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Media effects on opinions about climate change mitigation and the Norwegian petroleum industry

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Abstract

With this thesis I aim to investigate the media influences on Norwegian public opinions on climate change mitigation policies, with a particular emphasis on mitigation policies that target the Norwegian petroleum industry. This is acheived within a theoretical framework that is built to fit both the media and trust as important influences on public opinion. Drawing on theories of motivated reasoning, media representation, and trust in a politically legitimating capacity, I study Norwegian survey data from the first wave of the Norwegian citizen panel.

The results show that people relying on TV for their news update are more prone to be negative toward climate change mitigation policies that target the petroleum industry, whereas people who read the newspapers and use Twitter are positive toward the proposed policies. In addition, people who are supportive of mitigation policies targeting the petroleum industry do not trust the Norwegian cabinet, but they do trust other people. The results are the opposite when the respondents are unsupportive of the proposed policies.

These findings suggests first, that there might be substantial differences between the content of the TV news as compared to the newspapers. Second, that the petroleum industry rises the stakes, and talking about climate change and the petroleum industry at the same time engages people more than if industries in general are discussed. Third, political trust may be built on trust norms that emphasize values such as national economic development and competitiveness, which renders much support for the Norwegian petroleum industry among the public, and will make it hard to establish policies that are not reciprocated by other countries. On the other hand, the level of social trust is relatively high, which may indicate that establishing collective action on climate change is well within the realm of the possible.

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1.1 Media effects on climate change and petroleum production

What effects do the media have on the formation of public opinion? More specifically, what do these effects mean for policy making on issues such as the Norwegian petroleum production and its relation to climate change mitigation? These issues are the main focus of this thesis, and must be seen in connection with the salient position public opinion has in any democratic regime: An elected goverment or parliament is, by definition, an expression of public opinion (Page *et al*. 1987: 23). For my purpose this means that climate change mitigation policies relies, although perhaps not exclusively, on public opinion. As Austgulen & Stø (2013: 124, my translation) so eloquently put it: "The citizens understanding and attitudes toward climate change is of great importance for the development of Norwegian climate change policy, and for the legitimacy of that policy."

On the other hand, the media are relied upon to provide the publics with what they need to know about policies and policy proposals through the account of events, expert opinions, political statements, political opinions, and interest group advocacy (Page *et al*. 1987: 24, 34-38).
The media are capable of setting the public agenda - meaning that they do not necessarily tell us what to think, but they are able to influence what we think about and how we prioritize between (political) issues (McCombs 2014).

There has been quite a few studies on public opinion and public worry about climate change, also in Norway. One study shows that Norwegians increasingly believe in climate change science, but at the same time that they are less worried about it than before (Austgulen & Stø 2013: 127), while several studies show that world view and political affiliation are important determinants for what people think with regard to climate change (Austgulen & Stø 2013, Kahan *et al*. 2011, McCright & Dunlap 2011, Poortinga *et al*. 2011).

From the United States, we do know that conservative movement have had success in delaying the development of effective climate change policies. This has occured both through the lobbying of decision making organs by stakeholder industries and scientists – a science that have been largely funded by stakeholder industries, such as the American petroleum industry. In addition, the mass

media have been used to make the issue of climate change appear non-problematic to the general public (McCright & Dunlap 2003).

Further, it has been shown that journalistic norms are important for the way climate change has been represented in the media. Again, studies from the United States reveal that the norm of balanced reporting creates a bias in favour of the climate change sceptics, who are given more space to voice their opinions and views against the scientific consensus than what their number justifies (Boykoff & Boykoff 2007)

The situation seems somewhat different in Norway. Duarte (2010) shows that the Norwegian press is largely reporting on issues in line with the scientific consensus on climate change. She finds, however, that the Norwegian press suffers from an authority bias – that journalists have a tendency to report only what opinions, thoughts and views authorities hold, whether they are political or scientific.
The Climate Crossroads project have investigated several intersections between politics, climate science and the media. Naper (2014), for instance, finds that in the lead articles and commentaries of the Norwegian press hardly ever make the connection between climate change and Norway's contribution to global greenhouse gas emissions through the export of petroleum.

As noted above, the legitimation of climate change policies comes from public attitudes toward climate change as a phenomenon. Another question is what the Norwegian public think of the Norwegian petroleum industry, how this affects the legitimacy and the implementation of climate change mitigation policies, and which role the media plays in this landscape.

My thesis will contribute to this field of research by seeking answers to the question

What effects do various news media have on public opinion on climate change mitigation policies targeting the Norwegian petroleum industry?

By using a theoretical framework that encompass both motivated reasoning (Lewandowsky *et al*. 2013, Kahan *et al*. 2011) and collectively organised climate change denial (Norgaard 2011, Kunda 1990), I am able to explain these findings in a satisfactory manner – particularily when these theoretical elements are combined with theory on trust, and how different trust norms may influence political choices (Braithwaite 1998).

My research question and theoretical framework led to an investigation of survey data from the Norwegian citizen panel (Ivarsflaten 2014), and these data revealed that respondents who use TV news to stay updated on the news tend to support the petroleum industry, whereas those who read newspapers tend to support climate change mitigation efforts, also when they target the petroleum industry. These results remained consistent, but weaker when tested on a model that measured support for a general reduction of greenhouse gas emissions. This may indicate two things: First, that there are differences in the way newspapers and TV-news report on issues related to climate change and the petroleum industry, and second, that the respondents are more involved when the petroleum industry is concerned, for better or worse.

1.2 Why Norway?

Norway is the chosen case for this study because the of its outspoken engagement on climate change issues in international negotiations on the one hand, and its large petroleum industry on the other.

Norwegians love nature and many people embrace an active lifestyle where they use nature for recreational purposes (Norgaard 2011). Environmental values, along with egalitarian ones, have a strong hold in the Norwegian public. And environmental issues have been known to spark collective action: There were a few incidents of sivil disorder in relation to industrial development and, in particular, the building hydroplants in the 1970s and 1980s (Tvedt & Berg-Nordlie 2015, Tvedt 2014). Environmental activism need not result in sivil disorder, however, and a current case in point is the collective action for keeping the petroleum industry out of the vulnerable areas surrounding the Lofoten islands, Vesterålen and Senja. Petitions and demonstrations have been used in order to stop the government from launching an impact study with regard to petroleum production in these areas (Thonhaugen & Steinum 2015).

On the other hand, Norway is one of the largest petroleum exporters in the world, just after Russia and Saudi Arabia (IEA 2011:51), and even though emissions from the burning of fossil fuels are the main culprits when it comes to the warming of the globe and climate change, the government are opening new blocks to the search for new wells of oil and gas (Regjeringen 2015a). In addition, Norwegians seem to be reluctant to engage in global mitigation action through an international agreement, if countries such as China (i.e. large developing countries) are not participating

(Tvinnereim & Lachapelle 2014).

Thus, a quite disparate image of the Norwegian public and political scene is painted, and media influence on Norwegian public opinion on climate change mitigation policies targeting the petroleum industry makes a very interesting landscape to study.

1.3 Political and scientific relevance of the study

Climate change mitigation is of vital importance, since a warming of the globe beyond the goal of 2 degrees Celsius is associated with unknown, but most likely devastating consequences (IPCC 2014).

Given the difficulty of legitimating policies without public support (Austgulen & Stø 2013: 124), it is important to know which influences shapes public opinion. The mass media is one important influence on public opinion (McCombs *et al*. 2011). The message from the public to the politicians, and the other way around, can be muffled or made clearer by the media (Waldahl 1999).

Studies, such as this thesis, which focus on public opinion may give an overview of what the public opinion is, and may make it easier for policy makers to develop policies that have a supportive base in the public. If policies are perceived as legitimate, the public is also more likely to defer to them (Levi et al. 2009: 354).

In addition, we need to know more about the effects of the media upon Norwegian public opinion, and media effects in combination with other political and cultural aspects. With this study, I aim to make a contribution to this field of research, and make concrete proposals for further research.

1.4 Outline of the thesis

Chapter 1 has been used to provide a general idea of what this thesis is about. An attempt has been made to contextualize the Norwegian case, and provide a basic understanding for the relevance of the study. The research question has also been presented.

In chapter 2 I will outline the theoretical foundation for the thesis. Here you will find a literary overview, the theory behind the variables included in the quantitative analysis, hypotheses, and the theoretical rationale for the analysis of media representations.

Chapter 3 will consist of an elaboration and justification of the methods used in order to answer the research question, and a presentation of the data material. Some ethical considerations and methodological weaknesses will also be discussed.

In chapter 4 I will analyse the data presented in chapter 3. First I will go through each model, before I tie them together and discuss the implications of these findings.

Chapter 5 will contain a summary of the entire thesis and a conclusion. In addition, weaknesses with the study will be discussed, and pointers to furture research will be given.

Chapter 2

Trust, public opinion, and the media - a theoretical framework

2.1 Introduction

In the effort to answer the research question "*What effects do various news media have on public opinion on climate change mitigation policies targeting the Norwegian petroleum industry?*" I will apply several theoretical approaches, integrated to form a neat whole. In this chapter I will first outline the basic concepts this study is setting out to investigate, namely *trust*, *public opinion,* and *media representations*. Closely related to the concepts are theories that may explain how public opinion on policy issues are formed, and which role trust, the media, and politics play in this shaping. Thus, I will discuss relevant theories, such as trust normes based on values, compliance to authority, motivated reasoning, an journalistic normes in light of these concepts. Further, I will present the variables and hypotheses that constitute the quantitative analysis in light of both concepts and theory.

2.2 Concepts

2.2.1 Trust

To trust is to harbour certain expectations towards other people. Trusting someone have implications for ones own behaviour; both how one may choose to act, but also how one is able to act. Needless to say, when you trust someone you do not possess the facts regarding the trusted persons knowledge of today nor his behaviour tomorrow (Dasgupta 2000: 51-52, 54).

Trust as such an expectation is tied to values. Braithwaite (1998) holds that there are two sets of values that leads to different trust norms. It is possible to tie these trust norms and their corresponding values to cultural and/or political cleavages (Braithwaite 1998:50-52). This is not to say that an individual only holds one type of trust norms, but rather that they come into play in different settings (Braithwaite 1998:46).

