INES mentioning environmental issues as the most important issue to them personally – and issues of the economy and austerity dominating,

³ With the other being belief in the existence of God

these latter frames were where more votes could be expected to be won. Thus, Sinn Féin, the United Left Alliance and the Labour Party all framed their opposition to water charges in the frame of the financial burden that such charges would place on struggling households, with the Labour Party additionally pointing out that the water infrastructure should be improved upon before any metering should be implemented, tapping into the sentiment referred to previously that individuals may be particularly against water charges if they feel they are being charged for an inefficient service. Meanwhile, Fine Gael and Fianna Fáil both supported the policy primarily from the perspective of raising revenue for the troubled public finances. While Fine Gael did commit to using revenues garnered from the charges to fund the delivery of clean and safe water, the policy was also contained in the section of their manifesto entitled ‘Cutting the Deficit by Broadening the Tax Base’. The only mention of water charges in the Fianna Fáil manifesto was the economic benefits the installation of water meters would provide through providing jobs, though their renewed programme for government a few months previously had also touted it as a means to raise local government revenue. Thus, for both of these parties, environmental motivations were not the drivers of their support. The only party to explicitly campaign for water charges primarily on an environmental front was the Green Party, who was also the only party to emphasise in their manifesto the conservation impact that the introduction of water charges could have through altering consumer behaviour.

Party positions can affect voters in various ways. Carsey and Layman (2006) demonstrate that if individuals are aware of party differences on an issue but do not find the issue to be particularly important that they should bring their own attitudes in line with the party position. However, when they are aware of party differences on an issue and deem it to be important they may switch their party allegiances to match their own preferences. Applying this to water charges, one would expect partisanship to matter for approval of water charges whether it be the case that those with strong preferences on the policy vote for parties that hold the same

position or whether those that did not hold strong preferences updated their preferences to reflect that of their parties. In the absence of panel data, this chapter will be unable to test which mechanism – if any – is at work. Beyond partisanship, from the perspective of ideological consistency one would expect that individuals who are more supportive of increasing taxes in general would also be more supportive of introducing water charges.

H3 Individuals who support parties campaigning for the introduction of water charges are more likely to support water charges themselves than individuals who support parties campaigning against the introduction of water charges.

H4 Individuals who are most supportive of increasing taxes to pay for services will be more likely to support the introduction of water charges.

DATA

This chapter uses data from the 2011 INES. This survey was carried out in the aftermath of the February general election on a representative national sample through face-to-face interviews with a total of 1,853 respondents. A self-complete drop-off questionnaire was additionally included, of which 1,683 respondents completed it (see Marsh, Farrell, and McElroy 2017 for further details on the survey and the survey questionnaire). While the data is from a single timepoint which presents limitations for establishing causality, there is little reason to believe that one's position on water charges affected one's environmental attitudes and thus analysis of the data can provide worthwhile insights into the question of interest. When analysing the data, I make use of the demographic and political weights provided. This section details the questions from the survey being utilised in this analysis.

The dependent variable asks, 'Thinking about each of the following, and bearing in mind that government might need more revenue in order to maintain spending levels on public services, would you be in favour of, or opposed to, the introduction of each one of these

measures in order to raise revenue for the public finances? - water charges⁴. The responses were in favour, opposed or don't know⁵. The frame focuses individuals' minds on the harsh economic conditions the country was experiencing and whether the introduction of specific finance-raising measures was a favoured solution. Thus, in some ways, this question could be seen as measuring pro- versus anti-austerity sentiment. However, if one was sympathetic to the introduction of water charges primarily from an environmental perspective, one would still expect such respondents to answer that they were in favour of such a charge. If the environmental perspective was to encourage water conservation, then if that was achieved alongside an increase in public revenue through the introduction of water charges, the financial benefits for the state would be seen as a desirable by-product. And if the environmental perspective was that the money raised from the scheme could be reinvested back into water infrastructure to improve the quality and supply of water, then such a policy may also be deemed desirable.

Independent Variables

I use three environmental measures, each of which taps into a different environmental dimension, to examine whether environmental attitudes impacted support for water charges. The first question taps into an individuals' willingness to sacrifice their own standard of living to protect the environment by asking them to place themselves on a scale from strongly disagree (1) to strongly agree (7) with the following statement, 'I would be willing to accept a cut in my standard of living in order to protect the environment'⁶. The second question asks respondents on the same 1-7 scale to respond to the statement that, 'I would be willing to pay much higher taxes in order to protect the environment'. A key way in which this question differs from the

⁴ The other measures in this battery were property tax, the sale of state assets and the reintroduction of student fees. The order in which these were read was rotated.

⁵ 67 respondents – representing 3.6 per cent of the full sample - reported 'don't know' to this question and have been treated as missing.

⁶ This question was part of the drop-off questionnaire

previous question is that though respondents indicate a willingness to take on a significant extra tax burden to protect the environment, by doing so they do not necessarily foresee that this will negatively affect their standard of living. Finally, the third question taps into a policy-level trade-off by asking respondents to place themselves on a scale between ‘We should encourage economic growth even if this damages the environment’ (recoded as 0) and ‘We should protect the environment even if this damages economic growth’ (recoded as 10). In the context of the question, those who answered ‘don’t know’ have been treated as the middle category. It should be noted that all of these questions were asked in different parts of the questionnaire.

Partisanship will be primarily measured using the party respondents feel close to and, if respondents said no to this question, if there is any party they feel closer to than others. With this question, one is able to approximate partisan identity. This is categorised into Fianna Fáil, Fine Gael, the Labour Party, Sinn Féin, and other/none⁷. The party one gave their first preference to in the general election/would have given their first preference vote to if they did not vote will also be used both as a robustness check and for other analysis with the same categories, with the exception that ‘other’ is now separated from ‘refused/don’t know’ categories due to ‘others’ have a large enough sample to include as a standalone category. Finally, as a further robustness test, a series of questions are included asking respondents how likely they are to ever give their first preference vote to each of the political parties on a scale from 0-10 (those who answered ‘don’t know’ have been coded as the middle category 5) which captures electoral utility (van der Eijk et al. 2006). A particular advantage of this is that it allows one to examine whether individuals’ views on water charges were associated with how they considered all parties as opposed to restricting their choice to the party they voted for or felt closest to. It also allows one to include small but notable parties – namely the Green Party

⁷ The other category [including those that felt closer to a particular party but would not name the party] only contained 23 individuals between the various parties which is why this category was merged in with those who responded ‘none’.

and the United Left Alliance – who played a visible role in the election campaign but did not receive enough support at the national level to enable them to give reliable estimates through the questions in the other models.

To capture individual hardship, the following measures are used: Annual gross household income which ranges on an eight-point scale from less than €20,000 to greater than €75,000⁸; employment status (full-time employed, part-time employed, unemployed and seeking work, student, retired and engaged in home duties); and accommodation type (home owner without a loan or mortgage, home owner with a loan or mortgage, local authority tenant, private tenant and other). Accommodation type is relevant here as a number of individuals were living in negative equity following the collapse of the housing bubble.

To directly capture respondents' subjective perceptions on the tax versus spending scale, I use the following question, 'I would like you to look at the scale from 0 to 10 on this card. A '0' means government should MAINTAIN TAXES and SPEND LESS on health and social services, and '10' means government should INCREASE TAXES A LOT and SPEND THE SAME on health and social services. Where would you place yourself in terms of this scale?'. In the context of the economic conditions, this question confronts respondents with the reality that maintaining taxes may not mean maintaining the same level of services. Those who responded 'don't know' to this question have been classified as equivalent to those who answered the middle '5' category.

A number of controls are also used. Age is included as a continuous variable, gender as being either male or female and formal education is included using a question that asked individuals to state their highest educational level achieved to date (primary, junior certificate

⁸ While originally asked on a 10-point scale, the three highest categories of €75,000-€99,000, €100,000-€149,000 and €150,000+ have been merged together due to power issues from a relatively low number of respondents in these income brackets.

or equivalent, leaving certificate or equivalent, diploma or certificate and university degree or equivalent). To capture political interest, I include a variable measuring individuals' subjective interest in politics on a four-point scale ranging from 'not at all interested' (1) to 'very interested' (4) and political awareness is proxied by the number of days per week respondents listen to national radio news.

In addition to examining determinants of support for water charges, at the end of the chapter I examine whether support impacted upon voters' first preference choice. Additional controls used for this include social class (ab, c1, c2, d, e, f50+, f50-), living in an urban or rural area, objective political knowledge (on a scale from 0-3 where 0 means individuals got three political questions wrong and 3 means that individuals got 3 political questions right), belief in God (on a scale of 0 'definitely does not exist' to 10 'definitely does exist' with 'don't know' recategorised as '5'), what one considered to be the most important issue for the respondent in the election (coded into being let down by the political system, public services, macro-economy/public finances, employment/labour, taxes/personal cuts and other/don't know) and whether the respondent considered the change in the state of the economy over the past four years to have been mainly due to government policy, not mainly due to government policy or that they don't know.

RESULTS

I begin by presenting some descriptive statistics. In table 5.1, one can see the reported levels of support for water charges broken down by one's vote/intended vote in the 2011 general election. The first thing to note is that the policy was unpopular amongst the majority of the population. Overall, only 35 per cent were in favour of it. However, this is still a relatively substantial number given that voluntarily signing up to new charges is unlikely to be popular at the best of times, never mind during a period of intense economic and financial insecurity. While no party had a majority of their supporters in favour of the charge, parties in

favour of the policy do have bigger proportions of their supporters who state they are in favour with 41 per cent for Fine Gael and 39 per cent for Fianna Fáil voters. On the other end of the spectrum, support for the policy was at only 13 per cent among Sinn Féin voters. Meanwhile, support is closer to the average for both Labour Party voters and voters of ‘other’ parties and independents. Thus, at an initial glance, partisanship is playing a role as expected.

Table 5.1: Support for Water Charges by 2011 Vote/Vote Intention (%)

	FG	FF	Lab	SF	Ind	Other	None	All
Party Position on Water Charges	For	For	Against	Against	N/A	N/A	N/A	N/A
Support	41	39	34	13	34	34	33	35
Opposition	59	61	66	87	66	66	67	65
% Column Total	100	100	100	100	100	100	100	100
Number of Respondents	615	293	328	168	207	102	73	1786

To ascertain whether environmental protection preferences may have played a role in support for water charges as hypothesised, figure 5.1 breaks down each of the three environmental protection questions into whether individuals gave an environmental response, the midpoint answer or a non-environmental response and within each of these categories displays the percentage of respondents that expressed support for or opposition to the introduction of water charges. From the first chart within this figure, it appears that those who disagree with accepting cuts in their standard of living to protect the environment are less likely to support water charges than those who would agree to cuts or are unable to decide. The second chart shows that those who agree to paying higher taxes to protect the environment are more likely to support water charges than those who disagree to paying such taxes or are undecided. Finally, there is very little difference in support for water charges among those who would choose to either prioritise economic growth or environmental protection. Though preliminary, it would appear that the environmental dimension related to making personal sacrifices for the environment may be the environmental dimension that matters for supporting water charges.

Figure 5.1: Support for Water Charges by Measures of Environmental Support

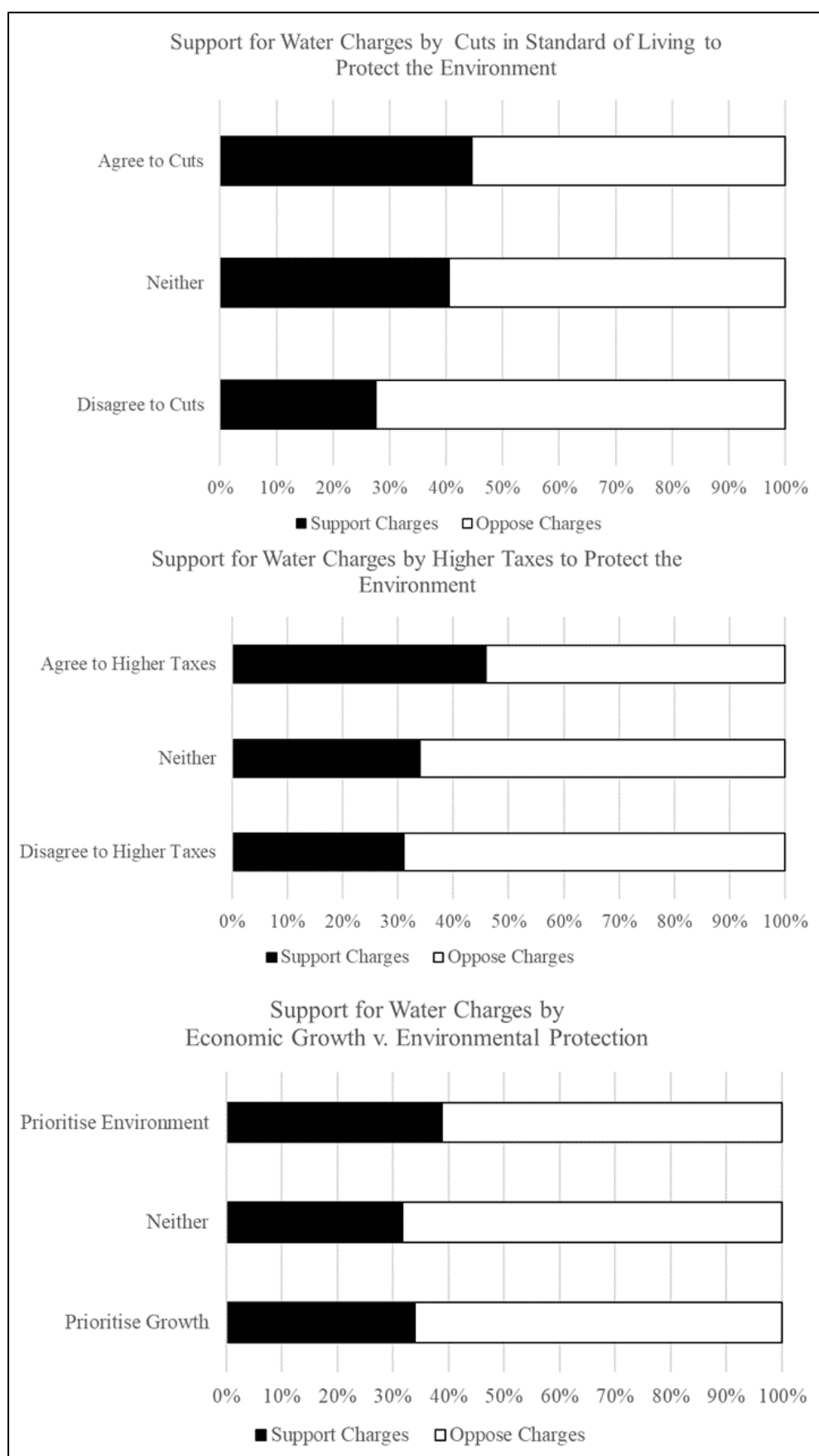


Table 5.2 presents three logistic regressions carried out on the dependent variable of support for water charges where each of the models contains just one of the environmental protection measures along with the rest of the explanatory variables as well as a fourth model where they are all included together. The results demonstrate a significant relationship between support for water charges and respondents' stated willingness to make personal sacrifices for the environment. The strength of this relationship is greater for being willing to accept a lower standard of living for the environment than it is for being willing to pay much higher taxes, and the correlation between these two variables may explain why only the first one maintains its significance when all three environmental variables are included in the same model. However, respondents' willingness to prioritise environmental protection over economic growth does not affect their support for water charges. This may suggest that respondents have the ability to differentiate between micro- and macro-level environmental actions and to then link the micro-level environmental actions with paying for water. Thus H1a is accepted and H1b is rejected.

Next, I examine the coefficients for the party one feels close to in order to test the impact of partisanship. Here, support for water charges is not statistically significantly different between supporters of the Fine Gael and Fianna Fáil parties who both advocated for such a policy. However, supporters of Sinn Féin – a party who was against the water charges - are significantly less likely to support the measure, and while the coefficient for the Labour party – a party that was also against the charges - is not statistically significant in any of the first three models compared to the reference displayed of Fine Gael partisans as displayed, it is significant at the $p < 0.05$ level compared to Fianna Fáil partisans. While this party closeness variable is the most appropriate one to use to approximate partisanship, as a robustness test the

Table 5.2: Logistic Regression of Support for Water Charges

VARIABLES	(1) Coef	Se	(2) Coef	se	(3) Coef	se	(4) Coef	se
Env Standard of Living	0.27***	(0.04)					0.25***	(0.04)
Env Higher Taxes			0.11***	(0.03)			0.04	(0.04)
Economy v. Environment					0.03	(0.02)	0.02	(0.03)
Party Close (FG)								
FF	0.32	(0.24)	0.34	(0.22)	0.32	(0.22)	-0.34	(0.24)
Labour	-0.47	(0.29)	-0.36	(0.26)	-0.42	(0.28)	-0.75**	(0.31)
SF	-0.92**	(0.38)	-1.04***	(0.36)	-1.06***	(0.38)	-1.26***	(0.40)
Other/None	-0.21	(0.17)	-0.27*	(0.16)	-0.30*	(0.19)	-0.54***	(0.21)
Income (<€20,000)								
€20,000-24,999	0.27	(0.28)	0.36	(0.27)	0.37	(0.27)	0.25	(0.28)
€25,000-29,999	0.04	(0.31)	0.21	(0.29)	0.21	(0.29)	0.05	(0.31)
€30,000-34,999	0.11	(0.28)	0.07	(0.26)	0.08	(0.26)	0.10	(0.29)
€35,000-39,999	0.33	(0.32)	0.35	(0.30)	0.44	(0.29)	0.27	(0.32)
€40,000-49,999	0.66**	(0.28)	0.82***	(0.26)	0.78***	(0.26)	0.67**	(0.28)
€50,000-69,999	0.59**	(0.27)	0.80***	(0.25)	0.79***	(0.25)	0.60**	(0.27)
>€70,000	0.83**	(0.36)	0.87***	(0.33)	0.84**	(0.33)	0.83**	(0.36)
Refused to answer	0.44**	(0.21)	0.58***	(0.19)	0.58***	(0.19)	0.45**	(0.21)
Unemployed								
Full Time Employed	0.31	(0.25)	0.37	(0.24)	0.38	(0.23)	0.32	(0.25)
Part Time Employed	0.52*	(0.28)	0.56**	(0.26)	0.56**	(0.26)	0.52*	(0.28)
Student	0.23	(0.35)	0.29	(0.34)	0.33	(0.34)	0.23	(0.35)
Retired	0.44	(0.33)	0.46	(0.30)	0.46	(0.30)	0.47	(0.33)
House Duties	0.41	(0.30)	0.44	(0.28)	0.43	(0.28)	0.43	(0.30)
House Owner/No Mortgage								
Owner with loan/mortgage	-0.29*	(0.15)	-0.30**	(0.14)	-0.28**	(0.14)	-0.29*	(0.15)
Local Authority Tenant	-0.65**	(0.30)	-0.65**	(0.28)	-0.67**	(0.27)	-0.65**	(0.30)
Private Tenant	0.26	(0.24)	0.27	(0.22)	0.29	(0.23)	0.27	(0.24)
Other	-0.12	(0.53)	-0.15	(0.48)	-0.18	(0.50)	-0.08	(0.52)
Tax v. Spending	0.08**	(0.03)	0.06**	(0.03)	0.07**	(0.03)	0.07**	(0.03)
Age	0.01**	(0.01)	0.01**	(0.01)	0.01**	(0.01)	0.01**	(0.01)
Females	-0.36***	(0.14)	-0.27**	(0.13)	-0.27**	(0.13)	-0.37***	(0.14)
Education (primary)								
Junior Certificate	0.22	(0.30)	0.11	(0.28)	0.09	(0.27)	0.23	(0.30)
Leaving Certificate	0.67**	(0.29)	0.46*	(0.27)	0.46*	(0.26)	0.68**	(0.29)
Diploma/Certificate	0.94***	(0.31)	0.72**	(0.28)	0.73***	(0.28)	0.93***	(0.31)
University	1.13***	(0.32)	1.07***	(0.29)	1.09***	(0.29)	1.12***	(0.32)
Political Interest (Not at all)								
Not Very	0.34	(0.28)	0.42	(0.26)	0.39	(0.26)	0.36	(0.28)
Quite Interested	0.76***	(0.26)	0.86***	(0.25)	0.86***	(0.24)	0.76***	(0.27)
Very Interested	0.88***	(0.30)	1.00***	(0.28)	1.00***	(0.28)	0.87***	(0.30)
Days listen to national radio per week	0.09***	(0.03)	0.07***	(0.03)	0.08***	(0.03)	0.09***	(0.03)
Constant	-4.44***	(0.61)	-3.83***	(0.56)	-3.73***	(0.56)	-4.26***	(0.61)
Pseudo R ²	0.15		0.13		0.12		0.15	
Observations	1,563		1,738		1,743		1,558	

Robust standard errors in parentheses

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

first three models were also run using the party individuals gave their first preference vote to in the election (see appendix Table A5.1) and similar findings emerge with the main difference being that there is a statistically significant difference between Labour Party voters and Fine Gael voters in these models⁹. Thus, H3 is accepted.