Broadly, we can distinguish between exchange trust norms on the one hand, and communal trust norms on the other. Exchange trust norms are tied to security values. This entails that, at the

individual level, values such as social recognition, economic prosperity, authority and competitiveness are part of these norms' foundation. At the societal level, values such as economic development, rule of law, and national greatness are part of the exchange trust norms base. The goal is to protect oneself or ones group from the oppression by others. Communal trust norms, on the other hand, are built on individual values such as self-insight, the pursuit of knowledge, self-respect, wisdom, tolerance and helpfulness. For society, values such as rule by the people, preservation of the natural environment, and greater economic equality creates the foundation on which communal trust norms are built. The goal being peaceful coexistence through a social order that shares resources, promotes cooperation, and communicates mutual respect (Braithwaite 1998: 49).

This distinction between communal trust norms and exchange trust norms is of interest here, because individuals differ in the way they proritize between the trust norms, and it may thus be part of an explanation for how individuals view their obligations to the collectivity (Braithwaite 1998: 49). Here there is a vital link to personal world view and political preferences. The values that are the foundations of different trust norms, are also linked to, say different political platforms: Someone who is predominantly security oriented will more likely vote for a conservative party, whereas someone who is more harmony oriented will prefer, perhaps, a social democratic one (Braithwaite 1998: 67-68). This is important in relation to climate change politics because world view, wether one call it security vs. harmony or individualist vs. collectivist, matters when opinions about climate change are formed (Austgulen og Stø 2013: 140-144, Kahan *et al*. 2011: 166-169).

In both the harmony perspective and the security perspective, the notion of reciprocity is an important factor, along with the way the others are construed (Kahan 2003: 76-77, Braithwaite 1998: 52). If attention is focused on utilities - the form does not matter - when a person is deciding whether to give or honour trust, it is the exchange trust norms which are in use. If, on the other hand, the giving and honouring of trust is a function of how well someone has been socialized to harbour values and norms that further collective interests, resistance towards alternative identities, and how well they see others who share the same values, it is the communal trust norms which are used (Braithwaite 1998: 52-53).

It should be mentioned that trust is rarily an *ad hoc* decision. Usually we have a perception or a reason for our trust decisions: Trustworthiness. A person's or an institution's trustworthiness is usually based on whether the trusted is commited to act in the interest of the truster. The trusted may behave in such a manner because of moral values that emphasise the keeping of promises (i.e. trustworthiness), whether the trusted cares about the truster, whether there is incentive compatibility

between the two, or some sort of comibantion of all three. Alternatively, trust may be given if the trusted has competence over a specific domain (Levi & Stoker 2000: 476).

Whereas trust is seen as a facilitator of cooperation, and in many cases as the opening of new opportunities, distrust is largely viewed as loss of opportunities. It could be the loss of economic gain or the opportunity to solve a difficult task that requires cooperation (Dasgupta 2000: 49, Hardin 1992: 154). Distrust may ultimately destroy a relationship because of un-cooperative behaviour, monitoring and watchfulness (Levi & Stoker 2000: 476).

Dasguptas (2000: 51-52) definition of trust as an expectation, will work also in relation to political and bureaucratic institutions. Trust is possible because these institutions act in predictable ways, which make it possible to expect these acts from them. They act in predictable ways because there are institutions, such as the rule of law, that have made provisions to ensure that such is happening - at least within a democratic regime (Rothstein 2000: 481).

Although such a notion of general (the aggregate level of trust in society) and political (trust in political institutions, and in the political system) trust is feasible, it is not unproblematic. Establishing such institutions do also constitute collective action problems, and we are facing a question to which there exist no firm answer: How is trust created? If institutions create trust, but trust is needed to create the institutions, this spiral into a "chicken or egg?" sort of dilemma that I will not attempt to answer here. Suffice it to say that trust is important to governments and public institutions as it constitutes one source of legitimacy: "The more a government is effective and trustworthy, the more legitimacy that government is likely to attain, and the more it will possess the potential to elicit compliance without excessive monitoring or punitive action." (Levi & Sacks 2009: 311). The term legitimacy refers to the a belief the citizens hold about the normative appropriateness of government structures, officials, and processes (Levi et al. 2009: 354). In a similar vein, Tyler stresses the importance of trust as a facilitator of democratic governance, because trust leads to deference to authorities (Tyler 1998: 270-276).

So, here trust is conceptualised as an expectation. An expectation which may influence or be influenced by several factors, such as culture, regime type, the media, public opinion etc. In the following I shall concentrate on two of these factors; public opinion, and the media. Trust may influence public opinion through adherence to different trust norms, which may play an important role in relation to motivated reasoning. This may be important in relation to climate change mitigation policies, where trust norms may feed into the motivated reasoning via the construction of "the other" and believes about reciprocity. This, I will return to later. Now I would like to turn your

attention toward the concept of public opinion.

2.2.2 Public opinion

Public opinion is perceived as one of the major driving forces of representative democracy (Page *et al*. 1987: 23). Freedom of expression, equality, and the citizens' right to debate all questions pertaining to common interests give public opinion a key role in the formation of any democratic regime (Waldahl 2007: 9). There is no formal definition of the concept of public opinion, but McCombs and colleagues have arrived at the following broad definition: "[Public opinion is] the collective consensus about political and civic matters reached by groups within larger communities." (McCombs *et.al*. 2011: 2). Further, it is possible to look at public opinion as both a process and an outcome, and it is important to understand both perspectives to fully grasp the concept. In the process perspective the role of dialouge and deliberation are stressed as the key elements in the description and evaluation of public opinion. In the outcome perspective, one is more interested in the expressions of political participation and action (McCombs *et.al*. 2011: 2-3).

Public opinion surveys from the past few years show that Norwegians are consistently concerned about climate change (Austgulen og Stø 2013, Austgulen 2012). This concern has yet failed to translate into political action such as changed voting behaviour or demonstrations on single issues tied to climate change (Gloppen *et.al*. 2014). Therefore, I will use the process perspective on public opinion when investigating what effects the news media have on public opinion on climate change mitigation policies targeting the petroleum industry. I believe firstly, that the process perspective on public opinion can shed some light on how the public opinion on this issue is formed. Secondly, it *may* also contribute some answers to the question of non-action when it comes to climate change mitigation on behalf of the Norwegian public.

We can consider the process perspective on public opinion as a combination of three separate processes: C*ognitive processes* within the individual, *collective processes* that ties the citizens together through common interests, and *political processes* that leads to authoritative decisions on current issues (Waldahl 2007: 9). These processes require communication in order to work, both between authorities and the individual (or vice versa), and between individuals or between groups. Hence communication is a necessary but not sufficient condition for the formation of public opinion (McCombs *et al*. 2011: 3). As will be discussed a little later, the media is an important influence on these processes as a mediator of messages between authorities and society, and sometimes also

between individuals or groups.

Goertz (2006) asserts that it is useful to organize some thoughts around ones concepts negative pole, in this case what public opinion is not. Since public opinion already from the outset is a blurry concept, it is rather difficult to imagine what it does not contain. Most obviously it is distinct from a private opinion (Lippmann 1991: 45). Not all opinions are relevant as public opinions, for instance whether one likes or dislikes the design on the new SUV from BMW (granted, such opinions are important to BMW, but I am limiting myself here to public policy making). If one do like the design on the new SUV, but still choose to buy an electric car because it is a better choice for the climate, it can be regarded as a public statement of one's individual opinion. If, in addition, one is a member of an organisation for electric car owners that advocates the building of infrastructure for electric vehicles under the notion that it is good climate policy, we are drawing closer to public opinion: First, climate change is regarded as a problem, and second, driving an electric car is a better policy than driving one fueled by diesel. These opinions may make it all the way in to the political system, and when politicians are deciding whether to spend money on infrastructure for electric vehicles or not, they are likely to be influenced by the pressure form this particular intrest group, but also from other stakeholders that may wish for a different development.

Thus, using Waldahls three processes, we may say that if the cognitive processes of individuals fail, either due to a lack of interest or because of misperception of the facts or the situation, so that an opinion does not form at all, there can be no public opinion. Second, if an individual opinion is formed, he or she must some way or other make it public, discuss it with other people, and join forces with those who hold the same opinion. But other people may not be interested, they may have different objectives, or the connecting ties may be weak. Finally, politicians, policy makers and other stakeholders in the political process may hold back information, obscure facts and otherwise make it hard to form an opinion on various matters (Waldahl 2007).

To follow this argument, I will consider public opinion as a process that incorporates numerous factors in its making, both at the individual level, but also in relations between individuals and groups, and in the relations between citizens and society at large. This view comes from the notion that public opinion is not static. It may change if new evidence emerges, if public interests change, if an extraordinary event occurs, or if political decisions do not have the intended effect. The concept of public opinion as a process see past the opinion in itself, and also allow us to investigate the various ways an opinion is formed through processes at the individual level, in society and at the political level (Waldahl 2007). Here, I will pay most attention to news medias influence on public

opinion, but, as we have seen, trust also plays a part in the shaping of public opinion (Leizerowits *et al*. 2012, Terwel *et al*. 2010).

The process perspective on public opinion is also useful to me in this inquiry because it allows me to look into the world of survey data. Survey data map out the attitudes and values of individuals, that is true, but aggregated it allows me to search for potential explanations as to which factors influence these attitudes. It is possible, for instance, to assess whether there is a relationship between voting behaviour and the habits of news consumption. It is also possible to assess the strength of such a relationship should it exist.

The issue of causality is not necessarily clarified through a cross sectional analysis (Skog 2010: 74), I have a host of research to lean on in this regard (McCombs *et al*. 2011, Boykoff 2008, Newton 1999, Holtz-Bacha 1990), which allow me to make the assumption, for instance, that the media influence public worry about climate change. If the various media channels turn out to influence what people believe with regard to climate change and mitigation policies differently, it may be one of the pieces to the Norwegian puzzle, and part of its solution.