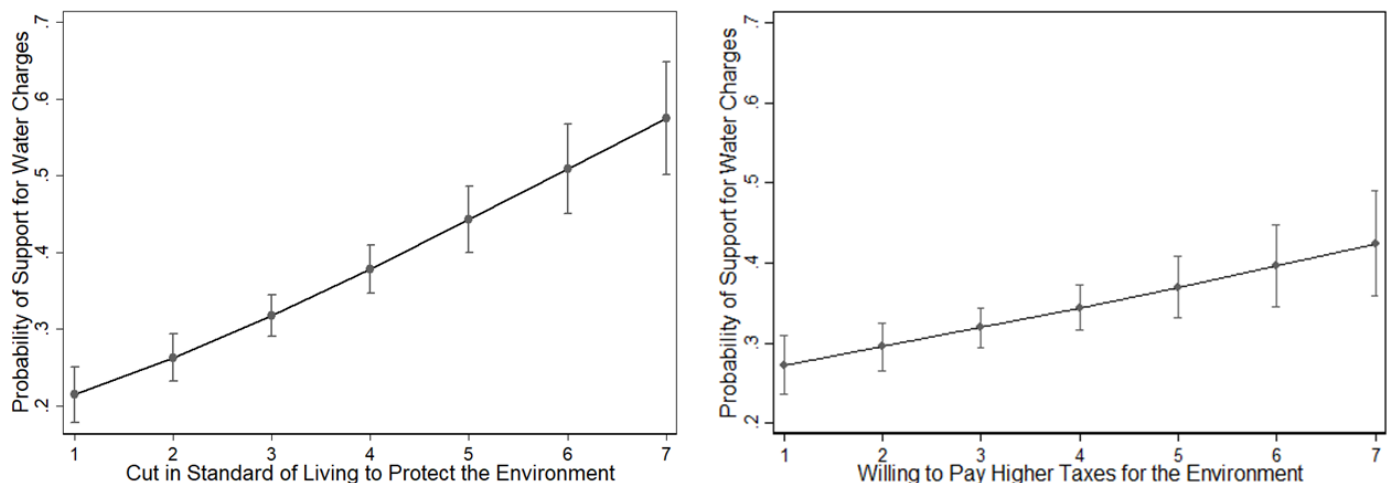
On experiencing financial hardship, the indicators generally show that such individuals are less likely to support the introduction of water charges. Individuals earning higher incomes are more likely to support the policy, local authority tenants are the least likely to support the policy and, though the significance levels are inconsistent across the models, there is some indication that home owners with loans/mortgages are less likely to support water charges than those without such burdens. Employment status does not behave as expected, with the unemployed only being significantly less likely at the $p=.05$ level than those who are part-time employed to support the charges and at that only in two of the three models. Overall, there is support for H2 though different measures of financial hardship behave differently. H4 is also supported, with those who are more willing to see tax increases to maintain social service spending being more likely to support water charges.

To demonstrate the magnitude of these effects, predicted probabilities are calculated based on models 1 & 2 where significant effects were found for the respective environmental questions, keeping every other variable at their mean value. These are plotted in figure 5.2. In each case, one can see that as one's answer to the environment question increases, one's probability of supporting water charges also increases. The effect is more pronounced for the

⁹ As a further robustness test, a set of models substituted this question for a series of questions asking respondents how likely they are to ever give their first preference vote to each of the political parties. What these models show (see appendix Table A5.2) is that individuals' preferences for the introduction of water charges maps onto their dispositions towards each of the parties in that those who support the policy are more likely to be willing to give their first preference vote to parties who also support the policy (significant at the $p=0.05$ level in all models for likelihood to ever give first preference vote to Fianna Fáil and the Green party, though only at the 0.10 level in some models for Fine Gael) while being less likely to support parties that opposed the policy (significant at the $p=0.01$ level for likelihood to ever give first preference to Sinn Féin and the United Left Alliance, though only at the $p=0.10$ level for the Labour Party).

cuts to standard of living question where keeping everything else in the model at their mean value, one has a 22 per cent probability of supporting water charges if you respond lowest on the environmental scale, whereas the corresponding figure for those who respond highest on the environmental scale is 58 per cent. For the willingness to pay taxes to protect the environment questions, if you are highly unwilling to pay taxes for this purpose, keeping everything else in the model at its mean value, you have a 27 per cent probability of supporting water charges whereas the corresponding figure for those who are highly willing to pay taxes for this purpose is 42 per cent.

Figure 5.2: Predicted Probabilities of Supporting Water Charges by Environmental Attitudes



A further point of curiosity is found in an additional test (Table A5.3 in the appendix) in which partisanship is interacted with the environmental support variables. Here, though Labour Party partisans are in general less likely to support the introduction of water charges in line with party policy, Labour party partisans who are more willing to make individual sacrifices for the environment are more likely to support the policy. This would appear to highlight some polarisation among Labour party partisans. On the one hand, some may have evaluated the policy based on the socialist lens upon which the party based their policy position or indeed just followed the party cue. On the other hand, as the Labour Party also promotes environmental protection, members who are disposed towards environmental protection appear

to have ignored the cues from their party and instead made their judgment independently based on environmental considerations. Such an effect is not present for other partisans, though it is present for nonpartisans.

While this chapter has shown that environmental attitudes can explain support for water charges, a final question that will be examined is whether support for water charges was influential in affecting vote choice. To examine this, a multinomial logistic regression is carried out in which the dependent variable of individuals' reported actual or intended vote is regressed on a range of variables that could be expected to influence vote choice including household income, employment status, age, gender, education, marital status, social class, living in a rural or urban area, political knowledge, belief in God, what one considered to be the most important issue personally in the election as an instance of issue voting and whether one considered that government policy was mainly responsible for the economic change in the country from 2007-2011 (for which the vast majority of respondents [94 per cent] recorded that the economy had got worse) as an indicator of economic voting, plus the water charges question. If the water charges question has a statistically significant impact upon vote choice after controlling for these variables, then one can be confident that attitudes towards the proposed policy had an impact upon voter behaviour.

Model 1 in table 5.3 displays the results of this multinomial logistic regression, displaying only the coefficients for the support for water charges variable that is of interest¹⁰. One can see that, even accounting for all these other variables that can be expected to influence vote choice, whether or not one supports water charges is a statistically significant distinguishing factor in voting behaviour with individuals who voted for the Labour Party or

¹⁰ The output for the other variables can be found in the appendix in Table A5.4 for model one and Table A5.5 for model 2. The category of 'refused/don't know' for the dependent variable is also not displayed, but can be found in the models in the appendix.

Sinn Féin over Fine Gael being less likely to support the introduction of domestic water charges in line with party policy. The water charges variable is not a significant indicator for explaining why one voted for Fine Gael over Fianna Fáil - both of which supported the introduction of the policy - and neither is it for voting for independents or others over Fine Gael which could be expected due to the different policy positions taken within each of these categories on the policy¹¹.

In model 2, the party individuals reported giving their first preference to in the previous general election is added in; such a factor is one of the best predictors in explaining current vote preferences and so including this provides an even stronger test on whether voters' views on water charges influenced their vote choice as well as an opportunity to approximate whether parties' positions on this policy actually enabled them to attract new voters. The first thing to note is that the pseudo R^2 increases from 0.12 to 0.28 with the addition of this variable, indicating its importance for explaining one's present first-preference vote. In this second model, the water charges variable is no longer statistically significant for explaining why people voted for the Labour Party, indicating that their stance on this issue was not important for attracting new voters. From the data, one cannot say for definite whether it may have been important for them in retaining existing voters. The coefficient remains statistically significant for explaining why one voted for Sinn Féin over Fine Gael (as well as other parties with a change of baseline) with a sizeable magnitude, suggesting that the party's stance on this played a key role for them in attracting new voters. As Sinn Féin distinguished themselves from the other main parties by rejecting the bailout agreement outright (Gallagher 2011, 150) of which

¹¹ If the reference category is instead set as Fianna Fáil, support for water charges is not a statistically significant indicator for distinguishing voting for Fianna Fáil over Labour in the model. However, given the negative campaigning that was engaged by the Labour Party in the closing stages of the campaign with their 'Fine Gael – Every Little Hurts' slogan that specifically attacked Fine Gael's austerity measures including water charges (Leahy 2011, 85/86) – and given the other variables in the model including the economic voting indicator that one would expect to be the key differentiates between Fianna Fáil voters and both Fine Gael/Labour voters – this is not so surprising.

the proposed introduction of water charges was a well-known component of, the significance of water charges for the Sinn Féin vote likely reflects their success in positioning themselves as a vehicle for anti-austerity votes. Thus, these models suggest that support for the reintroduction of water charges had an important role to play in individuals' vote choice, but only unambiguously so for Sinn Féin.

Table 5.3: Multinomial Logistic Regression on First Preference Vote/Vote Intention for 2011 General Election

VARIABLES	FF		LAB		SF		Ind		Other	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Reference FG										
Model 1:										
Support Water Tax	-0.15	(0.18)	-0.33**	(0.16)	-1.27***	(0.25)	-0.31	(0.20)	-0.13	(0.26)
Constant	-1.88***	(0.73)	-0.20	(0.70)	-0.32	(0.83)	-1.84**	(0.91)	0.26	(1.09)
Pseudo R ²					0.12					
Observations					1,767					
Model 2 (with 2007 vote):										
Support Water Tax	0.03	(0.19)	-0.10	(0.18)	-0.93***	(0.31)	-0.13	(0.21)	0.23	(0.27)
Constant	-4.98***	(0.86)	-2.37***	(0.88)	-2.62**	(1.17)	-3.41***	(1.01)	-3.33**	(1.39)
Pseudo R ²					0.28					
Observations					1,767					

Note: In addition to the output displayed, both models contain the additional control covariates as detailed in text as well as the extra category of 'refused/don't know' for the dependent variable. Tables displaying the full outputs can be found in the appendix in tables A5.4 and A5.5. The difference between model 1 and model 2 is that model 2 also control for respondents' reported first preference vote in the 2007 general elections.

Robust standard errors in parentheses

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

CONCLUSION

In this chapter, I set out to examine whether there was an environmental dimension to supporting the introduction of water charges in the aftermath of the 2011 Irish General election. The introduction of water charges could be expected to have environmentally beneficial effects through encouraging water conservation and raising revenue to address infrastructural problems that had developed within the system. However, in the context of an election that took place following the implementation of an EU-IMF bailout deal and the presence of bleak

economic and social conditions, the issue of the economy dominated even more than usual and the environmental aspects of the policy were not prominently highlighted. Thus, this is a hard test of whether - during a time of economic crisis – individuals' environmental attitudes translate into support for an environmentally-beneficial policy, even when that policy is being framed in the public debate through an alternative lens. In doing so, it has the advantage of the proposal being a tangible and imminent policy that respondents could expect to see implemented rather than a hypothetical proposal or one that policymakers may not act upon for some time.

The results demonstrate that the environmental dimension of a macro-level trade-off between economic growth and environmental protection does not affect respondents' support for water charges. However, the two dimensions capturing a willingness to make individual sacrifices for the environment are related; being willing to sacrifice one's standard of living for the sake of the environment has the largest effect of these. Thus, given that the policy would involve individuals being financially worse off from the policy, it appears that it is individuals' willingness to bear such a burden if they can expect it to lead to environmental gains that matters.

While support for the policy was found to affect vote choice, this was only conclusively found for voters of Sinn Féin. The fact that Fine Gael won the election despite campaigning for a policy that was widely unpopular – even amongst its own voters – and that their support for this policy did not appear to lose them first-preference votes to their main electoral competitor in the Labour Party indicates that parties may suggest some unpopular policies without being punished electorally for doing so. This may give grounds for parties to incorporate environmental protection policies even if the public support for such policies has not been met. However, the difficulties in executing the water charges policy once in

government and the subsequent reversal of the policy displays the challenge of implementing deeply unpopular policies even when you have a mandate.

In conclusion, this chapter demonstrates that – even during a period of heightened economic insecurity - the publics’ expressed willingness to make personal sacrifices in order to protect the environment is more than an empty or meaningless response, but has important implications for their support of a policy with tangible environmental benefits even when such a policy was largely being framed through an alternative lens. It also shows that voters who possess environmental attitudes can translate such an attitude into support for environmental policies, even when the environmental implications of the policy are side-lined in public discourse.

Conclusion

In this thesis, I set out to examine the relationship between environmental attitudes and economic conditions in light of the occurrence of the Great Recession of 2008 when each of these decreased substantially. Specifically, I was interested in examining in further detail the mechanisms that could explain how the decline in economic conditions may have affected environmental attitudes. There were four particular weaknesses in the existing literature that I sought to address. Firstly, there was the lack of focus on the broader topic of environmental protection with attention predominantly having been on the sub-topics of global warming and climate change. Secondly, previous research has predominantly focused on the United States at the expense of learning from the experiences of other countries. Thirdly, the investigation of the impact of subjective perceptions of the state of the economy has been neglected with investigating the impact of objective conditions receiving favour. Finally, there has been a reliance on repeated cross-sectional and pooled data sources which are unable to answer some of the causal questions of interest.

I initially investigated in the first empirical chapter whether environment-economy trade-off questions do indeed capture environmental attitudes rather than just the economic part of the trade-off; a previously untested hypothesis and one of special importance for the rest of this thesis as well as having broader implications for the literature at large. I concentrated my analysis on wave 7 of the British Election Study internet panel data from 2016 due to the advantages of its large sample size, its asking of multiple environmental protection questions and the survey containing a number of other questions that can capture the non-environmental dimension of the trade-off. The results clearly demonstrate that in this case the trade-off question does pick up on environmental attitudes rather than just economic attitudes and thus is a valid question to use for analysing environmental attitudes. While it is advisable - and

indeed recommended - that future research would seek to replicate this on other datasets in other time periods and countries to confirm whether such validity is found in other contexts, one would at the very least expect such a result to be transferable to Western democracies that are comparable to Britain.

In empirical chapters 2 and 3, the focus was on analysing survey data from both before and after the onset of the economic crisis to examine how deteriorations in economic conditions may have directly affected environmental attitudes. A challenge of both of these chapters was the fact that the repeated asking of environmental questions in surveys before the onset of the recession had been sporadic and there were even fewer surveys that had carried these questions through in the aftermath of the crisis. The second empirical chapter utilised cross-national and repeated cross-sectional survey data from the WVS in which the focus was on examining the impact different objective economic conditions had. Though the data in some countries in the dataset was collected as early as 2004 and others as late as 2014 and so the time span is not as narrow as what would be ideal for a regression discontinuity design, crucially each country used had data collected before 2008 and after 2009 and so one I could make use of the global recession having taken effect between both waves. Meanwhile, the third empirical chapter utilised panel data from New Zealand to investigate the impact of changing subjective perceptions of the state of the economy. While I would have liked to have been able to carry out such panel data analysis on other countries that had suffered even more from financial crisis, I could not due to a lack of data availability. Indeed, the New Zealand data is the only known panel dataset to have contained question on both environmental attitudes and economic perceptions both before and after the financial crisis hit.

The results from the second empirical chapter that uses data from the WVS conclusively demonstrate that increasing unemployment rates were strongly associated with individuals' declining prioritisation of environmental protection. Even though the recession led to relatively

modest – though still impactful – increases/decreases in unemployment rates in most of the countries in the sample (except Spain) during the time period being looked at, the increase in unemployment rates was very proportional to the decrease in environmental prioritisation. It would have been useful to have had more countries than Spain in the sample who experienced more dramatic increases in unemployment rates – such as Greece, Ireland and Portugal for instance – to have more certainty of the results at high changes. Despite this limitation, the result is particularly noteworthy for holding across a range of countries in different world regions with the generalisability of the results to South America being especially important to have demonstrated.

Despite the fact that the question specifically mentioned economic growth as part of the trade-off question, no such relationship was found with changing growth rates or changing GDP PPP per capita levels. There is also a lack of evidence to support the hypothesis that individuals at different income levels changed their prioritisation of the environment at different rates, though this result should be treated with caution given the measurement concerns that have been identified with the WVS income variable. It would have been theoretically fruitful to have been able to examine if the relationships found in this chapter were also found when the environmental expression referred to being willing to make personal sacrifices for the environment, however this could not be done as such questions had been dropped from the post-recession wave.