2.2.3 News media representations

The third important concept in this thesis is *news media representations*, which can be defined as "...the ways in which the media *portrays* particular groups, communities, experiences, ideas, or topics *from a particular ideological or value perspective*." (Teaching Film, Television, and Media 2014, emphasis added).

In the previous section I discussed what public opinion is, and arrived at a concept that gives weight to the process perspective, where communication is a key ingredient. In this thesis I will primarily investigate and discuss communication through the news media, and how that may affect the formation of public opinion on climate change mitigation policies and the petroleum industry in Norway. The news media serves an important accountability function in relation to the government, in that information dispersed through the media may, or may not, enhance the trust the general public places in the government and public officials (Gordon 2000: 297).

What we read in the newspaper or see on the TV-news are results of a series of decisions influenced by perceived interest and the social impact of a topic, not to mention other "news values", economic considerations and editorial lines (Carvalho 2007: 223). Also, which model of journalism is

prevalent in that particular media business is important: Firstly, journalists and editors may be looking to give the readers what they believe the readers want (the market model). Secondly, the journalists and editors may be looking to support a given cause, a political party, a politician, etc. (the advocacy model). Finally, the editors and the journalists may be wishing to present an issue in neutral, objective way, guided by professional codes of ethics, and principles of disinterested public service (the trustee model) (McCombs *et al*. 2011: 43-46).

A democracy is dependent upon an enlightened and informed public, and this cannot happen without communication (McCombs *et al*. 2011: 3). Thus, the news media must function as a mediator for information. These messages are not just mediated, however, they have undergone a transformation on the way from the sender through the media system to the reciever. Reporters, editors, television news broadcasts, newspapers, and other news outlets usually partake in the production, reproduction and transformation of values and worldviews in various media discourses, whereas other values and worldviews may largely be excluded (Carvalho 2007). This may quite easily be illustrated by the differences in the media discourses regarding climate change in western democracies versus the discourse in India. In the UK, for instance, the media discourse is still questioning climate science, and gives a fair amount of publicity to so called contrarians, whereas those news media that acknowledge global warming and climate change, are still a running large circles around policy proposals, policy debate and serious mitigation initiatives (Carvalho 2007). In India, on the other hand, the largest English newspapers have acknowledged climate science. The prevalent media discourse in these papers frames the North-South relationship, and largely advocates a view where Western countries must cut their emissions first, in order to "clear up" the mess they have caused (Billett 2010).

Media as mediator is a view that stems from Walter Lippmann, who in 1922 wrote about how media plays an important role in describing the events of the world to people far away from where the event takes place (Lippmann 1991). However, as Lippmann also pointed out, people may read about these events (today we may watch them as well), and perceive them differently, depending on various socioeconomic and demographic characteristics (Lippmann 1991). One of the key problems addressed by Lippmann was that people do not see facts for what they are, but rather what they perceive them to be. We tend to define first, then see – not the other way around (Lippmann 1991: 81). Althouhg human perception is extremely important, we must not forget the opposite argument – namely that the news media may pick and choose in various ways of framing and priming, and that various aspects of a story will be emphasized, whereas others may be undercommunicated or even ignored (McCombs *et al*. 2011, Carvalho 2007).

Another influence on media representations are the norms that journalists usually write according to, which can be devided into first and second order journalistic norms. First order journalistic norms comprise of personalisation, which means that a story is framed in terms of individual tragedies and not on the bigger issue; dramatisation, which drives journalists prefer crises of continuity, and leaves little space for the day to day workings of political institutions, policy making, etc; and, at last novelty. The norm of novelty forces journalists to constatly chase the news, which leaves ongoing, unresolved issues outside the news frame (Boykoff & Boykoff 2007: 1192).

Second order journalistic norms are authority-order and balance. The authority-order norm requires journalists to get statements or quotes from authorities, whether they are government authorities, or experts in a field. The norm of balance requires journalists to give approximately the same amount of attention to parties in a conflict, or when opinions are devided on an issue (Boykoff & Boykoff 2007: 1192-1193). Together, these five norms informs the the choice of issues that are considerd "news" on any given day, and they also instruct journalists and editors in their framing of the issue that passes the gate.

Hence, media representations are important in the shaping of public opinion. First, they play an important role in setting the public agenda. Without media coverage it is unlikely that an important problem will either enter the arena of public and political discourse (Dispensa & Brulle 2003: 79). Second, the media may be a force that spark collective action, for example in the issue of the Norwegian government opening the Lofoten islands, Vesterålen and Senja to petroleum production, were some media, Twitter in particular, are specifically geared towards collective action (Segerberg & Bennett 2011). Third, the media may be a force that spark disagreement and fierce debate because they sometimes feed into predjudice and cleaveges already manifest in society – again the issue of opening the Lofoten islands, Vesterålen and Senja to petroleum production serves as an adequate example (Aftenposten 2015a). And at last, media representations may influence political action, specifically on single issues that arises. One such example is the recent case where many asylum seekers with children that had lived in Norway for a long time were sent out of the country. Media attention has, on this issue, led to a revision of some of the cases (Rundsveen & Randby 2015).

2.2.4 A brief summary of the concepts

These three consepts; trust, public opinion and media representations, are all important in the day to

day workings of a democracy. The political leadership is elected based on public opinion, in which the media have helped to shape. But the political leadership needs also to be trusted in order to be able to govern, and the media contributes to such a relationship of trust by its accountability function. One could say, that public opinion in essence *is* trust, and that whom the public chooses to trust or distrust is based, at least to some extent, on the account of events *represented* by the media. It is the interplay between these concepts that I aim to map out by looking into the effects various news media have on public opinion about climate change mitigation policies, targeting the Norwegian petroleum industry.

2.3 Climate change mitigation, public opinion, and the media

Norway is an interesting case to study on account of two reasons in particular. On the one hand Norway has a desire to be progressive on environmental issues, and aspire to be a leading nation in international negotiations on climate change action (Norwegian Ministry of the Environment 2012). On the other hand Norway is one of the largest petroleum producers in the world. The Norwegian economy and welfare-system, especially in the future, is quite dependent upon the revenues from this industry. In this section I will lay out some theories that may help individuals reconcile these two roles that the government alternates in playing, albeit with particular emphasis on the effects the media may have in this regard.

Mass media play a key role in serving people with facts. The media cannot tell people how to *perceive* these facts, but they do choose which facts people get to see (McCombs 2014). The facts are chosen by the journalists according to journalistic norms and pressures that the journalists and editors are under from vested interests in the topic written about or the mediahouse owners or leaders (Boykoff & Boykoff 2007, Carvalho 2007).

If the principle of balanced reporting is to be followed on the issue of climate change, people will be confused with regard to what is actually widely accepted knowledge. This may turn out to be dangerous, because it leads to political inaction and policy gridlock (Boykoff & Boykoff 2007, McCright & Dunlap 2003). However, the issue of climate change raises fundamental questions on the legitimacy of our industrial society, our way of life, and shows that fossil economic growth is unsustainable - at least if it continues as today (Clark & York 2005). So, climate change proves to be a bit of a marketing challenge: People might not want to know – because the consequences of that knowledge are frightening or may imply changes to our way of life that we dislike – even if the

media are writing seriously about it.

The media shape complex science, policy, and political debate into narratives. Furthermore, journalists refuse, for the most part, to tell stories in the abstract (Smith 2005). This have major implications for the coverage of climate change, because as an abstract and untangible phenomenon it is likely to be side lined in "competition" with other news. Unless it can be related to an event such as extreme weather or natural disasters, and then the connection made by journalists may be scientifically wrong. In addition, it is a question of scale. Climate change is usually defined as a global problem, but it's consequences are local. Hence, as a matter of scale, climate change is difficult to fit with the layout of the news (Smith 2005).

2.3.1. Motivated reasoning

Walter Lippmann held that public opinion is formed by facts. Nevertheless, he questioned his own assumption by asking, for instance, who were there when the event happened to account for the facts? How are the facts distributed? How are these facts perceived? How much time do people spend on learning the facts of an event? The analyst of public opinion should "…begin then, by recognizing the triangular relationship between the scene of action, the human picture of that scene, and the human response to that picture working itself out upon the scene of action" (Lippmann 1991: 16-17). In other words, Lippmann points to the cognitive process of the individual: We live in the same world, but we *perceive* it differently. Our perception of the world is largely made up of preconceived images in our minds, and when we read about the world in the media, we interpret the texts in accordance with these images.

Today we may draw a parallel to the theory of motivated reasoning: The human propensity to select and construct beliefs about the self, other people, and the world in general according to directional goals or motives (Kunda 1990). Motivated reasoning is related to the notion of cognitive dissonance, which essentially means that there is a discrepancy between what an individual believes and what he does, which results in a change of believes (Festinger & Carlsmith 1959: 203-204). It is important to note, however that two inconsistent beliefs are not sufficient to produce dissonance motivation and a following change in beliefs or behaviour. Kunda (1990: 488) shows that dissonance is stirred only when people choose to get involved in activities that has forseeable negative consequences – if it threatens and involves the self.

2.3.2 Organized climate change denial

Climate change may constitute one example of an issue where cognitive dissonance may arise and lead to motivated reasoning, because its existance challenges and threatens the Western way of life – which is largely built upon an "industrial capitalism powered by fossil fuels." (Clark & York 2005, cited in Dunlap and McCright 2011: 145). If we take the causal order for granted, such cognitive dissonance has made the production of organized climate change denial, where stakeholders in both trade and politics uses the media and scientific uncertainty to reproduce climate change as a contested issue, relatively easy. McCright and Dunlap shows, for instance, how important the American conservative movement, which is an important part of the environmental countermovement, was in the process leading up to the US rejecting the Kyoto protocol. Conservative think tanks, largely funded by the fossil fuel industry and conservative foundations, utilized political hearings, the media, scientific expertise, and a change in the political opportunity structure – the republican takeover of the US Congress in 1994 – alongside corporate and union activities and lobbying to thwart any legislative action to ameliorate global warming and climate change (McCright & Dunlap 2003, Dunlap & McCright 2011). This development has been further contextualised by Antonio and Brulle (2011), who states that concervative and neoliberal politics have sought to undermine environmental issues already in the 1970s, as it represented a threat to the free market and neoliberal ideology in that the government would have incentives to start regulating business. In other words, to some of the conservative American, climate change and regulation of energy consumption represents a "left-wing anticapitalist conspiracy." (Antonio & Brulle 2011: 198).