While the key message from this chapter is that changes in the unemployment rate appear to be the macro-economic indicator associated with the lessening of the prioritisation of environmental protection, what the chapter cannot definitively answer due to the structure of the data is the mechanism through which this operated. For instance, one possible explanation from the postmaterialist literature is that as unemployment rates increased, individuals felt greater levels of insecurity and thus made a – conscious or unconscious –

decision that protecting the environment was no longer in their best immediate interests whereas prioritising the economy and labour market was. Another possible explanation would be along the lines of Downs' (1972) issue attention cycle whereby individuals simply lose interest in the environment and the burning issue of the economy takes up most of the public attention; thus the results could be interpreted through the lens that under conditions of increased unemployment, the attention given in public discourse to environmental protection declines and this is followed by a decline in societal interest in the issue. However, from this data, one cannot adjudicate on the mechanism through which changes in the unemployment rate reduced prioritisation of environmental protection.

This is where the New Zealand case study comes in, allowing me to track individual changes in the prioritisation of environmental protection against individual level changes in perceptions of changing economic conditions and individuals' own financial circumstances. While the aggregate level relationship between environmental protection attitudes and the economic and household perception indicators are as hypothesised with both declining between 2005 and 2008, such a relationship does not appear as significant when examining individual level change. This would suggest that increasing feelings of economic and household insecurity was not what caused the decline in environmental protection attitudes during this period. It does leave open the possibility that the environment was pushed out of public discourse in favour of economic events which then may have led to reduced environmental concern. It is also possible that the observed decline in environmental attitudes was due to entirely separate factors. As the first, and to date only, study that has approached this research question using panel data from before and after the onset of the crisis, this null result using a strong identification strategy is very noteworthy. The results are also in line with analysis carried out in the US using 2008-2011 panel data (Mildenberger and Leiserowitz 2017).

However, considering these results in tandem with those from the previous chapter there is one further point to be made. That is, the second empirical chapter showed that changes in environmental protection prioritisation cross-nationally were most sensitive to changes in the unemployment rate. However, the context of the New Zealand study was not one where the unemployment rate was spiralling in line with the plummeting economic growth rates. GDP growth rates in 2008 were negative and 5.5 percentage points lower than in 2007, however the unemployment rate barely fluctuated. The unemployment rate was not dramatically affected until 2009 when it increased by almost 2 percentage points (World Bank 2015).

Thus, one possible hypothesis resulting from the null finding is that even if one recognises that the economy has deteriorated and that one's own household finances have gotten worse – as individuals in this sample did - that such changing perceptions may have more of an impact on environmental and perhaps other attitudes when individuals perceive that unemployment levels have also gotten worse. To test such a hypothesis would require that individuals are asked whether they perceive unemployment rates to have risen or fallen. As the objective indicators of unemployment and growth do not need to change in the same direction, so too might one expect individuals to have different perceptions on the status of these. Researchers may therefore wish to include an unemployment perception question in future surveys. While one cannot retrospectively examine this, if such a relationship was found in future studies it would reconcile the results from these two chapters.

Using an innovative experimental design carried out on a national British sample via an online survey, empirical chapter 4 was able to isolate the effect of the salience of individuals' economic perceptions on their belief in anthropogenic climate change and their sense of urgency for taking action to tackle climate change. While the previous chapter showed no evidence to suggest that changing perceptions of the state of the economy could explain the drop in the prioritisation of environmental protection witnessed in 2008 in New Zealand, the

results of this experiment clearly show that individuals' economic perceptions do have an independent effect on whether they think urgent action should be taken to tackle climate change.

While the magnitude of the treatment effect was quite sizeable, especially for such a subtle prompt, the generated predicted probabilities from the models demonstrate that the relationship between prioritising action on climate change and one's partisan affiliation is more substantial¹. This is in keeping with the results from empirical chapter 1 – also using British data – where the party one supports is shown to be one of the strongest predictors of a willingness to prioritise action on the environment or to support greater government spending on the environment. Though economic perceptions may be just one factor along with the aforementioned partisanship and education for instance that are more well-established, the fact that their effects can be separated from others is a considerable empirical advancement. And as framing effects only work if a frame resonates with its targets' pre-existing interpretations (Nisbet 2009, 17), one can be quite confident of the association between the salience of respondents' own economic perceptions and their prioritisation of climate change. This is in contrast to no such treatment effect being found on individuals' belief in anthropogenic climate change which demonstrates that the salience of economic perceptions do not effect climate change beliefs.

Thus, the results demonstrate that the salience of economic perceptions do affect individuals' willingness to take action on climate change, but they also provide evidence for why subjective economic perceptions should not be ignored or side-lined in analysis. From this design, one cannot tell how long-lasting such effects may be though it was important to establish whether an independent effect of economic perceptions existed in the first place

¹ With the caveat that the partisan relationship in this model is correlational rather than causal.

before such an extension to the research could be followed and this is something future studies can now work on testing. However, as temporary stimuli can lead to wide variations in momentary feelings around underlying attitudes (Lavrakas 2008), even if the effect is only temporary it points to important framing effects that could play an especially important role during election campaigns or during times when climate change legislation is being proposed in the legislature. While not being able to comment on the stability of climate change measures specifically from this single point in time, the analysis from chapter 1 does show that attitudes on the prioritisation of environmental protection in general are quite stable and this guards against worries that the such attitudes may actually be ‘nonattitudes’.

Finally, the results from the last empirical chapter show that individuals’ environmental attitudes can impact their support for a policy with environmental implications – in this case the reintroduction of water charges in Ireland - even in the midst of harsh economic conditions and when the environmental dimension of the policy is not placed at the forefront of public discussions. Such a result demonstrates that expressed willingness to make sacrifices for the sake of the environment are more than just empty statements as more environmentally disposed individuals were more likely to support an environmentally-beneficial policy that would leave them financially worse off at a time of serious financial difficulty. However, while environmental attitudes may have impacted upon support for the policy, support for/opposition to the policy appears to have only been a key factor for the Sinn Féin party in attracting new voters at the general election. Such votes were most likely based on Sinn Féin’s opposition to the policy on the basis of the negative financial impact the policy would have on struggling households.

In addition to the theoretical implications of this thesis, it is also worth remarking on its policy implications. The finding that individuals do not prioritise the environment over the economy as much when unemployment increases leads to a few notable considerations for

those who would like to implement environmental protection policies. It suggests that they should take advantage of periods of low or falling unemployment rates as – all else being equal – these are likely to be the times in which they can expect to receive the greatest amount of public support. Moreover, it points to the importance of prioritising low unemployment rates over growing the economy if governments want to have the macro-economic conditions that are most conducive to public support for their environmental policies. The finding that individuals are less likely to prioritise action on climate change when they are reminded of their poor evaluations of the economy – and vice versa for when they are reminded of their positive evaluations of the economy – has implications for the communication of climate science. It suggests that where possible policymakers and the media should try to place information related to climate policy next to information on good economic stories in order to boost support, and that they should avoid placing such information next to bad economic stories. This can also be taken in reverse though for those who wish to quell support for action on climate change. The null effect of the salience of economic perceptions on individuals' belief in the occurrence of anthropogenic climate change alternatively demonstrates that policymakers cannot rely on economic upturns – or at least perceptions of economic upturns - to alter public belief in whether climate change is caused by humans. This also has knock-on effects for increasing individuals' willingness to prioritise action on climate change as belief in the occurrence of anthropogenic climate change is a prerequisite to being willing to take such action to tackle it.

A key factor that these chapters highlight is that individuals continue to see a conflict between economic conditions and environmental protection; otherwise one would not see an effect of changes in economic conditions or an effect of the salience of individuals' economic perceptions on their environmental attitudes. The results from the New Zealand chapter do however show that more research is still needed to understand the exact mechanisms under

which such effects occur. Nevertheless, this in itself presents both a challenge and an opportunity for policymakers as it suggests that if they can change the perception that protecting the environment will result in economic sacrifices, then they may be able to garner support for environmental policies that would not fall apart when there are signs of economic trouble. Highlighting the opportunities that can come with investing in the green economy could be one way of doing this; with indications that green energy will shortly be cheaper and more efficient than energy from fossil fuels, this shows that the technological advances are being made for this to be realistic. And research from Sweden does show that the link between the economy and environmental attitudes can be reduced over time (Harring, Jagers, and Martinsson 2011).

One cannot talk about the policy implications without however talking about the political implications. This thesis finished by turning its attention towards the political through the chapter on support for the policy of introducing water charges in Ireland. As noted, the results indicate that environmental attitudes did affect support for this policy but as none of the main parties placed a heavy emphasis on the environmental benefits that would come with this, they were not able to harness this for votes. However, given the dire economic context at the time and the nature of the interparty competition, it is likely that such a strategy could have cost them more votes than they would have gained. The chapter also highlighted the importance -and difficulty - of balancing economic, environmental and social needs; something that came into sharp focus in 2018 in France with the proposed carbon taxes which the French government ultimately decided to roll back on given the extent of public opposition led by the Gilets Jaunes. The political context does matter in addition to the economic context as policy does not get made in a political vacuum, and – especially with the rise of parties that are openly dismissive of environmental protection or are climate change deniers/sceptics – this is a factor that should be considered carefully going forward.

To sum up, this thesis has provided important insights into and advanced our understanding of the relationship between economic conditions and environmental attitudes. Each chapter had a carefully chosen research design that tackled a particular aspect of the relationship and the complementarity of the chapters enabled the overall research question to be examined in depth. Before beginning this project, the state of the literature was such that we had a vague idea that economic circumstances mattered for environmental attitudes, but not so much on exactly how and when. This thesis has provided further evidence of the adverse effects that poor economic conditions have on environmental attitudes, but with a greater nuance than previous work due to the emphasis placed on the mechanisms through which this occurs. In doing so, it has contributed to changing the emphasises in the literature to considering which economic conditions may affect environmental attitudes and under what circumstances. The results from the chapter analysing New Zealand data do advise us to have some caution when extrapolating from aggregate level data as the explanations unearthed may not be replicated when analysing individual-level change, while the results from the chapter using Irish data show us that environmental attitudes can still concretely affect support for policies with environmental implications even when the economy dominates. As discussed, the findings also have a number of policy implications that should be considered carefully. With this thesis mostly having analysed the impact of economic conditions on support for environmental protection during poor or declining economic conditions, the recovery of many countries from the depths of the 2008 economic crisis and availability, or soon to be, of relevant datasets now gives us another wave of variation in economic conditions – though in the opposite direction – to further refine the work carried out in this thesis. In particular, it would be fruitful to examine whether environmental attitudes returned to their previous higher levels once economic recovery –and specifically a lowering of the unemployment rate - took place, whether environmental attitudes may have been so deeply affected by the effect of the recession as to have had long-lasting

consequences or whether recent political events may have lessened the connection between environmental attitudes and economic conditions. In carrying out such analysis, research should continue to pay attention to the types of both environmental attitudes and economic conditions and unearth the circumstances under which the relationships may or may not hold.

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Appendix 1

Table A1.1: Creation of weights using the questions 'How much attention do you generally pay to politics?'

	Panel Wave – 2016 (%)	Face-to-Face 2015 (%)	Face-to-Face 2017 (%)	Mean Face- to-Face 2015 & 2017 (%)	Political Interest Weight ¹
0 (Min)	1.88	8.6	6.65	7.63	4.06
1	1.25	4.29	3.74	4.02	3.22
2	2.36	6.9	6.24	6.57	2.78
3	3.41	10.31	8.02	9.16	2.67
4	3.29	7.83	7.93	7.88	2.40
5	8.22	14.86	11.80	13.33	1.62
6	11.15	11.88	11.80	11.84	1.06
7	20.08	14.50	15.04	14.77	0.74
8	23.07	10.81	14.59	12.7	0.55
9	11.26	4.29	6.15	5.22	0.46
10 (Max)	12.87	5.39	7.89	6.64	0.52
DK	1.14	0.33	0.14	0.24	0.21

Wording of Questions and Numbers of respondents (BES Internet Panel Wave 7 – Core Sample):

Table A1.2: Some believe that protecting the environment should have priority even if that reduces economic growth. Others believe that economic growth should have priority even if that hinders protecting the environment. What is your opinion?

	Unweighted	Weighted
0	5.94	5.1
1	3.81	3.17
2	6.74	6.05
3	8.67	8.08
4	8.50	7.80
5	19.55	19.46
6	10.23	9.78
7	9.07	8.54
8	7.24	6.53
9	3.15	2.63
10	6.64	5.64
DK	10.45	17.22

¹ This weight is calculated by taking the mean percentage response in each category to the question from the 2015 and 2017 face-to-face surveys and dividing this by the percentage giving such a response in the 2016 panel wave. It is then combined with the pre-existing survey weight in the BES for data analysis.

Table A1.3: Do you think that [measures to protect the environment have] gone too far or not far enough?

	Unweighted	Weighted
Gone much too far	5.46	4.63
Gone too far	11.09	9.66
About right	29.65	30.32
Not gone far enough	30.37	29.36
Not gone nearly far enough	12.42	9.73
DK	11.01	16.31

Table A1.4: On the subject of climate change do you think...

	Unweighted	Weighted
The world's climate is not changing	4.04	3.78
The world's climate is changing but not due to human activity	21.78	18.83
The world's climate is changing due to human activity	62.23	59.77
DK	11.95	17.62

Table A1.5: Risk Poverty: During the next 12 months, how likely or unlikely is it that there will be times when you don't have enough money to cover your day to day living costs

	Unweighted	Weighted
Very Unlikely	23.13	19.11
Fairly Unlikely	30.50	29.06
Neither likely nor unlikely	17.43	18.95
Fairly likely	16.47	18.73
Very Likely	8.17	8.97
DK	4.29	5.18

Table A1.6: Risk Unemployment: During the next 12 months, how likely or unlikely is it that you will be out of a job and looking for work

	Unweighted	Weighted
Very Unlikely	33.25	29.04
Fairly Unlikely	22.79	23.97
Neither likely nor unlikely	19.32	20.26
Fairly likely	8.54	9.38
Very Likely	6.81	7.15
DK	9.29	10.21

Table A1.7: How does the *financial situation of your household* now compare with what it was 12 months ago? Has it:

	Unweighted	Weighted
Got a Lot Better	2.77	2.63
Got a Little Better	16.24	15.93
Stayed the Same	45.75	45.16
Got a Little Worse	24.00	23.54
Got a Lot Worse	7.74	7.91
DK	3.47	4.83

Table A1.8: Do you think that each of the cost of living is getting higher, getting lower or staying about the same?

	Unweighted	Weighted
Getting a Lot Lower	1.07	1.39
Getting a Little Lower	5.38	4.94
Staying About the Same	28.21	24.34
Getting a Little Higher	45.26	44.87
Getting a Lot Higher	16.99	19.92
DK	3.10	4.55

Table A1.9: Do you think now is a good or a bad time for people to buy major household items (furniture, kitchen appliances, televisions, and things like that)?

	Unweighted	Weighted
Good Time to Buy	21.68	18.76
Neither Good Nor Bad Time to Buy	56.30	56.46
Bad Time to Buy	8.71	9.18
DK	13.31	15.60

Table A1.10: Do you think the economy is getting better, getting worse or staying about the same?

	Unweighted	Weighted
Got a Lot Better	0.91	0.72
Got a Little Better	18.66	16.23
Stayed the Same	32.12	32.68
Got a Little Worse	30.20	29.61
Got a Lot Worse	13.16	12.76
DK	4.95	8.00

Table A1.11: Do you think that [cuts to local services in my area have] gone too far or not far enough?

	Unweighted	Weighted
Not Gone Nearly Far Enough	0.75	.068
Not Gone Far Enough	3.35	2.68
About Right	24.60	22.91
Gone Too Far	36.30	36.97
Gone Much Too Far	23.00	16.69
DK	12.00	17.01

Table A1.12: Do you think that [cuts to national services has] gone too far or not far enough?

	Unweighted	Weighted
Not Gone Nearly Far Enough	1.67	1.15
Not Gone Far Enough	6.91	5.40
About Right	21.87	20.16
Gone Too Far	34.33	37.19
Gone Much Too Far	27.13	22.63
DK	8.11	13.49

Table A1.13: Do you think that [cuts to NHS spending/cuts to NHS services has] gone too far or not far enough?

	Unweighted	Weighted
Not Gone Nearly Far Enough	1.01	0.99
Not Gone Far Enough	3.46	2.72
About Right	14.60	11.96
Gone Too Far	33.96	36.79
Gone Much Too Far	40.55	39.36
DK	6.42	8.18

Table A1.14: Some people feel that government should make much greater efforts to make people's incomes more equal. Other people feel that government should be much less concerned about how equal people's incomes are. Where would you place yourself on this scale?

	Unweighted	Weighted
0 (Government should be less concerned about equal incomes)	4.61	3.74
1	1.87	1.37
2	5.53	4.60
3	10.66	9.12
4	9.02	8.62
5	14.71	15.35
6	12.77	12.10
7	13.04	12.08
8	6.69	5.75
9	4.38	3.92
10 (Government should try to make incomes equal)	7.71	8.05
DK	9.01	15.30

Table A1.15: Socialist- Laissez Faire Scale Composites:

How much do you agree or disagree with the following statements?

1: Government should redistribute income from the better off to those who are less well off

2: Big business takes advantage of ordinary people

3: Ordinary working people do not get their fair share of the nation's wealth

4 There is one law for the rich and one for the poor

5: Management will always try to get the better of employees if it gets the chance

	1	2	3	4	5
<i>Unweighted</i>					
Strongly Disagree	5.18	1.22	1.61	2.49	1.60
Disagree	15.92	5.92	8.72	9.96	9.67
Neither Agree Nor Disagree	23.10	14.52	15.92	14.31	18.62
Agree	30.69	44.09	40.98	37.53	40.63
Strongly Agree	19.96	30.64	28.98	32.76	25.42
DK	5.15	3.61	3.81	2.95	4.06
<i>Weighted</i>					
Strongly Disagree	4.21	0.90	1.23	1.91	1.23
Disagree	14.15	5.07	6.90	8.56	8.20
Neither Agree Nor Disagree	24.41	15.90	15.97	14.98	18.26
Agree	31.49	45.65	43.62	39.18	42.32
Strongly Agree	17.60	26.05	25.80	30.31	23.28
DK	8.14	6.43	6.48	5.06	6.71
Factor Analysis					
Variance					
	Variance	Difference	Proportion	Cumulative	
<i>Unweighted</i>	2.66	..	1.13	1.13	
<i>Weighted</i>	2.63	...	1.14	1.14	
Rotated Factor Loadings					
	Unweighted		Weighted		
	Factor 1	Uniqueness	Factor 1	Uniqueness	
1.	0.67	0.54	0.67	0.55	
2.	0.74	0.45	0.74	0.46	
3.	0.79	0.37	0.78	0.39	
4.	0.79	0.38	0.78	0.39	
5.	0.64	0.59	0.64	0.60	

Average interitem correlation: 0.54

Alpha: 0.85

Table A1.16: Socialist-Laissez Faire Scale

	Unweighted	Weighted
0 (Laissez Faire)	0.20	0.14
.5	0.11	0.06
1	0.22	0.14
1.5	0.36	0.22
2	0.62	0.40
2.5	1.30	0.94
3	1.56	1.05
3.5	2.01	1.51
4	2.51	2.05
4.5	3.44	3.11
5	5.11	5.38
5.5	4.99	4.86
6	5.84	5.87
6.5	7.79	8.46
7	9.20	9.42
7.5	11.98	12.68
8	6.90	6.67
8.5	5.63	5.21
9	5.72	5.21
9.5	5.82	4.89
10 (Socialist)	9.99	8.47
DK	8.71	13.25

Table A1.17: And do you think that immigration undermines or enriches Britain's cultural life?

	Unweighted	Weighted
1 (Undermines)	22.77	22.96
2	11.68	11.83
3	12.04	12.48
4	13.82	14.67
5	14.36	13.08
6	10.49	8.55
7 (Enriches)	8.33	5.54
DK	6.51	10.88

Table A1.18: Some people think that the UK should allow *many more* immigrants to come to the UK to live and others think that the UK should allow *many fewer* immigrants. Where would you place yourself on this scale?

	Unweighted	Weighted
0 (Allow Many Fewer)	28.12	28.60
1	5.29	5.15
2	7.55	6.96
3	8.68	7.90
4	6.96	6.36
5	12.49	10.89
6	5.98	4.99
7	5.45	3.79
8	2.77	1.91
9	0.98	0.62
10 (Allow Many More)	2.35	1.41
DK	13.38	21.41

Table A1.19: Do you think that Britain should allow more or fewer of the following kinds of people to come and live in Britain?

	Unweighted	Weighted
0 (Allow Many Fewer)	29.87	32.40
1	5.28	5.89
2	7.64	7.90
3	7.60	8.10
4	5.31	5.21
5	14.43	12.47
6	6.33	5.37
7	6.00	4.43
8	3.77	2.46
9	1.11	0.65
10 (Allow Many More)	4.26	2.60
DK	8.39	12.50

Table A1.20: Libertarian-Authoritarian Scale Composites:

How much do you agree or disagree with the following statements?

1: Young people today don't have enough respect for traditional British values

2: For some crimes, the death penalty is the most appropriate sentence

3: Schools should teach children to obey authority

4: Censorship of films and magazines is necessary to uphold moral standards

5: People who break the law should be given stiffer sentences

	1	2	3	4	5
<i>Unweighted</i>					
Strongly Disagree	2.96	20.27	2.52	9.61	1.51
Disagree	9.54	13.26	7.25	17.75	6.16
Neither Agree Nor Disagree	17.29	10.72	15.81	20.30	19.47
Agree	37.19	24.09	44.27	35.04	38.49
Strongly Agree	28.64	26.92	27.02	13.11	30.62
DK	4.37	4.75	3.14	4.19	3.75
<i>Weighted</i>					
Strongly Disagree	1.89	14.19	1.79	7.04	1.05
Disagree	7.02	11.99	5.82	15.18	4.17
Neither Agree Nor Disagree	15.87	12.08	14.65	20.63	16.93
Agree	39.89	26.77	46.15	36.79	40.63
Strongly Agree	29.08	28.31	26.73	13.70	31.87
DK	6.24	6.65	4.86	6.66	5.35

Factor Analysis

Variance	Variance	Difference	Proportion	Cumulative
Unweighted	2.27	...	1.18	1.18
Weighted	2.18	...	1.19	1.19

Rotated Factor Loadings

	Unweighted		Weighted	
	Factor 1	Uniqueness	Factor 1	Uniqueness
1.	0.74	0.45	0.73	0.47
2.	0.66	0.57	0.64	0.59
3.	0.70	0.51	0.69	0.53
4.	0.49	0.76	0.47	0.78
5.	0.75	0.44	0.74	0.46

Average Interitem Correlation: 0.46

Alpha: 0.81

Table A1.21: Libertarian-Authoritarian Scale

	Unweighted	Weighted
0 (Authoritarian)	4.38	4.54
.5	4.38	4.49
1	6.11	6.12
1.5	6.63	6.82
2	7.47	7.92
2.5	10.24	11.71
3	8.61	9.36
3.5	8.00	8.27
4	6.20	6.07
4.5	5.37	4.89
5	5.40	5.16
5.5	3.84	3.12
6	3.06	2.22
6.5	2.60	1.68
7	2.36	1.41
7.5	1.80	1.03
8	1.33	0.71
8.5	0.98	0.58
9	0.66	0.36
9.5	0.27	0.15
10 (Libertarian)	0.35	0.21
DK	9.95	13.16

Table A1.22: Where would you place yourself on these scales? Europeaness.

	Unweighted	Weighted
1 (Min)	21.70	22.21
2	11.70	12.30
3	12.13	13.05
4	19.40	20.29
5	15.99	14.43
6	8.30	6.55
7 (Max)	7.70	6.33
DK	3.08	4.85

Table A1.23: Transition Probabilities for Prioritising Environment Not Far Enough Between waves 4 and 7 [recoded from 11 to 5 categories] (%)

	1	2	3	4	5	DK	Total
1 (Much too Far)	42	27	15	7	5	4	100
2	15	35	30	12	2	7	100
3	3	12	55	20	2	8	100
4	1	5	18	55	14	6	100
5 (Not Nearly Far Enough)	3	2	4	28	61	2	100
DK	3	8	22	19	3	46	100
Total	6	12	30	30	12	10	100

Note: n=21,019

Table A1.24: Rotated Factor Loadings with Imputed Values – Without Climate Change Belief

	Variance				
	Variance	Difference	Proportion	Cumulative	
Factor 1	3.02	0.20	0.35	0.35	
Factor 2	2.82	1.02	0.33	0.68	
Factor 3	1.81	0.80	0.21	0.88	
Factor 4	1.00	...	0.12	1.00	
Rotated Factor Loadings					
	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
Env v Econ	0.28	0.14	0.09	0.54	0.60
Env Not Far Enough	0.29	0.14	0.04	0.76	0.32
Risk Poverty	-0.04	0.13	0.70	0.01	0.49
Risk Unemployment	0.07	0.03	0.58	0.03	0.65
Change Finances	-0.08	0.19	0.56	-0.02	0.65
Cost of Living	-0.02	0.22	0.34	0.09	0.83
Bad Time Purchase	0.03	0.13	0.36	0.03	0.85
Econ Change	-0.02	0.44	0.40	0.05	0.66
Cuts Local Too Far	0.05	0.80	0.15	0.02	0.33
Cuts National Too Far	0.13	0.86	0.14	0.06	0.23
Cuts NHS Too Far	0.07	0.74	0.12	0.09	0.42
Redistribute Incomes	0.13	0.48	0.29	0.18	0.64
Socialist-Laissez Faire	0.00	0.55	0.33	0.11	0.58
Immigration Culture	0.80	0.05	-0.01	0.11	0.35
Immigration More	0.90	0.06	0.02	0.07	0.18
Asylum More	0.83	0.08	0.01	0.12	0.30
Authoritarian-Libertarian	0.63	0.04	-0.01	0.15	0.58
Europeanness	0.53	0.04	-0.01	0.13	0.70

Note: Scores of above 0.30 are in bold; n=19,348

Table A1.25: Rotated Factor Loadings – With Climate Change Belief

Table 11.10: Rotated Factor Loadings (With Climate Change Belief)					
Variance					
	Variance	Difference	Proportion	Cumulative	
Factor 1	2.72	0.11	0.38	0.38	
Factor 2	2.61	0.96	0.36	0.74	
Factor 3	1.65	0.54	0.23	0.97	
Factor 4	1.11	...	0.15	1.13	
Rotated Factor Loadings					
	Factor1	Factor2	Factor 3	Factor 4	Uniqueness
Env v Econ	0.23	0.09	0.09	0.51	0.67
Env Not Far Enough	0.22	0.07	0.04	0.65	0.53
Climate Belief	0.15	0.10	-0.03	0.50	0.71
Risk Poverty	-0.08	0.14	0.63	0.01	0.57
Risk Unemployment	0.09	0.01	0.57	-0.01	0.67
Change Finances	-0.04	0.22	0.54	-0.03	0.66
Cost of Living	-0.08	0.21	0.30	0.08	0.85
Bad Time Purchase	0.03	0.13	0.35	0.02	0.86
Econ Change	-0.03	0.45	0.39	0.04	0.64
Cuts Local Too Far	0.02	0.76	0.14	0.02	0.40
Cuts National Too Far	0.07	0.82	0.15	0.06	0.30
Cuts NHS Too Far	-0.00	0.70	0.08	0.09	0.50
Redistribute Incomes	0.05	0.45	0.32	0.16	0.67
Socialist-Laissez Faire	-0.04	0.56	0.31	0.10	0.57
Immigration Culture	0.76	0.01	-0.02	0.16	0.40
Immigration More	0.85	-0.01	0.01	0.08	0.27
Asylum More	0.79	0.04	-0.00	0.14	0.36
Libertarian-Authoritarian	0.59	-0.02	-0.00	0.17	0.62
Europeanness	0.54	0.02	-0.02	0.18	0.68

Note: Scores of above 0.30 are in bold; n=2,951

Table A1.26: OLS Regressions for the BES analysis

VARIABLES	(1) Socialist-Laissez Faire		(2) Libertarian- Authoritarian		(3) Env v. Econ		(4) Env Not Far Enough	
	coef	Se	coef	se	Coef	se	coef	se
Education (No Formal)								
GCSE (D-G Grade)	-0.38***	(0.13)	0.23	(0.14)	-0.03	(0.21)	-0.17**	(0.08)
GCSE (A*-C Grade)	-0.36***	(0.09)	0.22**	(0.11)	0.15	(0.15)	-0.00	(0.06)
A-Level	-0.55***	(0.10)	0.57***	(0.12)	0.25*	(0.15)	0.00	(0.06)
Undergraduate	-0.74***	(0.09)	1.09***	(0.12)	0.34**	(0.14)	0.12**	(0.06)
Postgraduate	-0.93***	(0.12)	1.71***	(0.14)	0.61***	(0.18)	0.18**	(0.07)
Other Technical, Professional or Higher Qualification	-0.80***	(0.11)	0.77***	(0.12)	-0.02	(0.16)	-0.02	(0.06)
Don't Know/Prefer Not to Say/No Answer	-0.32*	(0.18)	0.32*	(0.19)	0.48*	(0.25)	0.11	(0.10)
Female	-0.15***	(0.04)	-0.32***	(0.05)	0.30***	(0.07)	0.13***	(0.03)
Region (London)								
North East	-0.00	(0.12)	-0.13	(0.13)	-0.07	(0.21)	-0.03	(0.07)
North West	-0.00	(0.10)	-0.19	(0.12)	-0.31*	(0.16)	-0.19***	(0.06)
Yorkshire and the Humber	-0.06	(0.10)	0.08	(0.12)	-0.41**	(0.18)	-0.04	(0.06)
East Midlands	-0.08	(0.11)	-0.06	(0.11)	-0.06	(0.17)	-0.07	(0.06)
West Midlands	-0.08	(0.10)	-0.04	(0.11)	-0.10	(0.16)	-0.08	(0.06)
East of England	-0.22**	(0.10)	-0.03	(0.11)	-0.04	(0.16)	-0.06	(0.06)
South East	-0.24***	(0.09)	0.23**	(0.11)	0.13	(0.16)	-0.03	(0.05)
South West	-0.12	(0.10)	0.18	(0.12)	0.20	(0.16)	0.02	(0.06)
Wales	0.10	(0.12)	0.00	(0.12)	-0.40**	(0.19)	-0.15*	(0.08)
Scotland	-0.26***	(0.10)	0.26**	(0.12)	-0.31*	(0.17)	-0.07	(0.06)
Age (18-25)								
26-35	0.26***	(0.10)	-0.88***	(0.12)	0.10	(0.15)	-0.12**	(0.06)
36-45	0.41***	(0.10)	-1.27***	(0.11)	-0.40***	(0.15)	-0.15**	(0.06)
46-55	0.61***	(0.09)	-1.40***	(0.11)	-0.68***	(0.14)	-0.19***	(0.06)
56-65	0.72***	(0.09)	-1.40***	(0.10)	-0.60***	(0.14)	-0.27***	(0.05)
66+	0.51***	(0.09)	-1.55***	(0.11)	-0.64***	(0.13)	-0.36***	(0.05)
Partisanship (Conservative)								
Labour	1.87***	(0.05)	0.76***	(0.05)	0.95***	(0.09)	0.38***	(0.03)
Liberal Democrat	1.07***	(0.08)	1.11***	(0.09)	1.56***	(0.13)	0.57***	(0.05)
SNP	2.32***	(0.11)	0.66***	(0.13)	1.29***	(0.19)	0.51***	(0.07)
UKIP	1.40***	(0.09)	-0.26***	(0.08)	0.62***	(0.14)	-0.10*	(0.05)
Green Party	2.10***	(0.15)	1.76***	(0.15)	3.37***	(0.19)	1.17***	(0.07)
Other	1.69***	(0.18)	1.10***	(0.24)	1.45***	(0.23)	0.57***	(0.13)
None	1.42***	(0.10)	0.28***	(0.10)	0.58***	(0.15)	0.29***	(0.06)
Don't Know	1.23***	(0.16)	0.04	(0.19)	0.87***	(0.31)	0.30***	(0.10)
Change in Finances (-)	0.32***	(0.03)	-0.07***	(0.03)	0.08*	(0.04)	-0.01	(0.02)
Constant	5.22***	(0.14)	3.56***	(0.18)	4.15***	(0.25)	3.23***	(0.09)
Observations	11,988		11,988		11,988		11,988	
R-squared	0.26		0.22		0.10		0.11	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A1.27: Ordered Logistic Regressions – Version 2

VARIABLES	(1) Socialist-Laissez Faire		(2) Libertarian- Authoritarian		(3) Env v. Econ		(4) Env Not Far Enough	
	Coef	se	coef	se	Coef	Se	coef	se
Education (No Formal)								
GCSE (D-G Grade)	-0.39***	(0.12)	0.31**	(0.12)	-0.17	(0.13)	-0.21	(0.13)
GCSE (A*-C Grade)	-0.40***	(0.09)	0.36***	(0.09)	-0.11	(0.09)	-0.01	(0.10)
A-Level	-0.62***	(0.09)	0.74***	(0.09)	-0.03	(0.09)	-0.02	(0.10)
Undergraduate	-0.78***	(0.09)	1.17***	(0.09)	0.04	(0.09)	0.22**	(0.10)
Postgraduate	-0.99***	(0.11)	1.82***	(0.11)	0.20*	(0.11)	0.32***	(0.12)
Other Technical, Professional or Higher Qualification	-0.77***	(0.10)	0.89***	(0.10)	-0.02	(0.10)	0.00	(0.10)
Don't Know/Prefer Not to Say/No Answer	-0.39**	(0.17)	0.64***	(0.16)	0.39**	(0.16)	0.18	(0.16)
Female	-0.25***	(0.04)	-0.31***	(0.04)	0.21***	(0.04)	0.19***	(0.04)
Region (London)								
North East	-0.08	(0.11)	-0.13	(0.11)	-0.17	(0.12)	-0.27**	(0.12)
North West	0.04	(0.09)	-0.10	(0.09)	-0.28***	(0.10)	-0.35***	(0.10)
Yorkshire and the Humber	-0.07	(0.09)	-0.02	(0.10)	-0.19*	(0.10)	-0.11	(0.10)
East Midlands	-0.09	(0.10)	-0.07	(0.10)	-0.06	(0.10)	-0.13	(0.10)
West Midlands	-0.04	(0.09)	-0.06	(0.10)	-0.00	(0.09)	-0.15	(0.10)
East of England	-0.17**	(0.08)	-0.02	(0.09)	-0.08	(0.09)	-0.15*	(0.09)
South East	-0.18**	(0.08)	0.18**	(0.09)	0.10	(0.09)	0.01	(0.09)
South West	-0.12	(0.09)	0.08	(0.09)	0.06	(0.09)	0.09	(0.09)
Wales	0.11	(0.11)	-0.09	(0.10)	-0.20*	(0.11)	-0.22*	(0.12)
Scotland	-0.23**	(0.10)	0.19*	(0.10)	-0.30***	(0.10)	-0.27***	(0.10)
Age (18-25)								
26-35	0.31***	(0.09)	-0.85***	(0.09)	-0.07	(0.08)	-0.37***	(0.09)
36-45	0.40***	(0.08)	-1.23***	(0.08)	-0.39***	(0.08)	-0.49***	(0.09)
46-55	0.65***	(0.08)	-1.33***	(0.08)	-0.54***	(0.08)	-0.57***	(0.09)
56-65	0.80***	(0.08)	-1.36***	(0.08)	-0.49***	(0.08)	-0.67***	(0.09)
66+	0.51***	(0.08)	-1.49***	(0.08)	-0.52***	(0.08)	-0.88***	(0.09)
Partisanship (Conservative)								
Labour	1.82***	(0.05)	0.61***	(0.05)	0.65***	(0.05)	0.75***	(0.05)
Liberal Democrat	1.07***	(0.07)	1.08***	(0.07)	1.03***	(0.07)	1.11***	(0.07)
SNP	2.26***	(0.12)	0.50***	(0.12)	0.98***	(0.13)	1.06***	(0.12)
UKIP	1.39***	(0.08)	-0.39***	(0.08)	0.37***	(0.09)	-0.14*	(0.08)
Green Party	2.03***	(0.13)	1.51***	(0.13)	2.45***	(0.11)	2.64***	(0.14)
Other	1.78***	(0.19)	1.08***	(0.23)	0.96***	(0.16)	1.10***	(0.24)
None	1.37***	(0.09)	0.22**	(0.08)	0.45***	(0.08)	0.57***	(0.09)
Don't Know	1.15***	(0.12)	0.06	(0.13)	0.40***	(0.14)	0.37***	(0.14)
Change in Finances (-)	0.32***	(0.02)	-0.08***	(0.02)	0.05*	(0.03)	-0.01	(0.03)
Log Pseudolikelihood (Null)	-39,60873		-40,654.93		-34,017.99		-20,963.29	
Log Pseudolikelihood	-37,560.81		-38,866.78		-33,243.64		-20,031.93	
Pseudo R ²	0.05		0.04		0.02		0.04	
Observations	16,598		16,598		16,598		16,598	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A1.28: Rotated Factor Loadings – Wave 4

	Variance			
	Variance	Difference	Proportion	Cumulative
Factor 1	2.50	0.65	0.57	0.57
Factor 2	1.85	1.07	0.42	0.99
Factor 3	0.78	...	0.18	1.17
	Loadings			
	Factor 1	Factor 2	Factor 3	Uniqueness
Env v Econ	0.09	0.09	0.59	0.64
Env Not Far Enough	0.10	0.03	0.60	0.64
Risk Poverty	0.12	0.60	0.03	0.62
Risk Unemployment	0.02	0.55	0.06	0.69
Change Finances	0.26	0.57	-0.02	0.61
Cost of Living	0.24	0.40	0.10	0.77
Bad Time Purchase	0.16	0.41	0.04	0.81
Econ Change	0.44	0.51	0.10	0.53
Cuts Local Too Far	0.75	0.16	0.04	0.41
Cuts National Too Far	0.78	0.17	0.10	0.35
Cuts NHS Too Far	0.69	0.13	0.07	0.50
Redistribute Incomes	0.45	0.29	0.16	0.69
Socialist-Laissez Faire	0.53	0.31	0.11	0.61