On the Norwegian scene, there are not many studies, to my knowledge, that have focused on the organized production of climate change denial as driven by (public) stakeholders in such an obvious way as in the US, where the petroleum industry is a major actor and contributor to contrarian science, for instance (Oreskes and Conway 2010, Dunlap & McCright 2003). On the surface, however, the Norwegian petroleum industry is trying to send the message to the Norwegian public (and others) that it is looking to the future, that Norwegian petroleum production is sustainable and needed – also in a long term perspective – and that it operates within a climate friendly paradigm (Statoil 2015a, Statoil 2015b, Hornmoen 2014, Norsk olje og gass 2010).

Rather, the kind of organized climate change denial that has been studied in the Norwegian context is social, which means that ignoring is a response to social circumstances, and carried out through a process of social interaction (Norgaard 2006: 374). In her ethnographic study, Norgaard shows how

the inhabitants in a relatively small community in Norway avoid thinking about climate change and global warming, and how they engage several cognitive and emotional protective meassures when the issue surfaced in a conversation. Using Cohen's notion of implicatory denial, she shows that in relation to climate change it is "the psychological, political, or moral implications that conventionally follow" that is minimized or denied (Cohen 2001: 8, Norgaard 2006: 374).

Norwegian people possess a quite large amount of knowledge about climate change, and public opinion surveys indicate that a large majority are quite worried about it (Eide *et al*. 2014: 10), but Norwegians fail to incorporate this knowledge into their everyday lives by changing personal behaviour and/or engage in social action (Eide *et al*. 2014: 10, Norgaard 2006: 374). As the knowledge on climate change and related issues clashes with the Norwegian self-image as environmentally aware, egalitarian and humanitarian it may lead to cognitive dissonance (Norgaard 2006: 382, Kunda 1990), and Norgaard shows how Norwegians have developed several strategies of emotional management to solve this dissonance, such as selective attention (concerning news and other sources of information), perspectival selectivity (often pointing to Norways small size, or the US as a climate laggard) (Norgaard 2006: 385-389).

This is not to say that ordinary Norwegian citizens bear the sole responsibility for the absence of effective climate change policies in Norway. Kjersti Fløttum and Tonje J. Espeland (2014) conducted a linguistic analysis of two Norwegian white papers (*Norwegian Climate Policy* and *The High North. Means and Visions*, both from 2011-2012). Their conclusion was that the government did indeed convey different messages. In the white paper on Norwegian climate policy, emphasis was put on the negative effects of climate change, and what Norway could do to mitigate them. However, all these measures must be economically feasible, and the conclusion is that the white paper contains mixed messages that may lead to uncertainty on which political goals are actually pursued (Fløttum & Espeland 2014: 11). In the white paper on the high North, climate change is presented as a threat to a vulnerable region, but the better part of the paper is devoted to how climate change represent an opportunity for added value and economic prosperity in the region, with particular emphasis on petroleum exploration and production (Fløttum & Espeland 2014: 15).

The findings of Fløttum & Espeland indicates that the Norwegian government is betting on two horses, and this duality may affect public opinion in the sense that the citizens do not perceive the seriousness of climate change nor the urgency with which one must act (Eide *et al*. 2014: 17, Lorenzoni *et al*. 2007).

2.3.3 Impact of political and cultural values

Motivated reasoning in an individual is related to that individuals values and beliefs, particularly if it is tied to the self (Kunda 1990). International research shows that motivated reasoning in relation to climate change and climate change science is closely tied to cultural and political values. In the US climate change denial was closely tied to conservative values, the republican party and a neoliberal ideology (Antonio & Brulle 2011, Dunlap & McCright 2011).

In the US, climate change has become a social identity marker alongside issues such as abortion and gun control (Nisbet 2011: 360). McCright & Dunlap (2011) find that significant ideological and partisan polarization has occurred on climate change within the American public over the years between 2001 and 2010. Left-leaning people are more prone to hold a view on climate change which is in line with the scientific consensus – that climate change is happening and that the human contribution to climate change is substantial (McCright & Dunlap 2011: 155, 166). Scientific findings also suggest that political orientation moderate the effect of educational attainment (McCright & Dunlap 2011: 161-162, 174).

In a similar vein, Leizerowitz *et al*. (2012) show that political orientation and cultural values influenced peoples perception of "climategate", the scandal that occurred when e-mails between British and American climate scientists leaked to the press and was used to discredit the entire field of research. It was people who where, through their political affiliations, predisposed to skepticism (they voted Republican, or held conservative values) that suffered the greatest loss of trust in climate science and scientists (Leizerowits *et al*. 2012: 827).

Kahan *et al*. (2011) have used the theoretical framework of cultrual cognition of risk to test the hypothesis that people interpret scientific knowledge on global warming and climate change according to their cultural values. Their findings suggest that people in the US with more egalitarian and communitarian values tend to believe that most scientists agree that the planet is warming, that it is caused by humans, and that this poses a threat to society, whereas people with hierarchical and individualistic values are more likely to believe that scientific experts do not agree on these issues, and tend not to percieve global warming and climate change as significant risks (Kahan *et al*. 2011: 157-166).

Scholars have made similar findings within the UK, where people who vote conservatively and possess low environmental values tend to be more uncertain about the reality and severity of climate change (Poortinga *et al*. 2011: 1017, 1019). In addition, older people from a lower socio-

economic background were more likely to express climate scepticism, as were people who did not intend to vote. Also, men were more likely than women to express a sceptical view on climate change. Climate scepticism where more common among people who are politically conservative and hold traditional values, whereas it was less common among those people who hold self-transcendent and environmental values (Poortinga *et al*. 2011: 1022).

Although political orientation and cultural values matters for attitudes to climate change elsewhere, the picture may be different in Norway. In the Norwegian parliament, Stortinget, there is now a broad consensus regarding climate change: All the largest parties, that is The Labour party, the Socialist Left, the Centre, the Conservatives, the Liberals and the Christian Peoples party, except the Progress Party, signed an agreement in 2008 which saw a few amendments in 2012. This agreement states the goals of Norwegian climate policy, such as the fulfilling of the commitments in the Kyoto-protocol and add 10% to that, global emission cuts equalling 30% of Norways emissions back in 1990, that Norway will be carbon neutral by 2050 (or 2030, if a global agreement enters into force) (Stortinget 2012).

The parliamentary agreement and the 2013 election campaign, where climate change did not become a major issue, have led scholars to argue that when it comes to Norwegian politics, climate change is a valence-issue, meaning that everyone agrees that something must be done and that there are no clear cut frontiers (Gloppen *et al*. 2014: 29-30). There is some support for this notion in survey material from Norway: the relationship between partisan affiliation and attitudes toward climate change is weaker than in for instance the US and the UK (Austgulen & Stø 2013: 141-142).

There is, however, also evidence to the contrary. The parliamentary climate agreement from 2012 secures broad agreement on the goals of the climate policy, but does not give a lot of guidance as to which means one should use in order to reach them. Indeed, there is no unanimity among the parties at Stortinget as to *how* the threat posed by global warming and climate change should be alleviated. By establishing political consenus through the 'climate agreement', one has depoliticised the issues of global warming and climate change. The result is a muted politcal debate, a false consensus, and possibly also a hindered a public debate on innovative solutions (Gloppen *et al*. 2014: 30, 40).

It should be noted that on the 25th of March 2015 Stortinget (including the Progress party) agreed to adopt a new propsal for climate change mitigation goals from the conservative cabinet, which entails negotiations with the EU, and possibly a affiliation to EU-goals. The overarching goal is a 40% reduction of emissions compared to the 1990-level by 2030. The means to reach this goal is still blury, and the cabinet did not allocate any portion of emission cuts to specific industries, or

even to Norway as a whole (Regjeringen 2015b, Dagbladet 2015)

2.3.4 The media

News media are said to be "powerful vehicles for communication of climate science" (Boykoff 2008: 3). Studies from the UK and US shows that the press and the TV-channels have an ideological tint, and that this also emerges in the news coverage of climate change and climate change science. News media which tend to sympathise with conservative values, individualism and a liberalisation of the market, also tend to give climate change sceptics and contrarians more coloumn space and more often question scientific findings and the emerged consensus (e.g. Carvalho 2007, McCright and Dunlap 2003). This means that how various news media frames climate change as an issue is important.

In addition, there are grounds for taking a critical look at how journalists are reporting an issue: Journalistic norms, such as objectivity, balance, fairness and accuracy are important elements in shaping *what* becomes news, not to mention *how* the news are told (Boykoff 2008: 3). Scholars have focused much attention on the journalistic norm of balance in their research, where balance refers to the norm that opposing sides in a story should have approximately the same amount air-time or column space. In one sense this norm functions as a validity check, because journalists do not have the time nor the expertise to check the validity of all claims (Boykoff 2008: 3, Dunwoody & Peters 1992: 210), but it also functions as a tool with which the journalist is capable of carrying out his reporting in a neutral and objective manner (Boykoff 2008: 3, Entman1989: 30). The findings in this family of research strongly indicates that the journalistic norm of balance creates a bias in the reporting on climate change, both in the press and on TV (Boykoff 2011: 108-109, Boykoff 2008: 8).

Maxwell McCombs (2014) maintains that the media do not tell you what to think, but they do a good job telling you what to think about. Media have a strong public agenda setting role, and a number of studies show that this hold true also in relation to climate change. Yuki Sampei and Midori Aoyagi-Usui (2008) shows that concern for global warming in Japan is closely related to the amount of media coverage the issue gets. Their study also indicates that global warming is covered as an international issue, not domestic. This is particularly evident in their finding regarding an environmental campaign, launched by the Japaneese government, which was designed to reduce emissions of greenhouse gases and energy consumption. Global warming was rarely mentioned in

the articles on this campaign in the three largest Japaneese newspapers. A further implication of this is that the general public will not make the connection between global warming and emission cuts.