Note: Scores of above 0.30 are in bold; n=12,262

Table A1.29: Rotated Factor Loadings – Wave 4 with Authoritarian-Libertarian Questions

Variance					
	Variance	Difference	Proportion		Cumulative
Factor 1	2.51	0.45	0.40		0.40
Factor 2	2.05	0.15	0.33		0.73
Factor 3	1.90	1.11	0.31		1.04
Factor 4	0.79	...	0.13		1.17
Loadings					
	Factor1	Factor 2	Factor 3	Factor 4	Uniqueness
Env v Econ	0.10	0.18	0.10	0.57	0.63
Env Not Far Enough	0.11	0.15	0.03	0.58	0.63
Risk Poverty	0.12	-0.03	0.61	0.02	0.62
Risk Unemployment	0.01	0.05	0.56	0.04	0.69
Change Finances	0.26	-0.03	0.57	-0.01	0.61
Cost of Living	0.24	-0.03	0.41	0.09	0.77
Bad Time Purchase	0.16	0.06	0.41	0.02	0.80
Econ Change	0.44	0.01	0.52	0.08	0.53
Cuts Local Too Far	0.75	0.01	0.16	0.04	0.41
Cuts National Too Far	0.79	0.05	0.18	0.06	0.34
Cuts NHS Too Far	0.69	-0.02	0.13	0.06	0.50
Redistribute Incomes	0.45	0.03	0.30	0.16	0.69
Socialist-Laissez Faire	0.52	-0.12	0.32	0.12	0.59
Respect for British Values	-0.01	0.71	0.00	0.10	0.49
Death Penalty Sometimes	0.04	0.60	-0.08	0.20	0.59
Schools should teach authority	0.02	0.67	0.10	0.08	0.53
Censorship Necessary	-0.05	0.42	0.03	-0.01	0.82
Stiffer Legal Sentences	-0.00	0.69	-0.03	0.12	0.50

Note: Scores of above 0.30 are in bold; n=12,262

Table A1.30: Ordered Logistic Regressions – Wave 4

VARIABLES	(1) Socialist-Laissez Faire		(2) Libertarian- Authoritarian		(3) Env v. Econ		(4) Env Not Far Enough	
	Coef	se	Coef	Se	Coef	se	Coef	se
Education (No Formal)								
GCSE (D-G Grade)	-0.43***	(0.14)	0.39***	(0.15)	0.01	(0.14)	-0.13	(0.14)
GCSE (A*-C Grade)	-0.16	(0.11)	0.27***	(0.10)	-0.06	(0.11)	0.03	(0.12)
A-Level	-0.43***	(0.12)	0.68***	(0.10)	0.13	(0.11)	0.17	(0.12)
Undergraduate	-0.59***	(0.11)	1.10***	(0.10)	0.13	(0.11)	0.26**	(0.11)
Postgraduate	-0.82***	(0.13)	1.83***	(0.12)	0.30**	(0.13)	0.47***	(0.13)
Other Technical, Professional or Higher Qualification	-0.75***	(0.12)	0.71***	(0.11)	0.02	(0.12)	0.17	(0.12)
Don't Know/Prefer Not to Say/No Answer	-0.56***	(0.20)	0.80***	(0.18)	0.25*	(0.17)	0.01	(0.17)
Female	-0.25***	(0.05)	-0.28***	(0.05)	0.21***	(0.05)	0.24***	(0.05)
Region (London)								
North East	-0.14	(0.13)	-0.30**	(0.14)	-0.27*	(0.14)	-0.30*	(0.15)
North West	0.14	(0.11)	-0.34***	(0.11)	-0.22**	(0.11)	-0.22*	(0.12)
Yorkshire and the Humber	-0.14	(0.12)	-0.27**	(0.12)	-0.14	(0.10)	-0.17	(0.12)
East Midlands	-0.04	(0.12)	-0.28**	(0.11)	-0.06	(0.11)	-0.06	(0.13)
West Midlands	-0.03	(0.11)	-0.17	(0.11)	0.02	(0.10)	-0.03	(0.13)
East of England	-0.16	(0.11)	-0.08	(0.11)	-0.09	(0.11)	-0.04	(0.12)
South East	-0.07	(0.10)	-0.05	(0.10)	0.10	(0.09)	-0.02	(0.11)
South West	-0.11	(0.11)	0.00	(0.10)	0.03	(0.10)	0.08	(0.12)
Wales	0.08	(0.12)	-0.26**	(0.12)	-0.20*	(0.12)	-0.21	(0.13)
Scotland	-0.06	(0.11)	0.06	(0.11)	-0.49***	(0.10)	-0.45***	(0.13)
Age (18-25)								
26-35	0.11	(0.10)	-0.62***	(0.11)	0.01	(0.11)	-0.38***	(0.11)
36-45	0.30***	(0.10)	-0.87***	(0.11)	-0.25**	(0.11)	-0.60***	(0.11)
46-55	0.60***	(0.10)	-0.98***	(0.10)	-0.27***	(0.10)	-0.53***	(0.11)
56-65	0.67***	(0.09)	-0.94***	(0.10)	-0.35***	(0.10)	-0.69***	(0.10)
66+	0.41***	(0.10)	-1.04***	(0.11)	-0.27**	(0.11)	-0.68***	(0.11)
Partisanship (Conservative)								
Labour	1.78***	(0.06)	0.65***	(0.06)	0.72***	(0.06)	0.78***	(0.06)
Liberal Democrat	1.04***	(0.08)	1.10***	(0.08)	0.99***	(0.08)	1.00***	(0.08)
SNP	2.11***	(0.13)	0.47***	(0.15)	0.95***	(0.15)	1.13***	(0.15)
UKIP	1.49***	(0.12)	-0.42***	(0.10)	0.13	(0.12)	-0.11	(0.12)
Green Party	2.04***	(0.16)	1.81***	(0.18)	2.60***	(0.13)	2.64***	(0.17)
Other	2.05***	(0.20)	1.06***	(0.27)	1.21***	(0.20)	1.24***	(0.23)
None	1.24***	(0.10)	0.40***	(0.11)	0.57***	(0.10)	0.58***	(0.11)
Don't Know	1.28***	(0.19)	-0.15	(0.22)	0.81***	(0.29)	0.62**	(0.30)
Change in Finances (-)	0.33***	(0.03)	-0.06**	(0.03)	0.07***	(0.03)	-0.01	(0.03)
Log Pseudolikelihood (Null)	-27,474.70		-27,424.33		-23,222.54		-143902.30	
Log Pseudolikelihood	-25,860.08		-26,395.86		-22,647.65		-13,311.00	
Pseudo R ²	0.06		0.04		0.02		0.04	
Observations	12,262		12,262		12,262		12,262	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix 2

Table A2.1: Country Fixed Effects Models for Prioritisation of Environmental Protection

VARIABLES	(1)	(2)	(3)	(4)
<u>Individual Variables</u>				
Male	-0.09** (0.04)	...	...	-0.09** (0.04) -0.09** (0.04)
Education (Elementary or Less)				
No Formal	-0.03 (0.09)	...	...	-0.02 (0.09) -0.02 (0.09)
Incomplete Secondary	0.08 (0.05)	...	...	0.10* (0.05) 0.10* (0.05)
Complete Secondary	0.23*** (0.04)	...	...	0.22*** (0.03) 0.22*** (0.03)
Incomplete University	0.50*** (0.07)	...	...	0.53*** (0.06) 0.53*** (0.06)
Complete University	0.64*** (0.07)	...	...	0.65*** (0.07) 0.65*** (0.07)
Age (18-24)				
25-34	0.04 (0.06)	...	...	0.05 (0.06) 0.05 (0.06)
35-44	0.09 (0.07)	...	...	0.10 (0.06) 0.10 (0.07)
45-54	0.05 (0.08)	...	...	0.06 (0.08) 0.06 (0.08)
55-64	-0.00 (0.10)	...	...	0.01 (0.10) 0.01 (0.10)
65+	-0.15 (0.13)	...	...	-0.04 (0.13) -0.05 (0.13)
Employment Status (Full Time Employed)				
Part-Time Employed	0.05 (0.06)	...	...	0.05 (0.06) 0.05 (0.06)
Self-Employed	0.05 (0.07)	...	...	0.05 (0.07) 0.05 (0.07)
Retired	-0.05 (0.07)	...	...	-0.04 (0.07) -0.04 (0.07)
Housework	-0.05 (0.05)	...	...	-0.04 (0.05) -0.04 (0.05)
Student	0.09 (0.05)	...	...	0.11** (0.05) 0.10* (0.05)
Unemployed	-0.20*** (0.04)	...	...	-0.13*** (0.04) -0.14*** (0.04)
Other	0.02 (0.08)	...	...	0.02 (0.08) -0.01 (0.08)
Income	0.00 (0.01)	...	...	-0.00 (0.01) 0.05 (0.05)
<u>Macro-Economic Variables:</u>				
Unemployment	...	...	-0.07*** (0.03)	-0.07** (0.03) -0.06* (0.03)
Unemployment*Income	...	...	...	...
GDP Growth	...	...	0.03 (0.04)	0.03 (0.04) 0.04 (0.05)
GDP Growth*Income	...	...	...	...
GDP PPP PC (Per 1000)	...	...	0.04 (0.03)	0.03 (0.03) 0.04 (0.03)
GDP PPP PC *Income	...	...	...	...
Wave 6	-0.14 (0.13)	-0.25 (0.20)	-0.25 (0.20)	-0.26 (0.20)
Constant	0.31*** (0.15)	-0.49 (1.21)	-0.70 (1.07)	-0.99 (1.04)
Country FE	YES	YES	YES	YES
Observations	44,315	44,315	44,315	44,315
Number of groups	20	20	20	20
Log Likelihood	-20,070	-20,156	-19,937	-19,934

Robust cluster standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.2: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection – Without Unemployment

Environmental Protection – without Unemployment								
VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables</u>								
Male	-0.08**	(0.04)			-0.09**	(0.04)	-0.08**	(0.04)
Education (Elementary or Less)								
No Formal	-0.03	(0.09)			-0.02	(0.09)	-0.03	(0.10)
Incomplete Secondary	0.07	(0.05)			0.09*	(0.05)	0.09	(0.06)
Complete Secondary	0.22***	(0.04)			0.22***	(0.03)	0.22***	(0.03)
Incomplete University	0.50***	(0.07)			0.52***	(0.06)	0.52***	(0.06)
Complete University	0.64***	(0.07)			0.64***	(0.07)	0.64***	(0.07)
Age (18-24)								
25-34	0.04	(0.06)			0.05	(0.06)	0.05	(0.06)
35-44	0.09	(0.07)			0.10	(0.06)	0.10	(0.07)
45-54	0.04	(0.08)			0.06	(0.08)	0.06	(0.08)
55-64	-0.00	(0.10)			0.01	(0.10)	0.01	(0.10)
65+	-0.06	(0.13)			-0.04	(0.13)	-0.04	(0.13)
Employment Status (Full Time Employed)								
Part-Time Employed	0.05	(0.06)			0.04	(0.06)	0.04	(0.06)
Self-Employed	0.05	(0.07)			0.03	(0.07)	0.04	(0.07)
Retired	-0.05	(0.07)			-0.04	(0.07)	-0.04	(0.07)
Housework	-0.05	(0.05)			-0.04	(0.05)	-0.04	(0.05)
Student	0.09*	(0.05)			0.10*	(0.05)	0.09*	(0.05)
Unemployed	-0.20***	(0.04)			-0.17***	(0.04)	-0.17***	(0.03)
Other	0.01	(0.08)			0.02	(0.08)	0.01	(0.08)
Income	0.00	(0.01)			0.00	(0.01)	0.03	(0.04)
<u>Macro-Economic Variables:</u>								
GDP Growth			0.06	(0.05)	0.06	(0.04)	0.06	(0.06)
GDP Growth*Income							0.00	(0.01)
GDP PPP PC (Per 1000)			0.07***	(0.03)	0.07***	(0.03)	0.08***	(0.03)
GDP PPP PC *Income							-0.00	(0.00)
Wave 6	-0.14	(0.13)	-0.44**	(0.21)	-0.45**	(0.20)	-0.45**	(0.20)
Constant (Individual)	0.10	(0.13)	-1.71**	(0.85)	-1.92**	(0.79)	-2.07**	(0.82)
Country-Level Variance	0.12	(0.03)	1.06	(0.76)	1.05	(0.73)	1.08	(0.73)
Observations	44,315		44,315		44,315		44,315	
Number of groups	20		20		20		20	
Log Likelihood	-20,118		-20,271		-20,053		-20,049	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.3: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection with Income Quintiles

VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables</u>								
Male	-0.09**	(0.04)	...	...	-0.09**	(0.04)	-0.09**	(0.04)
Education(Elementary or Less)								
No Formal	-0.03	(0.09)	...	...	-0.02	(0.09)	-0.02	(0.09)
Incomplete Secondary	0.07	(0.05)	...	...	0.09*	(0.05)	0.09*	(0.05)
Complete Secondary	0.23***	(0.04)	...	...	0.22***	(0.04)	0.22***	(0.04)
Incomplete University	0.50***	(0.06)	...	...	0.53***	(0.06)	0.53***	(0.06)
Complete University	0.64***	(0.07)	...	...	0.65***	(0.07)	0.65***	(0.07)
Age (18-24)								
25-34	0.04	(0.06)	...	...	0.05	(0.06)	0.04	(0.06)
35-44	0.09	(0.07)	...	...	0.10	(0.06)	0.10	(0.07)
45-54	0.04	(0.08)	...	...	0.05	(0.08)	0.05	(0.08)
55-64	-0.00	(0.10)	...	...	0.00	(0.10)	0.00	(0.10)
65+	-0.06	(0.13)	...	...	-0.05	(0.13)	-0.05	(0.13)
Employment Status (Full Time Employed)								
Part-Time Employed	0.05	(0.06)	...	...	0.05	(0.06)	0.05	(0.06)
Self-Employed	0.05	(0.07)	...	...	0.05	(0.06)	0.06	(0.06)
Retired	-0.05	(0.07)	...	...	-0.04	(0.07)	-0.04	(0.07)
Housework	-0.05	(0.05)	...	...	-0.04	(0.05)	-0.04	(0.05)
Student	0.09*	(0.05)	...	...	0.11**	(0.05)	0.10*	(0.05)
Unemployed	-0.19***	(0.04)	...	...	-0.13***	(0.04)	-0.14***	(0.04)
Other	0.01	(0.08)	...	...	0.02	(0.08)	0.01	(0.08)
Income (1 st Quintile)								
2 nd Quintile	0.05	(0.06)	...	...	0.06	(0.06)	0.11	(0.19)
3 rd Quintile	0.01	(0.05)	...	...	0.01	(0.05)	-0.15	(0.16)
4 th Quintile	0.01	(0.06)	...	...	0.00	(0.06)	0.16	(0.26)
5 th Quintile	0.05	(0.13)	...	...	0.05	(0.13)	0.91*	(0.54)
<u>Macro-Economic Variables:</u>								
Unemployment	...	...	-0.08***	(0.02)	-0.08***	(0.03)	-0.08***	(0.03)
Unemployment*Income (1 st Quintile)								
Unemployment * 2 nd Quintile	...	...	...	...	...	...	-0.00	(0.01)
Unemployment * 3 rd Quintile	...	...	...	...	...	...	0.01	(0.01)
Unemployment * 4 th Quintile	...	...	...	...	...	...	-0.01	(0.02)
Unemployment * 5 th Quintile	...	...	...	...	...	...	-0.04	(0.04)
GDP Growth	...	...	0.02	(0.04)	0.03	(0.04)	0.01	(0.05)
GDP Growth*Income (1 st Quintile)								
Growth * 2 nd Quintile	...	...	...	...	...	...	0.02	(0.02)
Growth * 3 rd Quintile	...	...	...	...	...	...	0.04	(0.02)
Growth * 4 th Quintile	...	...	...	...	...	...	0.01	(0.03)
Growth * 5 th Quintile							-0.06	(0.05)
GDP PPP PC (Per 1000)	...	...	0.02	(0.03)	0.01	(0.03)	0.02	(0.03)
GDP PPP PC*Income (1 st Quintile)								
GDP * 2 nd Quintile	...	...	...	...	...	...	-0.00	(0.00)
GDP * 3 rd Quintile	...	...	...	...	...	...	-0.00	(0.00)
GDP * 4 th Quintile	...	...	...	...	...	...	-0.00	(0.00)
GDP * 5 th Quintile	...	...	...	...	...	...	-0.02	(0.01)

Wave 6	-0.13	(0.13)	-0.13	(0.21)	-0.14**	(0.19)	-0.14	(0.18)
Constant (Individual)	0.08	(0.12)	0.37	(0.96)	0.13**	(0.84)	0.11	(0.82)
Country-Level Variance	0.12***	(0.03)	0.21	(0.27)	0.24	(0.24)	0.24	(0.23)
Observations	44,315		44,315		44,315		44,315	
Number of groups	20		20		20		20	
Log Likelihood	20,117		-20,213		-19,992		-19,981	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.4: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection – Waves 4,5,6