Simon Billett (2010) made an interesting finding in his study on the coverage of climate change in the Indian mass media. Indian environmental journalists are covering climate change in line with the scientific consensus. However, there is a distanciation between cause and effect – namely that it is the industrial North that have caused global warming and climate change, whereas India and the rest of the South must endure the consequences. This reflects the position of the Indian government on the matter: India and other developing countries must be allowed to emit greenhouse gases in order to reach the same level of prosperity as the Western countries, while the Western developed countries must take on their historical responsebility and cut their emissions. However, Indian media is not alone in such distanciation: Carvalho (2007: 235) shows that even if the Guardian has printed articles that shares the scientific consensus point of view, and also ethical considerations towards developing countries and future generations, the question of who is responsible and what concrete actions should be taken politically and personally has not been touched upon to a significant extent.

In Norway, the image of climate change in the media is somewhat different. Duarte (2010) found that the journalistic norm of balance was less salient in her sample of newspaper articles. She shows that a majority of the articles in her sample support the scientific consensus and writes that anthropogenic climate change is happening, whereas only 8% of the pieces were sceptical (Duarte 2010: 46). She points, however, to an "authority bias", meaning that it is largely politicians, scientists and experts, besides the journalists, that are voicing an opinion in her sample. Lay people, particularily women, are not coming forward in the media (Duarte 2010: 52-58).

Naper (2014) conducted a content analysis of commentaries in various Norwegian newspapers. Findings from her sample, suggests that journalists rarily make the connection between Norwegian petroleum production and climate change. Rather, the petroleum indstry goes free from inconvenient criticism, because the public discourse that surrounds the petroleum industry and its relation to climate change, is either a humanitarian one, where Norwegian petroleum will provide energy to poor people in other parts of the world, or it is one of "building the nation", meaning that the industry provides the Norwegians with employment, development, and welfare.

Another study finds that there is a significant polarization between newspapers with regard to the petroleum industry and climate change. Through an analysis of the presentation of the government

white paper on the petroleum industry in 2011 by then-cabinet minister Ola Borten Moe and subsecuent news articles, lead articles and commentaries on the announcement of this white paper, Hornmoen (2014) shows that there exits several discourses on climate change and petroleum production in Norwegian newspapers. Several voices were clearly critical towards the ministers account of Norwegian petroleum policy as good climate policy and the necessity of a further expansion of the industry to the north, and these were largely written in national newspapers. Articles in local newspapers, particularly in the Stavanger area (which is the "petroleum capital" of Norway), in the North of Norway, and in papers where the issue was presented in the economy section, the language and arguments of the minister was largely adopted.

The picture I have aimed to paint here, is one that shows that the ordinary citizens of Norway are not the only ones that seem paralysed in the face of global warming and climate change. When both politicians and the media are serving unpalatable truths about global warming and climate change politics one day, and sing praise to the petroleum industry the next, it is bound to affect public opinion on these issues, and possibly also in connection to mitigation efforts. I will return to this briefly in connection with the variables and hypotheses used in the study, but first we must take a look at the other important explanatory factor in this thesis: trust.

2.4 Climate change, public opinion and trust

In this section I aim to show that interpersonal trust and trust in the government influence public opinion on climate change, and that it matters for climate change mitigation policies. This is a relatively new avenue of research in relation to climate change and the society, but it is an important avenue, since climate change is conceptualised in much of the literature as a collective action problem (Tvinnereim 2013, Ostrom 2010, Hardin 1968). This take on climate change as an issue, means that trust is needed in order to solve the collective action problem, in both a social and political capacity: Social trust for reasons of reciprocity in particular (Kahan 2003), and political trust because it increases the legitimacy and credibility of a given policy (Levi *et al*. 2009).

For the most part, the litterature on climate change has focused on relatively concrete segments of trust, such as trust in (climate change) scientists (Lewandowsky *et al*. 2013, Leizerowits *et al*. 2012), or trust in the (news) media (Boykoff & Boykoff 2007). In the following, I will focus on how trust may be tied to motivated reasoning, how the notion of reciprocity affects trust, and how media

influence both political and social trust.

Above, trust was conceptualised as an expectation. This provieds a rather broad view of trust, as it can be used simultaniously about a close friend and a public official or a complete stranger. Such a conception is also able to encompass the underlying value base on which our trust is built.

2.4.1 Trust, motivated reasoning and collective action

As mentioned above, Braithwaites (1998) notion of differing value bases to build different trust norms upon, fits with the notion of motivated reasoning. Shared values and beliefs are important in the formation of social trust. Socialisation from childhood helps people know what to do in situations where they might have to juggle their own needs with the expectations from others. This is facilitated, among other things, by internalisation of shared conseptions of how things should be done. This type of knowledge becomes part of an individuals belief system and are used to interpret future events and guide decisonmaking (Braithwaite 1998: 47).

Belief systems are comprised of attitudes, values, needs and interests that are interconnected and also show a great deal of cognitive consistency. A value may be defined as a lasting belief that a "certain mode of conduct or goal in life is personally or socially preferable to the converse mode of conduct or goal in life across specific objects or situations." (Braithwaite 1998: 48).

These belief systems and their encompassed values can, as we saw earlier, be tied to different sets of trust norms. These norms are not apolitical, but rather shaped also by political ideas and values, so that people who tend to vote for leftist parties would also have a propensity to rely on communal trust norms, where collective values are important. People who would vote for right wing parties, on the other hand, would prefer to rely on security trust norms, that draws a distinct line between "us" and "them", and a promote values of economic development etc (Braithwaite 1998: 67-68). This is not to say, for instance, that it is only people who vote for conservative parties that rely on exchange trust norms (Braithwaite 1998: 46).

Kahan (2003) underlines the significance of trust in the creation of collective action. He shows how trust is necessary when building reciprocal relationships of cooperation (Kahan 2003: 76-77). And reciprocity seems to be an important facilitator of trust. People are, for instance, more likely to pay their taxes if they believe that "everyone" else is paying theirs (Kahan 2003: 81). In addition, if one succeeds in establishing a system where reciprocity is positive, say where one would feel shame or

guilt for buying a car that is fueled by petrol or diesel and not by electricity, one would, potentially, be able to avoid costly incentives on behalf of, in this case, the government (Kahan 2003: 76-77).

Kahan's notion of reciprocity can quite easily be related to exchange trust norms and security values – as it is, after all, an exchange. Thus, in order to establish trust according to exchange trust norms, reciprocity must be secured.

In the extention of this argument, I point to Tvinnereim & Lachapelle (2014), who show how Norwegians are more sceptical of Norway's commitment to any international agreement on the curbing of greenhouse gas emissions, if countries such as China do not sign the agreement. This shows that reciprocity may be a key ingredient in a collective action effort, which is important considering that global warming and climate change are defined as collective action problems (Tvinnereim 2013: 380, Ostrom 2010: 550). The Norwegian attitudes are, in this case, most likely tied to the vulnerable Norwegian economy, and its petroleum producing capacities (Tvinnereim & Lachapelle 2014: 13), which lends some support to the notion of reciprocity in relation to trust. A possible deduction from this is that reciprocity and trust are also important for within-country collective action, such as recycling, reduced consumption, or the willingness to limit the number of air travels.

It should, however, also be noted that IPCC is the source of information about climate change that Norwegians mostly trust. Other trusted sources of information about climate change are the authorities and the NRK (the Norwegian broadcasting corporation). At the other end of the spectrum are environmental NGO's, climate change sceptics and the newspaper *Verdens Gang* (VG), who's information the Norwegians tend not to trust. Norwegian's trust in climate science is significantly lower than their trust in other sciences (Austgulen 2012).

Austgulen & Stø (2013) finds that Norwegian scepticism of the issue of climate change revolves around the seriousness and accuracy of climate science, and also how problematic the consequnces of climate change may prove to be. These attitudes toward climate change varies with world view and political ideology, as previously discussed. The authors of this article stress that emphasis should be laid upon how climate change is communicated to various groups and individuals in society, and that the authorities, but also the political parties, have a particular responsibility for how they communicate climate science to the public and their voters. They also suggest that involving the public to a greater extent in the efforts to mitigate climate change may increase peoples understanding for and participation in such efforts – thus increase the legitimacy for the various policies (Austgulen og Stø 2013: 144-145).

Based on what I have laid out so far, it can be argued that such efforts to engage the public to a greater extent is also an effort to increase trust, both in a political sense, but also to help establish reciprocity among people in general: “I feel bad if I don't carpool to work, because it is good for the mitigation effort, and all my collegues do”. This brings me onto the subject of how trust is important for the legitimacy of a policy, and the legitimacy of the authorities to implement such policies in general, but also toward the petroleum indutry in particular. In addition, communication on climate science and climate policies reaches the public through the media (Eide *et al*. 2014), which means that it is necessary to look into what effects the media have on social and political trust.

2.4.2 Trust, the media and the authorities

Earlier we saw that a trustworthy state or institution has more legitimacy within the citizenry than one that is not trustworthy (Levi et al. 2009: 354). This implies that the citizens trust (or at least that they do not openly distrust these institutions (Hardin 1998)) is indeed important to the functioning of state institutions. We have also visited the notion of legitimacy in realtion to policy making.

It is hard for the government to legitimate a policy that holds little support among the public. This is particularily true for the issue of climate change. Nisbet (2009) finds that the American government, with the then newly elected president Obama in the lead, wished to implement more climate change mitigation policies, but that this was difficult without the engagement from lay people. He further shows that the lack of engagement and the politication of the climate change issue (where republicans do not take climate change seriously, whereas democrats do) is partly down to how trusted sources of information frame the climate change issue (Nisbet 2009: 18-20).

As we saw just above, the authorities and NRK are trusted sources of climate change information, in addition to the IPCC (Austgulen 2012). When we also know that many Norwegian newspapers cover the issue in accordance with scientific consensus (Duarte 2010), it is easy to imagine that climate change mitigation would have high priority among both lay people and the authorities in Norway. Still, it does not. Most Norwegians get their information regarding climate change from the media (Eide *et al*. 2014), and the media are important gatekeepers that play a descriptive, but also a normative, role in the debate about climate change (Høiby & Ytterstad 2014: 66). Therefore, it is reasonable to believe that the media will influence peoples trust in the governement, and hence the legitimacy with which they are able to govern on certain issues.

A fair bit of the research in this field has revolved around the thesis of “video malaise”, a term originally coined by Michael J. Robinson, where the decline of trust in public and political institutions and the increase in political cynicism where connected to the rise of television as a mediator of political news (Holtz-Bacha 1990: 73). Contrary to this thesis, however, are findings from Germany. Holtz-Bacha (1990: 79) finds no connection between deteriorating political trust and the content of political media, but entertainment content, on the other hand, have a detrimental effect on political trust.

Newton (1999) finds similar results in the UK. Paying attention to the news serves to engage Britons more politically, regardless of whether they read the newspaper or watch the television news. Reading a broadsheet newspaper is significantly more tied to mobilization on political issues than reading a tabloid newspaper. Reading a tabloid was not significantly different from not reading a newspaper at all, although it was not specifically tied to political malaise either. Broadsheet readers were also less cynical and more trusting than the rest of the respndents (Newton 1999: 589, 592). Further, watching a lot of general televison is slightly associated with less political mobilization, but there is no evidence of political malaise although there are slight evidence of cynicism and low subjective efficacy (Newton 1999: 592). Newton (1999: 598) concludes that it is the content that matters in its mobilizing effects, not the media form.

The discussion of video or media malaise does not end there, however. Mutz & Reeves (2005) find that following political debates on TV may significantly lower Americans political trust, because of the behaviour of the participants in the debate. People respond negatively to incivilities in political debates broadcasted on TV. It is, however, difficult to say whether behaviour such as this have a negative effect on trust also through other types of media due to the significant differences between, for instance, TV and newspapers (Mutz & Reeves 2005: 13).

In her 2007 article, Mutz shows television broadcasted political debates enhance peoples knowledge about politics and also their knowledge of the arguments used by people who maintain the opposing view to ones own. However, if these debates are characterised by incivil behaviour and close-up camera angles, the viewers would take a less understanding and accepting view of the oppositional arguments, and they would like and respect the proponents of these views less. These findings are of importance here because less respect for the opposition may result in lowered trust if the opposition happen to be the ruling party. If such is the case the legitimacy of any given policy may become an issue (Mutz 2007: 633). Also, Mutz' findings support the notion of motivated reasoning in that people seem to selectively perceive the content of what they are viewing: “The perceived

legitimacy of one's own side of a controversy is unharmed by incivility even when it is of the "in-your-face" variety (Mutz 2007: 633).

These studies seem to strengthen the link between the legitimacy of authorities and their policies and trust. Simultaniously it also shows that the media may influence this trust at least to some extent. With these points clarified, it is now time to turn to the variables and the hypotheses that will guide my research toward answers to the overall research question – namely what effects the media have on climate change mitigation policies targeting the Norwegian petroleum industry.

2.5 Variables and hypotheses

In order to answer the research question about what effects various newsmedia have on public opinion about climate change mitigation policies targeting the petroleum industry, I have chosen to conduct a quantitative analysis. To be accurate, I will conduct four analyses where I assess the impact of the *same* independent variables upon four *different* dependent variables. These assessments will be compared, and this comparison will hold the conclusion to this thesis.

In this section I will first present the dependent variables: First, support for taxation of exploratory activities in the petroleum industry. Second, support for the petroleum production rate. Third, worry about climate change, and finally, support for general reduction of emissions of greenhouse gases. The reason for using four different dependent variables is to provide a richer, or thicker and more nuanced answer to the research question, in line with what a case study usually, but not always, entails (Yin 2014: 19).

Second, I will present the independent variables and the hypothesised effect they will have on each dependent variable in turn. These variables are related to the themes of political affiliation, the media and trust. At last I will include the control variables, which are the usual suspects: Age, income, education and gender.

2.5.1 Dependent Variables

Opinions about taxation on exploration and test drilling

In order to see how opinions about taxation of the exploration and test drilling are affected by the media, I have chosen a dependent variable that measures people's support for such a policy. The

dependent variable is derived from two questions measuring the respondents support for further taxation of the petroleum industry with regards to the search for and development of *new* petroleum reservoars. The text preceding the question is: “We will now ask your opinion on a few measures that have been suggested in order to mitigate climate change. Many experts believe that these measures will work. Yet, there is some conflict as to whether these are good measures to implement. How positive or negative would you say you are to the measures mentioned here?” (Ivarsflaten *et al*. 2014: 56, my translation). The following questions were: *Reduce the tax benefits for petroleum exploration on the Norwegian continental shelf,* and *Intensify the tax regulation for petroleum exploration on the Norwegian continental shelf* (Ivarsflaten et al. 2014: 56, my translation).

This variable is chosen as the dependent variable because it functions as a measure on public support for a climate change mitigation policy, and it specifically targets the petroleum industry. The survey documentation also details that these questions where asked in the context of climate change mitigation (Ivarsflaten *et al*. 2014: 56).

As a concrete policy proposal, it is possible that it is easier for people to take a stand, rather than using a more abstact measure. To most Norwegians the petroleum sector is important, not only financially but also cultrally. Most people avoid discussing the Norwegian petroleum industry's contribution to global warming and climate change, and to many people there are significant values attached to the industry – in terms of living standards, welfare, etc. (Norgaard 2011).

It should be noted, however, that this variable is not straight forward to use. The taxation rules for the petroleum industry are intricate, and encompass exploration and extraction activities of resources under the seabed. Leading the Norwegian state to earn about 78% tax revenue on petroleum activities (KPMG 2015). However, costs in relation to exploration is more or less paid for by the government through transcriptions. The argument for such an arrangement is that it would generate more activity and more employment (KPMG 2015).

To put more taxes on the petroleum industry in the phase of exploration and test drilling may give higher income to the Norwegian state treasury, especially at times where the prices on petroleum products are high and such activities will still pay off in the long run. If the petroleum prices are low, on the other hand, it is less likely that oil companies will initiate further exploration, because the revenues will not be high enough. Thus, in the last scenario the taxes will be good for the global climate, but will probably hurt the economy in two ways: First, government income will drop due to less activity on the Norwegian continental shelf, and second, possible stagnation in the Norwegian economy as a whole due to the recession in this sector alone.

Opinions about petroleum production rate

The previous dependent variable is more or less targeting my research question. However, the tax rules that the petroleum industry is subject to is, as we have seen above, relatively complex. For this reason, I have decided to conduct 3 more analysis. This will add weight to the first analysis, and also help verify the findigs. Therefore, a measure on whether people believe that the Norwegian petroleum production rate should increase, stay at todays level or decrease has been chosen. The original question was posed as follows: *Which of the following statements do you mostly agree with?* With the following possible answers: 1. *Norway should continue producing petroleum at todays level*. 2. *Norway should produce less petroleum than today*, and 3. *Norway should produce more petroleum than today* (Ivarsflaten et al. 2014: 50).

Worry about climate change

In order to better understand how the news media influence public opinion on mitigation efforts related to the petroleum industry, it is useful to assess its impact on how worried people are about climate change. If the media variables have a similar impact on worriedness and support for climate change mitigation efforts it would strengthen my analysis. Using this variable as a dependent can be viewed as a confirmatory exercise, with a media twist, to form a firm base to build the analysis of main interest. Also beginning in this end, may shed some light on how important motivated reasoning is in the relationship between climate change beliefs and beliefs about the Norwegian petroleum industry. The respondents were asked *How worried are you about climate change?* (Ivarsflaten *et al*. 2014: 50, my translation).

Opinions on a general regulation of emissions

At last, I will conduct an analysis with a dependent variable that measures support for general regulation of CO2 emissons among the industry in Norway and Europe. As we have seen, there is empirical evidence that shows that the petroleum industry holds a significant position in Norway (Norgaard 2011, Gloppen *et al*. 2014). In order to assess the impact of media upon public opinion in relation to the petroleum industry, I also need to assess whether the media have similar effects upon other mitigation policies. This dependent variable is also constructed by merging to questions.

These two questions shared the same introduction as the questions making up the measure on opinions about taxation on petroleum exploration, but the statements after where: *Instensify the regulation on how much CO2 the industries in Norway and Europe may emit by cutting the total number of quotas these industries are aloud to use*, and *Intensify the regulation on how much CO2 the industries in Norway and Europe may emit in total* (Ivarsflaten et al. 2014: 54-55).

2.5.2 Independent variables

Media

Media constitutes the main source of information about climate change for Norwegians (Eide et al. 2014: Ryghaug *et al*. 2011: 784). In addition, the media is also the most important source of information about climate change issues (Eide *et al*. 2014: 11). The media is thus quite likely to have an impact upon public opinion on climate change mitigation policies targeting the petroleum industry. In order to measure this impact, I have included three variables that measure how often the respondents use TV-news, newspapers (in paper format, not online), and twitter, respectively. This will provide an inkling as to whether there are any differences in the effect by different media sources. TV and newspapers reaches the largest audiences (Eide et al 2011). Twitter is included in the analysis on the grounds that social media is becoming more and more important in peoples everyday lives, and because social media are part of a "personalised politics" trend where collective action has been replaced, in many respects, by personalised action through social media (Bennett 2012). Also, twitter has been frequently used in relation to climate change politics and civic action (Segerberg & Bennett 2011). The variables are derived from the question *How often do you use the following media in order to stay updated on the news?* (Ivarsflaten *et al*. 2014: 116, my translation). And thus, I have included measures for TV-news use, newspaper reading and Twitter. In light of the theoretical perspectives and empirical findings discussed earlier, I have arrived at the following hypotheses:

H1: The use of TV news to stay updated on the news will have a positive effect on all the dependent variables.

H2: Reading the newspaper will have a positive impact upon all the dependent variables.

H3: Twitter-use has a positive impact on worry about climate change and support for the proposed mitigation policies. It has a negative impact on opinions regarding the petroleum production rate.