Environmental Protection – Waves 4,5,6

VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables:</u>								
Male	-0.09*	(0.05)	...	...	-0.09*	(0.05)	-0.09*	(0.05)
Education (Elementary or Less)								
No Formal	-0.01	(0.13)	...	...	-0.02	(0.14)	-0.02	(0.13)
Incomplete Secondary	0.16***	(0.05)	...	...	0.17***	(0.06)	0.16***	(0.06)
Complete Secondary	0.24***	(0.04)	...	...	0.26***	(0.03)	0.25***	(0.03)
Incomplete University	0.49***	(0.11)	...	...	0.51***	(0.09)	0.49***	(0.10)
Complete University	0.64***	(0.08)	...	...	0.68***	(0.07)	0.67***	(0.07)
Age (18-24)								
25-34	0.01	(0.04)	...	...	0.02	(0.04)	0.02	(0.04)
35-44	0.02	(0.06)	...	...	0.04	(0.06)	0.04	(0.06)
45-54	-0.01	(0.09)	...	...	0.00	(0.10)	-0.00	(0.10)
55-64	-0.00	(0.08)	...	...	0.01	(0.08)	0.01	(0.09)
65+	0.01	(0.13)	...	...	0.01	(0.13)	-0.00	(0.13)
Employment Status (Full Time Employed)								
Part-Time Employed	0.06	(0.08)	...	...	0.06	(0.08)	0.05	(0.07)
Self-Employed	0.04	(0.11)	...	...	0.07	(0.10)	0.07	(0.10)
Retired	-0.11	(0.13)	...	...	-0.08	(0.13)	-0.08	(0.13)
Housework	-0.06	(0.07)	...	...	-0.04	(0.07)	-0.03	(0.06)
Student	0.06	(0.06)	...	...	0.08	(0.07)	0.07	(0.08)
Unemployed	-0.15***	(0.05)	...	...	-0.06	(0.04)	-0.05	(0.05)
Other	-0.15*	(0.09)	...	...	-0.09	(0.08)	-0.10	(0.09)
Income	-0.00	(0.02)	...	...	-0.01	(0.02)	0.07	(0.05)
<u>Macro-Economic Variables:</u>								
Unemployment	...	...	-0.13***	(0.03)	-0.13***	(0.03)	-0.15***	(0.03)
Unemployment*Income	...	...	...	...	...	...	0.00	(0.00)
GDP Growth		...	-0.03	(0.04)	-0.03	(0.04)	0.02	(0.03)
GDP Growth*Income	...	...	...	...	...	...	-0.01**	(0.01)
GDP PPP PC (Per 1000)	...	...	-0.05	(0.03)	-0.05*	(0.03)	-0.04	(0.03)
GDP PPP PC *Income	...	...	...	...	...	...	-0.00	(0.00)
Survey Wave (Wave 4: 1999-2001)								
Wave 5 (2005-2007)	-0.05	(0.18)	0.15	(0.30)	0.16	(0.27)	0.13	(0.27)
Wave 6 (2010-2012)	-0.29	(0.22)	0.46	(0.43)	0.43	(0.38)	0.42	(0.38)
Constant (Individual)	0.34**	(0.17)	2.52**	(1.01)	2.27**	(0.99)	2.02**	(0.91)
Country-Level Variance	0.09	(0.02)	0.59	(0.54)	0.61	(0.47)	0.62	(0.46)
Observations	25,813		25,813		25,813		25,813	
Number of groups	8		8		8		8	
Log Likelihood	-12,221		-12,225		-12,116		-12,107	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

Countries Retained: Chile, Japan, Mexico, Peru, South Korea, Spain, Sweden, US; For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.5: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection – Waves 3,5,6

Environmental Protection – waves 3,5,6

VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables:</u>								
Male	-0.13***	(0.03)	...	...	-0.13***	(0.03)	-0.12***	(0.03)
Education (Elementary or Less)								
No Formal	-0.02	(0.11)	...	...	-0.02	(0.12)	-0.03	(0.13)
Incomplete Secondary	0.07	(0.07)	...	...	0.06	(0.07)	0.05	(0.08)
Complete Secondary	0.21***	(0.03)	...	...	0.21***	(0.04)	0.19***	(0.03)
Incomplete University	0.46***	(0.06)	...	...	0.46***	(0.06)	0.45***	(0.06)
Complete University	0.57***	(0.07)	...	...	0.59***	(0.07)	0.58***	(0.06)
Age (18-24)								
25-34	0.06	(0.06)	...	...	0.06	(0.06)	0.06	(0.06)
35-44	0.10	(0.07)	...	...	0.11	(0.07)	0.11	(0.07)
45-54	0.00	(0.07)	...	...	0.01	(0.07)	0.01	(0.07)
55-64	-0.08	(0.10)	...	...	-0.06	(0.10)	-0.06	(0.10)
65+	-0.12	(0.13)	...	...	-0.12	(0.13)	-0.12	(0.13)
Employment Status (Full Time Employed)								
Part-Time Employed	0.05	(0.05)	...	...	0.06	(0.05)	0.06	(0.05)
Self-Employed	0.17*	(0.09)	...	...	0.15*	(0.08)	0.15**	(0.08)
Retired	-0.02	(0.08)	...	...	-0.01	(0.09)	-0.01	(0.09)
Housework	-0.04	(0.06)	...	...	-0.03	(0.06)	-0.02	(0.06)
Student	0.08	(0.06)	...	...	0.10	(0.07)	0.10	(0.07)
Unemployed	-0.20***	(0.06)	...	...	-0.15***	(0.05)	-0.15***	(0.05)
Other	-0.07	(0.13)	...	...	-0.00	(0.13)	-0.01	(0.13)
Income	0.02	(0.01)	...	...	0.01	(0.01)	0.01	(0.03)
<u>Macro-Economic Variables:</u>								
Unemployment	...	...	-0.10***	(0.02)	-0.10***	(0.02)	-0.11***	(0.02)
Unemployment*Income	...	...	...	...	...	...	0.00	(0.00)
GDP Growth	...	...	0.01	(0.02)	0.01	(0.02)	-0.02	(0.02)
GDP Growth*Income	...	...	...	...	...	...	0.01***	(0.00)
GDP PPP PC (Per 1000)	...	...	-0.03	(0.02)	-0.03	(0.02)	-0.02	(0.02)
GDP PPP PC *Income	...	...	...	...	...	...	-0.00	(0.00)
Survey Wave (Wave 3: 1995-1998)								
Wave 5 (2004-2007)	-0.04	(0.16)	-0.03	(0.29)	-0.03	(0.29)	-0.02	(0.29)
Wave 6 (2010-2013)	-0.14	(0.16)	0.14	(0.33)	0.12	(0.33)	0.12	(0.32)
Constant (Individual)	0.15	(0.11)	1.63***	(0.25)	1.38***	(0.29)	1.38***	(0.30)
Country-Level Variance	0.08	(0.02)	0.25	(0.17)	0.28	(0.16)	0.27	(0.15)
Observations	44,869		44,869		44,869		44,869	
Number of groups	13		13		13		13	
Log Likelihood	-19.555		-19.633		-19.409		-19.399	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Countries Retained: Australia, Chile, Germany, Mexico, New Zealand, Peru, Poland, Romania, South Korea, Spain, Sweden, Ukraine, US, Uruguay; For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.6: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection – Education/Green Party

VARIABLES	(1)	(2)	(3)
<u>Individual Variables</u>			
Male	-0.08 (0.05)	-0.09** (0.04)	-0.09** (0.04)
Education (Elementary or Less)			
No Formal	0.09 (0.12)	-0.03 (0.09)	-0.02 (0.09)
Incomplete Secondary	0.14** (0.07)	0.09* (0.05)	0.09* (0.05)
Complete Secondary	0.19*** (0.04)	0.22*** (0.03)	0.22*** (0.04)
Incomplete University	0.48*** (0.08)	0.52*** (0.06)	0.52*** (0.06)
Complete University	0.64*** (0.09)	0.66*** (0.07)	0.65*** (0.07)
Age (18-24)			
25-34	0.01 (0.07)	0.05 (0.06)	0.05 (0.06)
35-44	0.05 (0.08)	0.10 (0.06)	0.10 (0.06)
45-54	0.02 (0.10)	0.05 (0.08)	0.05 (0.08)
55-64	-0.03 (0.12)	0.00 (0.10)	-0.00 (0.10)
65+	-0.12 (0.13)	-0.05 (0.13)	-0.05 (0.13)
Employment Status (Full Time Employed)			
Part-Time Employed	0.01 (0.08)	0.05 (0.06)	0.05 (0.06)
Self-Employed	0.15** (0.07)	0.06 (0.07)	0.05 (0.06)
Retired	-0.04 (0.09)	-0.04 (0.07)	-0.04 (0.07)
Housework	0.02 (0.06)	-0.04 (0.05)	-0.04 (0.05)
Student	0.05 (0.07)	0.11** (0.05)	0.11** (0.05)
Unemployed	-0.17*** (0.05)	-0.14*** (0.04)	-0.14*** (0.04)
Other	0.05 (0.08)	0.01 (0.08)	0.02 (0.08)
Income	-0.01 (0.02)	-0.00 (0.01)	-0.00 (0.01)
<u>Macro-Economic Variables:</u>			
Unemployment	-0.07*** (0.02)	-0.07** (0.03)	-0.07** (0.03)
GDP Growth	0.01 (0.05)	0.03 (0.04)	0.04 (0.05)
GDP PPP PC (Per 1000)	0.02 (0.02)	0.05 (0.05)	0.02 (0.04)
<u>Other Macro Variables:</u>			
% 25-64 Year Olds with Tertiary Education	-0.03 (0.02)	-0.05 (0.03)	
% Green Party Vote			-0.03 (0.06)
Wave 6	-0.09 (0.19)	-0.05 (0.20)	-0.16 (0.20)
Constant (Individual)	0.74 (0.65)	0.32 (0.97)	-0.03 (1.17)
Country-Level Variance	0.12 (0.07)	0.35 (0.58)	0.30 (0.39)
Observations	28,384	44,315	44,315
Number of groups	12	20	20
Log Likelihood	-12,072	-19,983	-19,993

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Countries Retained in model 1: Australia, Brazil (using 2007 figure as approximation instead of the 2006 figure when the Brazilians WVS wave 5 data was collected as the Brazilian education time-series data begins in 2007), Germany, Japan, Mexico, Netherlands, Poland, Slovenia, Spain, South Korea, Sweden and the United State. For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Table A2.7: Multilevel Mixed-Effects Logistic Regression Models for Prioritisation of Environmental Protection with Dependent Variable Coded 1 for Prioritising Environment Protection and 0 for Prioritising Economic Growth or answering don't know, giving no response or other.

VARIABLES	(1)		(2)		(3)		(4)	
<u>Individual Variables</u>								
Male	-0.05	(0.04)	...	...	-0.05	(0.04)	-0.05	(0.04)
No Formal	-0.16*	(0.10)	...	...	-0.15	(0.10)	-0.15	(0.10)
Incomplete Secondary	0.07	(0.05)	...	...	0.09*	(0.05)	0.09*	(0.05)
Complete Secondary	0.24***	(0.04)	...	...	0.24***	(0.04)	0.24***	(0.04)
Incomplete University	0.47***	(0.06)	...	...	0.48***	(0.05)	0.48***	(0.05)
Complete University	0.61***	(0.07)	...	...	0.61***	(0.06)	0.61***	(0.06)
Age (18-24)								
25-34	0.02	(0.05)	...	...	0.03	(0.05)	0.02	(0.05)
35-44	0.05	(0.06)	...	...	0.07	(0.06)	0.07	(0.06)
45-54	0.05	(0.08)	...	...	0.05	(0.07)	0.06	(0.07)
55-64	0.03	(0.09)	...	...	0.04	(0.09)	0.04	(0.09)
65+	-0.05	(0.12)	...	...	-0.05	(0.12)	-0.05	(0.12)
Employment Status (Full Time Employed)								
Part-Time Employed	0.03	(0.06)	...	...	0.04	(0.06)	0.03	(0.06)
Self-Employed	0.01	(0.06)	...	...	0.01	(0.06)	0.01	(0.06)
Retired	-0.05	(0.07)	...	...	-0.04	(0.06)	-0.04	(0.06)
Housework	-0.05	(0.05)	...	...	-0.05	(0.05)	-0.05	(0.05)
Student	0.09**	(0.04)	...	...	0.11**	(0.04)	0.11**	(0.05)
Unemployed	-0.17***	(0.04)	...	...	-0.12***	(0.03)	-0.13***	(0.04)
Other	-0.05	(0.10)	...	...	-0.06	(0.09)	-0.07	(0.09)
Income	0.01	(0.01)	...	...	0.01	(0.01)	0.06	(0.05)
<u>Macro-Economic Variables:</u>								
Unemployment	...	...	-0.07***	(0.02)	-0.07***	(0.02)	-0.06**	(0.03)
Unemployment*Income	...	...	...	...	...	...	-0.00	(0.00)
GDP Growth	...	...	-0.01	(0.05)	-0.00	(0.05)	0.01	(0.06)
GDP Growth*Income	...	...	...	...	...	...	-0.00	(0.01)
GDP PPP PC (Per 1000)	...	...	0.02	(0.03)	0.02	(0.03)	0.03	(0.03)
GDP PPP PC *Income	...	...	...	...	...	...	-0.00	(0.00)
Wave 6	-0.14	(0.12)	-0.22	(0.24)	-0.23	(0.22)	-0.23	(0.23)
Constant (Individual)	-0.13	(0.13)	0.08	(0.94)	-0.14	(0.82)	-0.44	(0.84)
Country-Level Variance	-0.16	(0.03)	0.29	(0.33)	0.31	(0.27)	0.32	(0.29)
Observations	48,622		48,622		48,622		48,622	
Number of groups	20		20		20		20	
Log Likelihood	-20,150		-20,252		-20,054		-20,051	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

For Gender, education, age and unemployment status, those who responded 'don't know', 'missing' 'no answer' or 'not applicable' have been grouped together and included as a standalone category, though their coefficients are not displayed.

Appendix 3

Note on Labelling Error

In this note, I discuss a labelling error in the survey questionnaires in both 2002 and 2005 and the potential implications this may have for the study. In each wave from 2002 – 2008, respondents were presented with the following statement and asked to tick a box that corresponds with their view:

ONE means that we should concentrate more on protecting the environment, even if it leads to considerably lower incomes, and SEVEN means that we should safeguard our income levels before we seek to protect the environment. Where would you place your view?

On a horizontal line from 1 to 7, the correct label ‘Protect environment even if it leads to lower incomes’ was placed next to 1 on the left-hand side in all three waves but next to 7 on the right-hand side the label read ‘Not protect environment *even* if it leads to lower incomes¹’ in both 2002 and 2005. By 2008, this had been corrected so that the right-hand side label read ‘Safeguard incomes before protecting environment’, thus matching the descriptions given in the question wording. This is problematic as one cannot know how much of any observed changes in responses to this question are because of the change of labels and how much are because of changes in environmental protection priorities. However, given that the question wording itself and the label for 1 remained the same, that the description in the question in each case specified that 7 meant to safeguard income levels before protecting the environment and that the intention of a conflict between environmental protection and income levels was clear, one would expect that respondents knew what was meant and that these surveys responses are comparable and thus can capture meaningful change in environmental priorities.

¹ Italics added for emphasis.

One way to test this is to analyse whether key factors that are known to correlate highly with strong environmental protection preferences are correlated in the expected direction with this question in both waves. The variables I have chosen to test this, which have been proven to relate strongly to environmental protection preferences (Van Liere and Dunlap 1980; Diamantopoulos et al. 2003), are educational attainment, membership of an environmental organisation and, as a measure of one's liberal orientation, one's left-right placement on the political spectrum². In Table A1, one can see the results of two separate ordered logit regression models for the 2002 and 2005 waves respectively where the environmental protection question has been regressed on the above three variables. As in the analysis in the main body, for ease of interpretation the scale has been reversed so that 7 represents the highest support for prioritising environmental protection. The results are consistent with what one would expect if individuals interpreted the question as intended. Those with a university degree are more likely to have a higher environmental protection preference as identified by the question wording than those with lower educational attainment in both waves, with this difference being statistically significant compared to those with a secondary education in 2002 and those with a secondary or a nonprofessional trade/technical tertiary education in 2005. Likewise, members of environmental organisations are more likely to choose a higher environmental score as identified by the question wording. Finally, in 2002 and 2005 right-identifying individuals are statistically less likely than centre-identifying individuals to choose a higher category of environmental protection and in 2005 left-identifying individual are statistically more likely to choose a higher category of environmental protection as identified by the question wording. Thus, while it is not ideal that this error was present, there are very good reasons to believe that

² Respondents are coded as left if they responded as 0-4, centre if they responded 5 and right if they responded 6-10, as well as having categories for 'don't know' and those who did not respond.

the question was nonetheless able to accurately capture the change in individuals' environmental protection views over time.

Table A3.1. Ordered logistic regressions for environmental protection v. income question

	2002	2005
Education (University Degree)		
Complete Primary or Less	-0.57(0.34)	0.22(0.33)
Secondary	-0.46(0.20)*	-0.57(0.19)**
Nondegree Professional Trade/Technical Tertiary	-0.17(0.24)	-0.46(0.22)*
Incomplete University	0.25(0.32)	-0.55(0.34)
Member of Environmental Organisation	1.55(0.34)**	0.70(0.27)**
Left-Right Scale (Centre)		
Left	0.13(0.21)	0.90(0.22)**
Right	-0.57(0.20)**	-0.53(0.21)*
Cut 1	-3.64(0.29)	-4.18(0.35)
Cut 2	-2.83(0.26)	-2.95(0.27)
Cut 3	-1.76(0.23)	-1.83(0.24)
Cut 4	0.10(0.22)	-0.16(0.23)
Cut 5	1.30(0.23)	1.16(0.24)
Cut 6	2.34(0.26)	2.35(0.26)
Log Likelihood	-1,001.26	-1,004.28
Number of Respondents	623	623

**p≤ 0.01; * p≤ 0.05; standard errors in parentheses

Note: Don't know/no response responses are included in the model where available, though not displayed in the table.

Table A3.2: Regression of the change in environmental protection v. income question - Robustness

	2005		2008	
	(1)	(2)	(3)	(4)
Change in Retrospective Economic Evaluation	-0.02(0.07)	...	-0.05(0.07)	...
Change in Household Financial Situation	...	-0.03(0.06)	...	0.01(0.05)
Gender (Male)	0.32(0.14)*	0.32(0.14)*	-0.06(0.14)	-0.06(0.14)
Newspaper (None/No Response)				
Bay of Plenty Times	0.16(0.44)	0.14(0.43)	0.37(0.44)	0.37(0.45)
Daily News	0.82(0.58)	0.81(0.58)	-0.62(0.58)	-0.61(0.58)
Dominion	0.36(0.42)	0.36(0.42)	-0.23(0.40)	-0.21(0.41)
Hawkes Bay Today	0.17(0.48)	0.17(0.48)	-0.52(0.46)	-0.49(0.46)
Manawatu Evening Standard	0.15(0.40)	0.13(0.40)	-0.43(0.48)	-0.42(0.48)
New Zealand Herald	0.38(0.40)	0.38(0.40)	-0.15(0.39)	-0.12(0.39)
Otago Daily Times	0.74(0.47)	0.75(0.47)	-0.64(0.44)	-0.64(0.44)
The Press	0.68(0.41)	0.67(0.41)	-0.24(0.42)	-0.20(0.43)
Waikato Times	0.26(0.44)	0.25(0.44)	-0.18(0.48)	-0.16(0.49)
Other	0.44(0.44)	0.43(0.44)	-0.30(0.41)	-0.28(0.42)
Education (Completed University)				
Incomplete Primary/None	0.69(0.40)	0.69(0.40)	-1.17(0.33)**	-1.19(0.33)**
Secondary	-0.08(0.20)	-0.08(0.20)	-0.10(0.19)	-0.10(0.19)
Non-Degree Professional Trade/Technical Tertiary	-0.07(0.19)	-0.07(0.19)	-0.22(0.21)	-0.22(0.21)
Incomplete University	0.42(0.30)	0.41(0.30)	0.12(0.33)	0.12(0.33)
Partisanship (Labour)				
National	-0.54(0.16)**	-0.54(0.16)**	-0.19(0.16)	-0.21(0.16)
Greens	-0.37(0.28)	-0.35(0.28)	0.01(0.31)	0.01(0.30)
New Zealand First	0.07(0.30)	0.07(0.30)	-0.30(0.32)	-0.30(0.32)
Other	-0.53(0.24)*	-0.53(0.24)*	0.38(0.24)	0.39(0.24)
None	-0.66(0.52)	-0.67(0.52)	-0.88(0.49)	-0.87(0.49)
Household Income Group (Bracket 1 - Lowest)				
Bracket 2	0.23(0.33)	0.22(0.33)	-0.07(0.30)	-0.07(0.30)
Bracket 3	-0.02(0.36)	-0.02(0.36)	-0.37(0.40)	-0.37(0.40)
Bracket 4	0.04(0.40)	0.03(0.40)	-0.06(0.32)	-0.06(0.33)
Bracket 5 (Highest)	0.21(0.33)	0.21(0.33)	-0.25(0.31)	-0.25(0.31)
Receives Unemployment Benefit	0.58(1.11)	0.59(1.11)	-0.93(0.98)	-0.99(1.01)
Constant	-0.22(0.54)	-0.21(0.54)	-0.13(0.51)	-0.08(0.49)
R ²	0.10	0.10	0.09	0.09
Number of Respondents	563	563	577	577

**p ≤ 0.01; * p ≤ 0.05; standard errors in parentheses

Note: Individuals who responded 'don't know' or did not respond to the economic evaluation or household finance questions in either wave are not included in this table as one cannot ascertain how their views changed. Don't know/no response responses for other questions are included in the model where available, though not displayed in the table.

Table A3.3. Fixed effect ordered logistic regression of environmental protection v. safeguarding income question (2002-2008) - Robustness

	(1)	(2)
Retrospective Economic Evaluation	-0.03(0.10)	...
Household Financial Situation	...	0.09(0.10)
Income Group (Bracket 1)		
Bracket 2	0.19(0.41)	0.19(0.41)
Bracket 3	-0.53(0.54)	-0.54(0.53)
Bracket 4	-0.13(0.47)	-0.14(0.46)
Bracket 5	-0.09(0.52)	-0.10(0.52)
Partisanship (Labour)		
National	-0.55(0.28)*	-0.51(0.28)
Greens	1.39(0.58)*	1.42(0.59)*
New Zealand First	-0.01(0.37)	0.04(0.37)
Other	-0.15(0.33)	-0.13(0.34)
None	-0.77(0.80)	-0.79(0.83)
Receives Unemployment Benefit	-0.83(0.53)	-0.80(0.51)
Year (2005)		
2002	-0.60(0.15)**	-0.59(0.15)**
2008	-1.57(0.22)**	-1.51(0.17)**
Log Pseudolikelihood	-2,225.21	-2,222.40
Pseudo R ²	0.18	0.19
Number of Respondents	484	484

**p≤ 0.01; * p≤ 0.05; standard errors in parentheses

Note: Don't know/no response responses are included in the model where available, though not displayed in the table.

Appendix 4

Question Wording

In your opinion, how good or bad is the state of Britain's economy at the moment?

- Very good
- Quite good
- Neither good nor bad
- Quite bad
- Very bad
- Don't Know

On the subject of climate change do you think:

- The world's climate is changing as a result of human activity
- The world's climate is changing but NOT because of human activity
- The world's climate is NOT changing
- Not sure

Thinking about global warming and climate change, which of these statements comes closest to your view:

- It is a serious and urgent problem and radical steps must be taken NOW to prevent terrible damage being done to the planet.
- Climate change is definitely happening but there is time to work out the best actions to take, and we should not rush into anything that could harm our standard of living.
- It is not yet clear whether climate change is happening or not – scientists are divided on this issue.
- I don't believe climate change is happening at all – it's simply scare-mongering and we should ignore it¹.
- Don't Know

For reasons discussed in the main text, those with 'very bad' economic evaluations were not included in the analysis, referring to tests in which this category behaves oddly and as an outlier. Tables A4.1 and A4.2 below display tests in which those with 'very bad' economic evaluations are included in logistic regressions for examining the effects of the economic prompting on belief in anthropogenic climate change and support for urgently addressing climate change. Table A4.3 meanwhile displays the results from the analysis referred to in footnote 13 in which a multinomial regression was carried out instead of a logistic regression for examining the effects of the prompting on one's sense of urgency to tackle climate change.

¹¹ As discussed in footnote 8, the climate sceptic and denier responses were mistakenly fielded in the same response category. Using responses to the climate belief question, it was possible to separate out climate deniers from climate sceptics post-survey

Table A4.1 Logistic Regression of Treatment and Economic Evaluations on Belief in Anthropogenic Climate Change including those with very bad economic evaluations.

	Model 1 – Without covariates	Model 2 – With covariates
<i>Treated</i>	0.265 (0.187)	0.190 (0.196)
<i>Neither Good nor Bad Economic Evaluations</i>		
Very Bad	0.001 (0.362)	-0.240 (0.353)
Quite Bad	0.554** (0.204)	0.386 (0.214)
Good	-0.058 (0.191)	0.105 (0.205)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>		
Treated*Very Bad	0.038 (0.476)	0.016 (0.512)
Treated*Quite Bad	-0.308 (0.293)	-0.287 (0.304)
Treated*Good	-0.138 (0.276)	-0.007 (0.287)
Constant	0.324* (0.130)	-0.887** (0.327)
ll(null)	-1111.026	-1111.026
ll(model)	-1100.942	-1024.332
Observations	1689	1689

Note: Those who responded ‘don’t know’ to the economic evaluation question have been excluded. Education, partisanship, gender and region are also included as controls in model 2, but their coefficients are not displayed.

* $p \leq 0.05$; ** $p \leq 0.01$; Coefficients are log-odds ratios; Standard Errors in parentheses

Table A4.2 Logistic Regression of Treatment and Economic Evaluations on Urgency of Addressing Climate Change including those with very bad economic evaluations.

	Full Sample		Among Anthropogenic Climate Change Believers	
	Model 1 – Without covariates	Model 2 – With covariates	Model 3 – Without covariates	Model 4 – With covariates
<i>Treated</i>	-0.264 (0.183)	-0.344 (0.191)	-0.585* (0.247)	-0.607* (0.256)
<i>Neither Good nor Bad Economic Evaluations</i>				
Very Bad	-0.476 (0.326)	-0.656* (0.332)	-0.949* (0.413)	-0.970* (0.429)
Quite Bad	0.378* (0.192)	0.271 (0.200)	0.067 (0.266)	0.115 (0.269)
Good	-0.436* (0.194)	-0.326 (0.202)	-0.548* (0.261)	-0.504 (0.268)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>				
Treated*Very Bad	1.213** (0.464)	1.267** (0.481)	2.345** (0.649)	2.383** (0.663)
Treated*Quite Bad	0.139 (0.277)	0.176 (0.291)	0.462 (0.381)	0.442 (0.393)
Treated*Good	0.543* (0.275)	0.664* (0.280)	0.915* (0.365)	0.999** (0.370)
Constant	-0.121 (0.129)	-0.738 (0.320)	1.003** (0.183)	1.100* (0.466)
ll(null)	-1159.950	-1159.950	-659.368	-659.368
ll(model)	-1142.407	-1087.394	-647.043	-630.216
Observations	1689	1689	1,071	1,071

Note: Those who responded ‘don’t know’ to the economic evaluation question have been excluded. Education, partisanship, gender and region are also included as controls in these regressions in models 2 and 4, but their coefficients are not displayed.

* $p \leq 0.05$; ** $p \leq 0.01$; Coefficients are log-odds ratios; Standard Errors in parentheses

Table A4.3 Multinomial Regression of Treatment and Economic Evaluations on Urgency of Addressing Climate Change

	Model 1 – Without Covariates	Model 2 - With Covariates
Climate Change is Happening & Requires Urgent Action (Baseline)		
Climate Change is Happening & Does Not Require Urgent Action		
<i>Treated</i>	0.411 (0.211)	0.466* (0.217)
<i>Neither Good nor Bad Economic Evaluations</i>		
Quite Bad	-0.472* (0.235)	-0.354 (0.240)
Good	0.536* (0.224)	0.396 (0.233)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>		
Treated*Quite Bad	-0.201 (0.331)	-0.226 (0.340)
Treated*Good	-0.654* (0.313)	-0.697* (0.316)
Constant	-0.478** (0.154)	-0.199 (0.375)
Unclear if/Don't Believe that Climate Change is Occurring		
<i>Treated</i>	-0.279 (0.293)	-0.130 (0.305)
<i>Neither Good nor Bad Economic Evaluations</i>		
Quite Bad	-0.271 (0.283)	-0.068 (0.301)
Good	0.489 (0.262)	0.397 (0.269)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>		
Treated*Quite Bad	0.127 (0.457)	0.0401 (0.491)
Treated*Good	-0.152 (0.410)	-0.355 (0.420)
Constant	-1.184** (0.178)	-0.182 (0.500)
Don't Know		
<i>Treated</i>	0.402 (0.316)	0.471 (0.327)
<i>Neither Good nor Bad Economic Evaluations</i>		
Quite Bad	-0.275 (0.330)	-0.280 (0.347)
Good	-0.0879 (0.354)	-0.077 (0.360)
<i>Treatment*Neither Good nor Bad Economic Evaluations</i>		
Treated*Quite Bad	-0.141 (0.469)	-0.098 (0.481)
Treated*Good	-0.530 (0.502)	-0.710 (0.502)
Constant	-1.599** (0.230)	-1.110* (0.562)
ll(null)	-1,903.451	-1,903.451
ll(model)	-1877.467	-1,778.932
Observations	1,573	1,573

Note: Those who responded 'don't know' to the economic evaluation question have been excluded, as have those that responded 'very bad' for reasons discussed in the main text. Education, partisanship, gender and region are also included as controls in model 2, but their coefficients are not displayed.

*p ≤ 0.05; **p ≤ 0.01; Coefficients are log-odds ratios; Standard Errors in parentheses

Appendix 5

Table A5.1: Logistic Regression of Support for Water Charges with 2011 Vote/Vote Intention

VARIABLES	Coef	(1) se	Coef	(2) se	Coef	(3) se
Env Standard of Living	0.26***	(0.04)				
Env Higher Taxes			0.12***	(0.03)		
Economy v. Environment					0.03	(0.02)
2011 Vote (FG)						
FF	0.07	(0.18)	0.10	(0.17)	0.08	(0.16)
LAB	-0.44***	(0.17)	-0.35**	(0.16)	-0.37**	(0.16)
SF	-1.10***	(0.28)	-1.26***	(0.26)	-1.25***	(0.26)
IND	-0.16	(0.21)	-0.20	(0.20)	-0.20	(0.20)
Other	-0.09	(0.31)	-0.03	(0.29)	-0.02	(0.29)
Refused/Don't Know	-0.23	(0.31)	-0.16	(0.28)	-0.26	(0.27)
Income (<€20,000)						
€20,000-24,999	0.19	(0.28)	0.30	(0.27)	0.30	(0.27)
€25,000-29,999	0.01	(0.31)	0.18	(0.29)	0.18	(0.29)
€30,000-34,999	0.05	(0.29)	0.03	(0.27)	0.04	(0.27)
€35,000-39,999	0.28	(0.32)	0.32	(0.30)	0.40	(0.29)
€40,000-49,999	0.57**	(0.29)	0.74***	(0.27)	0.71***	(0.27)
€50,000-69,999	0.53*	(0.27)	0.75***	(0.25)	0.73***	(0.25)
>€70,000	0.73**	(0.37)	0.79**	(0.33)	0.76**	(0.33)
Refused to answer	0.40*	(0.21)	0.55***	(0.20)	0.55***	(0.20)
Unemployed						
Full Time Employed	0.31	(0.25)	0.33	(0.24)	0.35	(0.23)
Part Time Employed	0.52*	(0.28)	0.56**	(0.26)	0.55**	(0.26)
Student	0.26	(0.36)	0.32	(0.34)	0.36	(0.34)
Retired	0.48	(0.33)	0.47	(0.30)	0.47	(0.30)
House Duties	0.39	(0.29)	0.39	(0.28)	0.38	(0.28)
House Owner/No Mortgage						
Owner with loan/mortgage	-0.29*	(0.15)	-0.29**	(0.14)	-0.27*	(0.14)
Local Authority Tenant	-0.59*	(0.30)	-0.59**	(0.28)	-0.60**	(0.28)
Private Tenant	0.26	(0.24)	0.28	(0.23)	0.29	(0.23)
Other	-0.13	(0.53)	-0.17	(0.48)	-0.19	(0.49)
Tax v. Spending	0.07**	(0.03)	0.06**	(0.03)	0.07**	(0.03)
Age	0.01**	(0.01)	0.01**	(0.01)	0.01**	(0.01)
Females	-0.36***	(0.14)	-0.28**	(0.13)	-0.27**	(0.13)
Education (primary)						
Junior Certificate	0.29	(0.30)	0.19	(0.27)	0.18	(0.27)
Leaving Certificate	0.70**	(0.29)	0.50*	(0.26)	0.50*	(0.26)
Diploma/Certificate	0.96***	(0.30)	0.74***	(0.28)	0.75***	(0.28)
University	1.14***	(0.31)	1.09***	(0.29)	1.12***	(0.28)
Political Interest (Not at all)						

Not Very	0.31	(0.28)	0.40	(0.26)	0.38	(0.26)
Quite Interested	0.74***	(0.26)	0.84***	(0.25)	0.85***	(0.24)
Very Interested	0.92***	(0.29)	1.06***	(0.28)	1.07***	(0.28)
Days listen to national radio per week	0.10***	(0.03)	0.08***	(0.03)	0.09***	(0.03)
Constant	-4.39***	(0.59)	-3.86***	(0.54)	-3.76***	(0.54)
Pseudo R ²	0.15		0.13		0.13	
Observations	1,563		1,738		1,743	

Robust standard errors in parentheses

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

Table A5.2: Logistic Regression of Support for Water Charges with Probability to Ever Vote for a Party

VARIABLES	(1)		(2)		(3)	
	Coef	se	Coef	se	Coef	se
Env Standard of Living	0.27***	(0.04)				
Env Higher Taxes			0.12***	(0.03)		
Economy v. Environment					0.03	(0.02)
Prob FF	0.06***	(0.02)	0.05**	(0.02)	0.05***	(0.02)
Prob FG	0.05**	(0.02)	0.04*	(0.02)	0.04*	(0.02)
Prob Green	0.07**	(0.03)	0.09***	(0.03)	0.10***	(0.03)
Prob Labour	-0.05*	(0.03)	-0.04*	(0.02)	-0.04*	(0.02)
Prob SF	-0.08***	(0.02)	-0.10***	(0.02)	-0.10***	(0.02)
Prob IND	-0.01	(0.02)	-0.02	(0.02)	-0.03	(0.02)
Prob ULA	-0.12***	(0.03)	-0.11***	(0.03)	-0.11***	(0.03)
Income (<€20,000)						
€20,000-24,999	0.20	(0.28)	0.30	(0.28)	0.30	(0.28)
€25,000-29,999	-0.02	(0.31)	0.13	(0.29)	0.12	(0.29)
€30,000-34,999	0.01	(0.29)	0.02	(0.27)	0.02	(0.27)
€35,000-39,999	0.25	(0.33)	0.31	(0.31)	0.38	(0.31)
€40,000-49,999	0.60**	(0.28)	0.73***	(0.27)	0.69**	(0.27)
€50,000-69,999	0.49*	(0.27)	0.69***	(0.26)	0.67***	(0.26)
>€70,000	0.57	(0.37)	0.61*	(0.34)	0.57*	(0.34)
Refused to answer	0.38*	(0.21)	0.52***	(0.20)	0.51***	(0.20)
Unemployed						
Full Time Employed	0.13	(0.26)	0.17	(0.24)	0.20	(0.24)
Part Time Employed	0.37	(0.28)	0.41	(0.27)	0.43	(0.27)
Student	0.14	(0.37)	0.20	(0.35)	0.27	(0.35)
Retired	0.29	(0.34)	0.31	(0.31)	0.32	(0.31)
House Duties	0.25	(0.30)	0.25	(0.29)	0.25	(0.29)
House Owner/No Mortgage						
Owner with loan/mortgage	-0.25	(0.15)	-0.25*	(0.15)	-0.23	(0.15)
Local Authority Tenant	-0.56*	(0.31)	-0.58**	(0.29)	-0.59**	(0.29)
Private Tenant	0.33	(0.25)	0.32	(0.23)	0.32	(0.23)
Other	-0.16	(0.57)	-0.23	(0.53)	-0.27	(0.55)
Tax v. Spending	0.09***	(0.03)	0.07***	(0.03)	0.08***	(0.03)
Age	0.01**	(0.01)	0.01**	(0.01)	0.01**	(0.01)
Females	-0.42***	(0.14)	-0.35***	(0.13)	-0.34***	(0.13)
Education (primary)						
Junior Certificate	0.25	(0.30)	0.17	(0.28)	0.15	(0.28)
Leaving Certificate	0.72**	(0.29)	0.52**	(0.27)	0.52**	(0.26)
Diploma/Certificate	1.05***	(0.31)	0.82***	(0.28)	0.82***	(0.28)
University	1.23***	(0.32)	1.15***	(0.29)	1.17***	(0.29)
Political Interest (Not at all)						
Not Very	0.30	(0.28)	0.41	(0.26)	0.39	(0.26)

Quite Interested	0.71***	(0.26)	0.83***	(0.25)	0.84***	(0.25)
Very Interested	0.90***	(0.30)	1.04***	(0.29)	1.06***	(0.28)
Days listen to national radio per week	0.10***	(0.03)	0.08***	(0.03)	0.09***	(0.03)
Constant	-4.46***	(0.65)	-3.73***	(0.59)	-3.69***	(0.59)
Observations	0.17		0.15		0.15	
	1,563		1,738		1,743	