Trust

Trust is important to the formation of public opinion, but public opinion also depend on trust. It has been shown that trust in climate change scientists and in the media is important for what people believe about climate change (Leizerowitz *et al*. 2012), and that trust is important for the legitimacy of implemented climate change policies and for the legitimacy of the authorities in general. Since I am looking at climate change as a collective action problem, which is dependent upon both trust and reciprocity in order to be solved, I have chosen to include three measures of trust: The first is derived from the question *How high trust or distrust do you place in the following institutions and actors?* (Ivarsflaten et al. 2014: 39, my translation), and measures trust in the Norwegian cabinet. The measure of social trust is based on the question *Would you say that, in general, most people can be trusted, or that one cannot be to careful in one's dealings with others?* (Ivarsflaten et al. 2014: 48, my translation). The last measure of trust, is one that targets the Norwegian political system as a whole, as it measures beliefs about one's own opportunities to influence politics. The measure is built on this question: *Look at the statements below. To what extent do you agree or disagree with them?,* followed by *People like me may cast a vote, but there is nothing else we can do in order to influence politics* (Ivarsflaten et al. 2014: 47-48). I believe these variables will influence the dependent variables in the following way:

H4: High levels of interpersonal trust will have a positive impact on all the dependent variables.

H5: Trust in the government will have a positive impact on all the dependent variables.

H6: Believing that one cannot influence the political scene in other ways than by voting, will have a negative impact on all the dependent variables.

Political values

Based on previous research, there is pretty strong evidence pointing to motivated reasoning as an explanation to the contrast between the scientific consesus on *anthropogenic* climate change, and the lack of action both at the national but also at the individual level. Motivated reasoning is partly culturally embedded, and partly political. It is tied to which personal values and goals an individual possess (Kahan *et al*. 2011, Norgaard 2011, Norgaard 2006). In this thesis, I will focus on the political, by using *Which party did you vote for in the parliamentary election?*, followed by 10 alternatives as a variable (Ivarsflaten *et al*. 2014: 25, my translation).

H7: The variable will impact the climate change variables positively, and the production rate variable negatively.

2.5.3 Control variables

The control variables included in this study are socio-demographic variables that are known to have a significant impact upon the formation of opinion, particularily in relation to climate change. In addition, it is assumed that their inclusion will contribute to the overall fit of the model.

Age

Earlier research have showed that younger people tend to be more worried about climate change, than older people (Poortinga *et al.* 2011: 1017, 1019, Hamilton 2011: 237). Thus, I make the following assumption:

H8: Age have a negative impact worry about climate change, and support of the proposed mitigation policies. Age will have a positive impact on opinions about the petroleum production rate.

Gender

According to previous research, women tend to be more worried about climate change than men (Poortinga *et al*. 2011: 1017, Hamilton 2011: 236). Therefore gender is included as a control variable, and gives the following hypothesis:

H9: Gender will impact worry about climate change, and the mitigation policies negatively, but will a positive effect on opinion about the petroleum production rate.

Education

Previous research has shown that education is important, but that it does not necessarily change your mind if you are predisposed to a certain opinion (Hamilton 2011, Poortinga *et al*. 2011: 1017, 1019). My hypothesis in this regard is:

H10: Education have a positive impact on worry about climate change and support for both mitigation policies. Education has a negative impact on opinions about the petroleum production

rate.

Income

Income has proved to have an effect on opinions on climate change in previous studies (McCright & Dunlap 2011: 168-169). It is possible that how much one earns also shapes ones values and adherence to political ideology - higher income may lead to adherence to more conservative or individualistic values, and thus my hypothesis is:

H11: Income has a negative effect on worry about climate change, and support for the mitigation proposals. It will affect opinions on the petroleum production rate positively.

Table 2-1: Summary table of the hypotheses

Dependent variable	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**	**H8**	**H9**	**H10**	**H11**
Worry	+	+	+	+	+	-	+	-	-	+	-
Production rate	+	+	-	+	+	-	-	+	+	-	+
Tax	+	+	+	+	+	-	+	-	-	+	-
Emission	+	+	+	+	+	-	+	-	-	+	-

2.6 Summary

In this chapter I have first mapped out the concepts that are important for the understanding of this study. Trust is conceptualised as an expectation, that may influence public opinion or be influenced by public opinion. Trust is important for the legitimacy of a policy, but also for the entire regime. Further, in my concept of public opinion, it is seen as a process, and this process is influenced by a large number of factors, such as age, gender and education. But also cultural and political influences are very important for how issues are perceived and ultimately what individuals think of them. The media are important mediators of messages, opininons and events. But they are also gatekeepers that construct the politcal and public agenda. How an issue is (re)presented in the media may have strong bearing on what we think of that issue.

My theoretical framework shows how various news media may matter in the shaping of public opinion on climate change issues by linking it to the notions of motivated reasoning and collectively organised denial. I am drawing on previous work that specifically look into how climate change

issues and the Norwegian petroleum industry is made out in the media. My theoretical framwork also incorporates a more general account of trust, by showing how political and social trust matters for the legitimacy of any climate policy the authorities seek to implement. In addition, my framework points to ways the media may affect trust (particularily political trust) by drawing on previous research into the media malaise theory.

At the end I have also presented the variables I am going to use in the analysis, and also the hypotheses that will guide the analysis toward answering my research question regarding the effects of various news media on public opinion on climate change mitigation policies targeting the petroleum industry.

Chapter 3

A quantitative approach to the assessment of media impact on public opinion

3.1 Introduction

This chapter is devoted to the methods I will use in my search for answers to the research question. Analysing the impact news media have on public opinion with regard to climate change mitigation policies targeting the petroleum industry can be done in several ways, but a case study of Norway based on quantitative data has been chosen.

In this chapter I aim to, first, explain why I chose a quantitative analysis based on survey data as the method of choice along with a discussion of some relevant pitfalls that may hamper a quantitative study. Second, I will present and discuss the Norwegian Citizen Panel data, before I lay out the operationalization of the variables.

3.2 Data

Being interested in what effects the media have on public opinion, public opinion being a collective opinion shared between individuals and groups of individuals (McCombs *et al*. 2011: 2-3), it makes sense to study individuals in order to establish the effects various news media have on the forming of public opinion

Such data was of relatively easy access to me, through an ongoing online survey project between University of Bergen, the UNI Rokkansenteret and several institutes at the Faculty of Social Sciences at the University of Bergen called the Norwegian citizen panel (Høgestøl & Skjervheim 2013: 2). The idea is to establish a panel of citizens, representative of the population, in order to conduct surveys and survey experiments for social scientific purposes.

3.2.1 Data collection

The data used in this analysis is from the first wave of the Norwegian Citizen Panel (Ivarsflaten

2014). The unit of analysis is, as insinuated above, the individual – Norwegian citizens above the age of 18. The survey is conducted in Norway, with counties as the geographical unit (Ivarsflaten *et al*. 2014a: 4)

The reqruitment process started with the drawing of a large intitial sample, in the end consisting of 24 942 potential panel members over the age of 18, which together where representative of the population. The sampling was conducted by Evry from the Norwegian National Population Registry, on behalf of the Norwegian Tax Administration after the necessary permissions where obtained (Høgestøl & Skjervheim 2013: 2-3).

Panel members were recruited per post. First by a letter containing a detailed description of the project and how to participate, later a reminder was sent as a postcard to those who had not logged on, completed the survey, or had not provided their e-mail address. From the gross sample, 4905 surveys were completed (Høgestøl & Skjervheim 2013: 4).

In the final sample there are som discrepancies regarding the representativeness. Here I only comment on what is relevant to my thesis. The main challenges were first of all access and ability to use the internet – which is connected to age. Second, the motivation and interest of the respondents is always an issue (Høgestøl & Skjervheim 2013: 5).

3.2.2 Representativeness

Overall, younger (18-29 years of age) and older (60 years of age and older) are slightly underrepresented, while the middle age group is over represented. The under representation of the older age group can be explained by the way the survey was conducted. Increasing age makes it slightly less likely that one is accustommed to the use of internet.

Women are slightly over represented overall, but not in every subgroup.

There is a systematic over representation of people with higher education within every subgroup. This is probably due to this groups overall interest in politics and public issues (Høgestøl & Skjervheim 2013: 6).

Due to these biases, both Høgestøl & Skjervheim (2013: 8) and Ivarsflaten *et al*. (2014a: 4) recommends the use of weights. I have decided to heed this advice to some extent. All of the four major models in chapter 4 has been tried with weights, but the differences between weighted and

unweighted models are so small, that I have chosen only to report the unweighted models in this thesis. The weighted models can be seen in the appendix to chapter 4.

3.3 Operationalization and descriptive stats of the variables

In the previous chapter I explained the need for four different dependent variables - the dependent variable I wish to focus on is not ideally suited for an analysis on its own, due to a very complex political background. I wish to use the same independent variables and controls in all four analysis, but I will not, however add the variables used as dependent variables in any of the other analysis. The reason for this choice is that I fear they will "steal" the lime light, and thus obscure the effects that I am wanting to study. In this section I will discuss my choice of type of regressions.

3.3.1 The dependent variables

Worry about climate change

The variable describing how worried Norwegians are about climate change. It is derived from the question *How worried are you about climate change?*, (Ivarsflaten *et al*. 2014: 50, my translation), to which the respondents could choose between 5 categories. These were coded 1-5, where 1 is "very worried", 2 is "worried", 3 is "a little worried", 4 is "very little worried ", and 5 is "not at all worried". There was also a sixth category called "not answered". In my dataset I recoded this into missing values so that they where omitted from the analysis. I have recoded and dichotomised the variable in order to be able to conduct a binary logistic regression. The categories 1, 2 and 3 are merged and then recoded to 1, and the categories originally coded 4 and 5 are are merged, and then recoded to 0.