Robust standard errors in parentheses

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

Table A5.3: Logistic Regression of Support for Water Charges with Interactions

VARIABLES	(1)		(2)		(3)	
	Coef	se	Coef	se	Coef	se
Env Standard of Living	0.12	(0.09)				
Env Higher Taxes			0.08	(0.08)		
Economy v. Environment					-0.07	(0.06)
Party Close (FG)						
FF	0.50	(0.54)	0.51	(0.48)	-0.34	(0.49)
Labour	-2.31***	(0.82)	-1.60***	(0.73)	-1.42**	(0.65)
SF	-0.65	(0.75)	-0.22	(0.63)	-0.95	(0.75)
Other/None	-0.98***	(0.39)	-0.44**	(0.35)	-0.90**	(0.37)
Party Close (FG) * Env SoL						
FF	-0.06	(0.14)				
Labour	0.50**	(0.21)				
SF	-0.08	(0.20)				
Other/None	0.22**	(0.10)				
Party Close (FG) * Env Tax						
FF			-0.06	(0.13)		
Labour			0.34**	(0.18)		
SF			-0.25	(0.16)		
Other/None			0.05	(0.09)		
Party Close (FG)*Env Econ						
FF					0.13	(0.09)
Labour					0.19*	(0.10)
SF					-0.02	(0.13)
Other/None					0.11*	(0.06)
Income (<€20,000)						
€20,000-24,999	0.25	(0.28)	0.36	(0.27)	0.39	(0.27)
€25,000-29,999	0.01	(0.31)	0.21	(0.29)	0.21	(0.29)
€30,000-34,999	0.08	(0.29)	0.07	(0.27)	0.10	(0.26)
€35,000-39,999	0.25	(0.32)	0.34	(0.30)	0.44	(0.29)
€40,000-49,999	0.61**	(0.28)	0.82***	(0.27)	0.79***	(0.26)
€50,000-69,999	0.54**	(0.27)	0.80***	(0.25)	0.79***	(0.25)
>€70,000	0.82**	(0.36)	0.84**	(0.33)	0.82**	(0.33)
Refused to answer	0.41**	(0.21)	0.57***	(0.20)	0.57***	(0.19)
Unemployed						
Full Time Employed	0.35	(0.25)	0.39	(0.24)	0.36	(0.23)
Part Time Employed	0.58**	(0.28)	0.57**	(0.26)	0.55**	(0.26)
Student	0.27	(0.36)	0.28	(0.34)	0.34	(0.34)
Retired	0.47	(0.33)	0.47	(0.31)	0.44	(0.30)
House Duties	0.43	(0.30)	0.44	(0.28)	0.41	(0.28)
House Owner/No Mortgage						
Owner with loan/mortgage	-0.29*	(0.15)	-0.30**	(0.14)	-0.29**	(0.14)
Local Authority Tenant	-0.65**	(0.30)	-0.62**	(0.28)	-0.71***	(0.27)
Private Tenant	0.27	(0.24)	0.27	(0.23)	0.28	(0.23)

Other	-0.20	(0.55)	-0.20	(0.49)	-0.20	(0.50)
Tax v. Spending	0.08**	(0.03)	0.06**	(0.03)	0.07**	(0.03)
Age	0.01**	(0.01)	0.01**	(0.01)	0.01**	(0.01)
Females	-0.35**	(0.14)	-0.28**	(0.13)	-0.25*	(0.13)
Education (primary)						
Junior Certificate	0.25	(0.30)	0.12	(0.28)	0.09	(0.27)
Leaving Certificate	0.67**	(0.29)	0.48*	(0.27)	0.45*	(0.26)
Diploma/Certificate	0.96***	(0.31)	0.74***	(0.28)	0.72***	(0.28)
University	1.15***	(0.32)	1.09***	(0.29)	1.09***	(0.29)
Political Interest (Not at all)						
Not Very	0.38	(0.28)	0.41	(0.26)	0.38	(0.26)
Quite Interested	0.76***	(0.26)	0.84***	(0.25)	0.85***	(0.24)
Very Interested	0.88***	(0.29)	0.98***	(0.28)	1.00***	(0.28)
Days listen to national radio per week	0.09***	(0.03)	0.07***	(0.03)	0.08***	(0.03)
Constant	-3.92***	(0.67)	-3.78***	(0.62)	-3.17***	(0.63)
Pseudo-R ²	0.15		0.13		0.12	
Observations	1,563		1,738		1,743	

Robust standard errors in parentheses

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

Table A5.4: Multinomial Logistic Regression on First Preference Vote/Vote Intention for 2011 General Election

VARIABLES	(1) FF	(2) LAB	(3) SF	(4) Ind	(5) Other	(6) Refused/Don't Know
Reference FG						
Support Water Tax	-0.15 (0.18)	-0.33** (0.16)	-1.27*** (0.25)	-0.31 (0.20)	-0.13 (0.26)	-0.21 (0.27)
Income (<€20,000)						
€20,000-24,999	-0.38 (0.36)	-0.75** (0.33)	-0.51 (0.36)	0.15 (0.42)	-0.41 (0.45)	0.46 (0.62)
€25,000-29,999	0.43 (0.39)	-0.09 (0.35)	-0.04 (0.40)	0.57 (0.47)	0.12 (0.51)	1.09* (0.66)
€30,000-34,999	-0.02 (0.34)	-0.82** (0.33)	-1.13*** (0.42)	0.57 (0.39)	-0.88* (0.53)	0.22 (0.65)
€35,000-39,999	-0.22 (0.42)	-0.65* (0.39)	-0.74 (0.51)	-0.07 (0.51)	-0.14 (0.55)	0.76 (0.67)
€40,000-49,999	-0.84** (0.41)	-1.00*** (0.35)	-1.19** (0.46)	-0.36 (0.47)	-0.65 (0.52)	0.25 (0.69)
€50,000-69,999	-0.68* (0.39)	-0.46 (0.32)	-1.21** (0.51)	-0.01 (0.44)	-0.32 (0.46)	0.07 (0.71)
>€70,000	0.16 (0.51)	-0.59 (0.43)	-13.95*** (0.40)	0.19 (0.56)	-0.99 (0.73)	0.16 (0.86)
Refused to answer	-0.58** (0.28)	-0.54** (0.24)	-0.87*** (0.27)	-0.00 (0.32)	-1.26*** (0.38)	0.63 (0.50)
Unemployed						
Full Time Employed	0.18 (0.32)	0.52* (0.28)	-0.45 (0.32)	-0.01 (0.35)	-0.35 (0.43)	-0.38 (0.47)
Part Time Employed	-0.08 (0.38)	0.65** (0.32)	-0.16 (0.35)	0.73** (0.37)	-0.25 (0.49)	-0.35 (0.56)
Student	-0.10 (0.55)	-0.18 (0.43)	0.09 (0.43)	-0.33 (0.52)	-0.08 (0.55)	-1.04 (0.87)
Retired	0.59 (0.39)	0.80** (0.37)	-0.18 (0.45)	0.77 (0.48)	0.80 (0.54)	0.70 (0.65)
House Duties	-0.20 (0.37)	-0.22 (0.34)	-0.46 (0.37)	0.08 (0.41)	-0.14 (0.50)	-0.88 (0.60)
Age	-0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.02* (0.01)	-0.00 (0.01)
Female	-0.18 (0.19)	0.03 (0.16)	-0.25 (0.21)	-0.14 (0.21)	0.11 (0.27)	-0.13 (0.28)
Education (primary)						
Junior Certificate	-0.11 (0.31)	0.55 (0.37)	0.84** (0.39)	1.08* (0.56)	0.41 (0.56)	2.15* (1.14)
Leaving Certificate	-0.34 (0.32)	0.77** (0.36)	0.47 (0.40)	1.25** (0.55)	0.44 (0.53)	2.78** (1.15)
Diploma/Certificate	-0.66* (0.35)	0.37 (0.38)	0.32 (0.45)	1.24** (0.58)	0.48 (0.56)	2.39** (1.17)
University	-0.90** (0.38)	0.60 (0.39)	0.24 (0.49)	1.53*** (0.58)	0.34 (0.58)	2.40** (1.17)
Married						
Living as married	0.53* (0.29)	0.15 (0.27)	0.83** (0.33)	0.37 (0.33)	0.01 (0.48)	0.60 (0.42)
Single	-0.12 (0.24)	0.10 (0.21)	-0.00 (0.29)	0.23 (0.25)	-0.06 (0.35)	-0.21 (0.43)
Divorced/Widowed/Separated	0.42 (0.28)	0.24 (0.28)	0.57* (0.32)	0.64* (0.33)	0.08 (0.45)	0.42 (0.44)

Social Class (AB)												
C1	-0.06	(0.26)	0.26	(0.23)	0.15	(0.38)	0.21	(0.29)	-0.17	(0.40)	0.20	(0.39)
C2	-0.15	(0.30)	0.28	(0.26)	0.55	(0.39)	0.16	(0.32)	-0.19	(0.41)	-0.31	(0.45)
D	0.14	(0.33)	0.11	(0.30)	0.46	(0.43)	0.19	(0.37)	0.20	(0.44)	0.39	(0.48)
E	-0.07	(0.37)	0.33	(0.36)	0.74	(0.46)	0.01	(0.46)	0.22	(0.49)	0.59	(0.57)
F 50 +	-0.66	(0.41)	-1.67***	(0.60)	-0.77	(0.58)	0.01	(0.42)	-1.53	(1.11)	-0.60	(0.72)
F 50 -	-0.16	(0.64)	-0.91	(1.11)	0.57	(0.77)	0.61	(0.77)	0.11	(1.08)	1.55*	(0.80)
Area (Town/City >1,500)												
Town/Village/Rural (<1,500)	0.24	(0.17)	-0.44***	(0.16)	0.53***	(0.19)	0.51***	(0.19)	-0.57**	(0.28)	0.92***	(0.28)
Political knowledge	0.20**	(0.10)	-0.09	(0.09)	0.03	(0.11)	-0.16	(0.11)	0.05	(0.14)	-0.41**	(0.18)
Belief in God	0.11***	(0.03)	-0.07***	(0.03)	-0.05	(0.04)	-0.05	(0.03)	-0.11***	(0.04)	-0.01	(0.06)
MII (Failure of Political System)												
Public Services	0.71**	(0.30)	0.25	(0.24)	0.21	(0.32)	0.14	(0.30)	0.34	(0.37)	-0.18	(0.49)
Economy/Public Finances	0.67**	(0.26)	0.15	(0.22)	0.70**	(0.28)	-0.04	(0.28)	-0.37	(0.38)	0.28	(0.38)
Employment/Labour	0.74***	(0.28)	0.73***	(0.21)	0.58**	(0.29)	0.30	(0.27)	0.20	(0.36)	-0.13	(0.43)
Taxes/Pension Cuts	0.77**	(0.35)	0.24	(0.31)	-0.20	(0.42)	-0.04	(0.40)	0.20	(0.45)	0.05	(0.56)
Other/Don't Know	0.74**	(0.35)	0.07	(0.33)	0.15	(0.41)	-0.47	(0.46)	-0.20	(0.48)	0.46	(0.48)
Gov Policy Mainly Responsible for Econ Change (Yes)												
No	1.97***	(0.22)	0.02	(0.28)	0.35	(0.34)	0.56*	(0.31)	0.22	(0.49)	0.07	(0.49)
No answer/DK/Missing	1.42***	(0.29)	-0.06	(0.33)	0.52	(0.34)	-0.02	(0.41)	1.04***	(0.38)	0.64	(0.41)
Constant	-1.88***	(0.73)	-0.20	(0.70)	-0.32	(0.83)	-1.84**	(0.91)	0.26	(1.09)	-4.51***	(1.41)
Pseudo R ²							0.12					
Observations							1,767					

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5.5: Multinomial Logistic Regression on First Preference Vote/Vote Intention for 2011 General Election with past vote

VARIABLES	(1) FF	(2) LAB	(3) SF	(4) Ind	(5) Other	(6) Refused/Don't Know
Reference FG						
Support Water Tax	0.03 (0.19)	-0.10 (0.18)	-0.93*** (0.31)	-0.13 (0.21)	0.23 (0.27)	0.05 (0.30)
Income (<€20,000)						
€20,000-24,999	-0.31 (0.40)	-0.49 (0.38)	-0.45 (0.41)	0.21 (0.43)	-0.41 (0.51)	0.56 (0.68)
€25,000-29,999	0.35 (0.42)	-0.18 (0.41)	-0.02 (0.49)	0.54 (0.50)	0.11 (0.54)	0.88 (0.68)
€30,000-34,999	0.02 (0.38)	-0.68* (0.36)	-1.11** (0.49)	0.58 (0.39)	-0.92 (0.59)	0.49 (0.69)
€35,000-39,999	-0.03 (0.49)	-0.19 (0.44)	-0.43 (0.58)	0.21 (0.53)	0.31 (0.56)	1.39* (0.72)
€40,000-49,999	-0.79* (0.45)	-0.97** (0.40)	-1.64*** (0.61)	-0.41 (0.49)	-0.72 (0.50)	0.60 (0.75)
€50,000-69,999	-0.67* (0.40)	-0.21 (0.37)	-1.58*** (0.61)	-0.03 (0.47)	-0.39 (0.52)	0.66 (0.76)
>€70,000	0.16 (0.53)	-0.31 (0.46)	-14.63*** (0.46)	0.27 (0.57)	-1.01 (0.87)	0.91 (0.85)
Refused to answer	-0.47 (0.30)	-0.38 (0.27)	-0.68** (0.32)	0.01 (0.32)	-1.20*** (0.40)	0.84* (0.49)
Unemployed						
Full Time Employed	-0.01 (0.35)	0.35 (0.32)	-0.77** (0.39)	-0.16 (0.36)	-0.54 (0.47)	-0.72 (0.51)
Part Time Employed	-0.46 (0.42)	0.52 (0.36)	-0.52 (0.42)	0.48 (0.37)	-0.48 (0.53)	-0.78 (0.63)
Student	-0.18 (0.57)	-0.43 (0.46)	-0.31 (0.50)	-0.55 (0.50)	-0.36 (0.59)	-1.64* (0.94)
Retired	0.54 (0.43)	0.38 (0.44)	-0.56 (0.54)	0.56 (0.48)	0.42 (0.60)	-0.27 (0.66)
House Duties	-0.52 (0.42)	-0.39 (0.39)	-0.91* (0.46)	-0.02 (0.42)	-0.24 (0.56)	-1.11* (0.66)
Age	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.01)	0.02 (0.02)
Female	-0.00 (0.21)	0.11 (0.19)	0.07 (0.26)	-0.05 (0.22)	0.29 (0.29)	-0.29 (0.33)
Education (primary)						
Junior Certificate	0.21 (0.36)	0.73* (0.43)	0.70 (0.45)	1.29** (0.59)	0.67 (0.59)	1.88* (1.01)
Leaving Certificate	0.17 (0.37)	0.89** (0.42)	0.25 (0.46)	1.35*** (0.59)	0.41 (0.56)	2.26*** (1.03)
Diploma/Certificate	-0.32 (0.39)	0.41 (0.45)	0.25 (0.52)	1.30*** (0.62)	0.46 (0.58)	1.94* (1.07)
University	-0.72* (0.42)	0.49 (0.47)	0.04 (0.55)	1.48** (0.63)	0.13 (0.61)	1.86* (1.07)
Married						
Living as married	0.54 (0.35)	0.02 (0.33)	0.40 (0.43)	0.08 (0.39)	-0.29 (0.52)	0.77 (0.50)
Single	-0.17 (0.26)	0.06 (0.24)	0.10 (0.36)	0.10 (0.27)	-0.28 (0.36)	-0.64 (0.49)
Divorced/Widowed/Separated	0.60** (0.30)	0.63** (0.32)	0.70* (0.39)	0.62* (0.36)	0.15 (0.49)	0.41 (0.51)

Social Class (AB)												
C1	-0.08	(0.28)	0.31	(0.28)	0.05	(0.46)	0.28	(0.30)	-0.16	(0.40)	-0.01	(0.40)
C2	-0.22	(0.32)	0.15	(0.30)	0.54	(0.47)	0.12	(0.34)	-0.31	(0.43)	-0.68	(0.50)
D	-0.00	(0.36)	-0.03	(0.36)	0.27	(0.52)	0.15	(0.39)	0.10	(0.48)	0.17	(0.52)
E	-0.26	(0.43)	0.04	(0.43)	0.29	(0.58)	-0.08	(0.46)	0.03	(0.51)	-0.16	(0.61)
F 50 +	-0.46	(0.44)	-1.46**	(0.58)	-0.78	(0.68)	-0.00	(0.44)	-1.42	(1.14)	-1.00	(0.83)
F 50 -	-0.36	(0.66)	-0.61	(1.09)	-0.20	(1.15)	0.74	(0.74)	0.48	(1.10)	1.78**	(0.88)
Area (Town/City >1,500)												
Town/Village/Rural (<1,500)	0.34*	(0.19)	-0.17	(0.18)	0.58**	(0.23)	0.60***	(0.20)	-0.46	(0.30)	1.06***	(0.29)
Political knowledge	0.15	(0.12)	-0.06	(0.10)	0.12	(0.14)	-0.15	(0.12)	0.08	(0.15)	-0.06	(0.19)
Belief in God	0.09**	(0.04)	-0.05	(0.03)	-0.01	(0.04)	-0.03	(0.03)	-0.07	(0.05)	0.04	(0.06)
MII (Failure of Political System)												
Public Services	0.88***	(0.32)	0.48*	(0.28)	-0.01	(0.39)	0.28	(0.31)	0.55	(0.39)	-0.30	(0.54)
Economy/Public Finances	0.80***	(0.28)	0.32	(0.27)	0.84**	(0.33)	0.02	(0.29)	-0.27	(0.41)	0.36	(0.41)
Employment/Labour	0.95***	(0.31)	0.85***	(0.26)	0.38	(0.36)	0.34	(0.28)	0.32	(0.38)	-0.06	(0.43)
Taxes/Pension Cuts	0.92**	(0.38)	0.35	(0.36)	-0.74	(0.51)	-0.04	(0.41)	0.12	(0.48)	0.26	(0.64)
Other/Don't Know	0.99***	(0.35)	0.21	(0.38)	0.00	(0.51)	-0.39	(0.47)	-0.06	(0.49)	0.17	(0.49)
Gov Policy Mainly Responsible for Econ Change (Yes)												
No	1.61***	(0.24)	0.05	(0.31)	0.44	(0.45)	0.47	(0.33)	-0.12	(0.51)	-0.26	(0.47)
No answer/DK/Missing	1.34***	(0.31)	0.12	(0.36)	0.61	(0.38)	-0.03	(0.42)	1.05**	(0.41)	0.10	(0.43)
Vote 2007 Election (FG)												
FF	3.74***	(0.40)	1.63***	(0.26)	1.31***	(0.39)	1.37***	(0.28)	2.84***	(0.75)	1.23**	(0.50)
Labour	1.62*	(0.88)	4.32***	(0.33)	2.63***	(0.54)	2.00***	(0.46)	4.68***	(0.79)	-12.28***	(0.44)
SF	-20.63***	(0.68)	2.85***	(0.70)	6.37***	(0.66)	2.97***	(0.71)	5.31***	(0.98)	3.48***	(0.98)
Ind/Other	2.45***	(0.70)	2.01***	(0.43)	0.98	(0.83)	3.02***	(0.39)	5.47***	(0.77)	1.31	(1.11)
Don't Know/Didn't Vote	2.38***	(0.46)	1.67***	(0.29)	2.02***	(0.40)	1.29***	(0.33)	3.17***	(0.77)	3.86***	(0.48)
Constant	-4.98***	(0.86)	-2.37***	(0.88)	-2.62**	(1.17)	-3.41***	(1.01)	-3.33**	(1.39)	-7.76***	(1.34)
Pseudo R ²							0.28					
Observations							1,767					

Robust standard errors in parentheses

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