There are pros and cons in the use of a dichotomised dependent variable, particularily connected to the dichotomisation itself. In this case, the variable is not a natural dichotomy, such as gender. It has 5 distinct categories, that are easily ranged, which opens up for an ordinal logistic regression (Fullerton 2009). Using such an approach would have enriched the analysis by telling us, for instance, in which categories of the dependent variable the various media have more or less impact. However, since the purpose of this analysis is to see what effects the news media have on the level of worry in general, and if these effects are similar to the effects in the other analyses, I decided that the loss of information by dichotomising the variable was not too great compared to the more

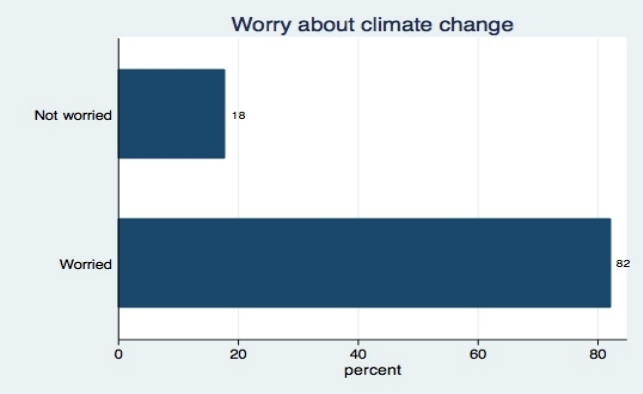
difficult interpretations of the results rendered from the multinominal logistic regression when the information rendered from the binary logistic regression is what I need in order to compare the results across different models.

Dummy variables are also a neat in that they describe qualitative phenomena (Midtbø 2012: 43), and are often used in the social sciences (see for instance Levi *et al*. 2009). Also, since the analysis of these dependent variables are of an exploratory nature, I argue that, at the moment, general knowledge about what effects the media, political and social trust have on opinions about climate change is needed, and that detailed knowledge should be the next step.

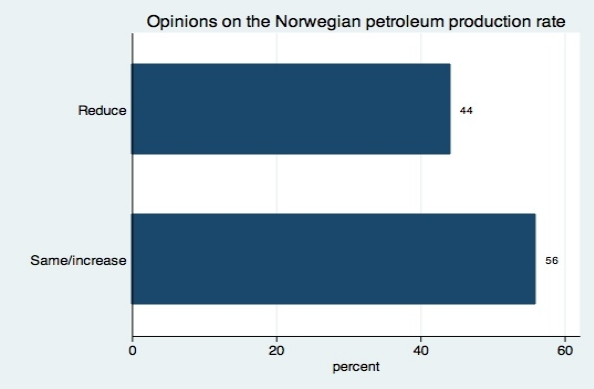
As can be observed in figure 3-1 below 82% of the respondents say they are worried about climate change. This constitutes a large majority. In table 3-1, it may be observed that the variable has a negative lopsidedness, and a lightly enlarged kurtosis. This is no surprise, given the large majority that are worried about climate change (Midtbø 2012: 60). This deviation from the normal distribution can also be seen graphically in the appendix to chapter 3. Although it is an advantage that the variable does not deviate from the normal distribution in a statistical analysis, it is not a premise, and since the kurtosis has not yet reached the critical level of 10 i choose to ignore the issue (Midtbø 2012: 60, 71). Also, there was not really a good alternative transformation (see appendix to chapter 3). Therefore I have chosen not to transform this variable.

Figure 3-1:

A)Norwegian worry about climate change



B) Opinions on production rate



Opinions about the Norwegian petroleum production rate

This variable is discribing what Norwegians think about the petroleum production rate. It is derived

from asking people which statement they mostly agree with. The first being "Norway should continue to extract the same amount of oil as we do today", coded 1. The second statement is "Norway should extract less oil than we do today", coded 2. The third statement is "Norway should extract more oil than we do today", coded 3. In addition, there is a fourth category which is coded 97, which is the "not answered" category (Ivarsflaten et al. 2014: 50, my translation).

In order to be able to conduct a binary logistic regression, I have recoded the variable to a dummy variable, where the category originally coded 2 is recoded to 0, and the categories originally coded 1 and 3 are are merged, and then recoded to 1. The "not answered" category is recoded to missing values and will be omitted from the analysis.

As the pros and cons of the use of a dichotomised dependent variable and the binary logistic regression is discussed under the operationalisation of the previous dependent variable, I need not repeat it here. Instead, I procede to the descriptive stats.

As can be observed in figure 3-1 above, most of the respondents (56%) still want the petroleum production rate to stay at the same level as today or increase. This variable also shows a negative lopsidedness (see table 3-1, the two rightmost coloumns). Here too, there is a deviation from the normal distribution, but it is still possible to procede without such normality (Midtbø 2012: 71). Also, there is not really a good alternative transformation (see table 3-2 in the appendix to chapter 3). Therefore, I have chosen not to transform this variable.

Table 3-1: Descriptive stats for the dependent variables

Variable name	Mean	Median	Std. dev.	Number of obs.	Skewness	Kurtosis
Worry about climate change	0.82	1	0.38	4734	-1.68	+3.81
Petroleum production rate	0.86	1	0.50	4665	-0.24	+1.06
Support for tax	+4.24	4	+1.47	2249	-0.13	+2.67
Support of regulation	+5.38	6	+1.26	2296	-1.08	+4.39

Support for taxation of the petroleum industry's exploration ventures

The variable measuring attitudes towards or support for heavier taxes on the exploration side of the petroleum industry is comprised of two variables, which originally were part of a survey experiment (Høgestøl & Skjervheim 2013: 9). As I explained in the previous chapter, this measure is quite

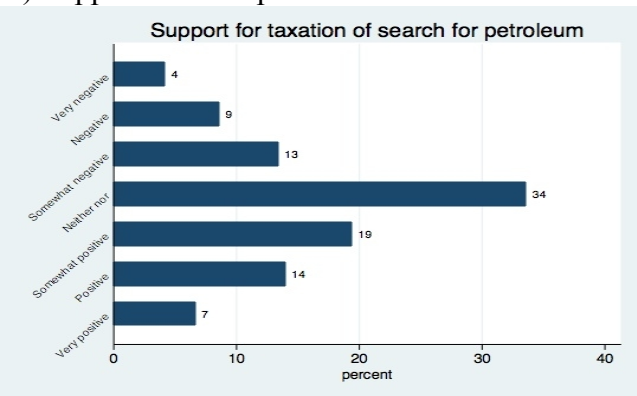
complex, which is why I argue the need for four separate analysis. The other three models will serve as verification. These two variables are derived from two questions posed to two different segments of the population. These questions had the same meaning, but they were posed slightly differently, in order to see whether people responded differently to them (see previous chapter for the wording of the questions). I merged the two variables, which also leaves me with a larger N for the analysis, which is preferable for one reasons in particular: It lowers the chances of certain statistical errors (Midtbø: 114).

The new variable is coded 1 for "very negative", 2 for "negative", 3 for "somewhat negative", 4 for "neither nor", 5 for "somewhat positive", 6 for "positive", and 7 for "very positive". All other values are coded to missing, in order to remove them from the analysis. As can be observed in table 3-1 above, the average answer (4.24) is slightly toward the positive attitude, and the categories 5-7 combined reveal that 40% of the respondents have a positive attitude toward the suggested tax, whereas 26% harbour a negative attitude (see figure 3-2 below). There is a rather large middle category (34%) that do not take a stand on this issue. This could be because of the complex nature of the question. As was outlined in chapter two, such a tax may lead to reduced activity on the Norwegian continental shelf, which could possibly reduce global emissions of greenhouse gases, but may also prove to have consequences that are affecting employment rates etc (see chapter 2). So it might be that people are not able to take a stand on the issue up front.

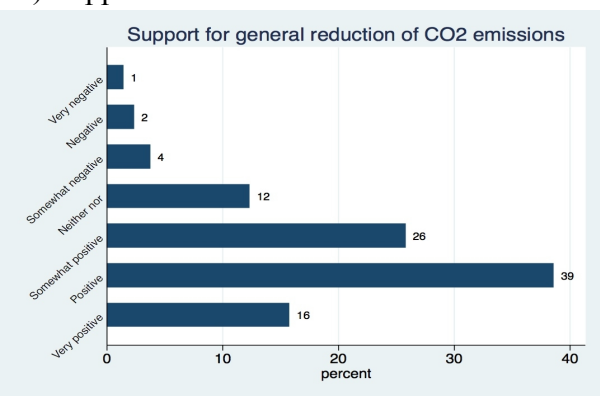
This variable also deviates slightly from the normal distribution, which may be observed in the two rightmost coloumns of table 3-1. The distrubution is slightly left-leaning, which may be observed in graphic in the appendix to this chapter. Seeing as it is an advantage that a variable does not deviate from the gaussian distribution in a statistical analysis, but not a premise (Midtbø 2012: 71), I have decided to do nothing about it given that the deviation is quite small (Midtbø 2012: 60).

Figure 3-2

A) Support for new petroleum tax



B) Support for reduction of GHG emissions



Support for a general regulation of CO_2 emissions

This variable measures attitudes towards or support for a more general reduction of greenhouse gases. This variable was originally two different variables originally used in a survey experiment to test attitudes toward emission trading systems (ETS) among Norwegians (Høgestøl & Skjervheim 2013: 9). The questions posed to two separate segments of the population had the same meaning, but were posed in two slightly different ways, as showed in chapter 2. There turned out to be significant differences between the two groups, and I argue that it is important to be aware of this. Still, I do not think it will have any direct bearing upon the analysis I am going to conduct. Therefore, I merge these two variables. An additional advantage is a larger N for the analysis, which is preferable for reasons stated in the previous section.

The merged variable measuring support for a general reduction of CO_2 emissons is coded 1 for "very negative", 2 for "negative", 3 for "somewhat negative", 4 for "neither nor", 5 for "somewhat positive", 6 for "positive", and 7 for "very positive". All other values are coded missing, in order to remove them from the analysis. The average answer is 5.38, which is somewhere between "somewhat positive" and "positive", as can be observed in table 3-1 above. A clear majority of the respondents harbour a positive attitude toward this policy proposal. 81% of the respondents fall into the categories 5-7, whereas only 7% maintain a negative attitude. 12% are indifferent or unable to take a stand. The middle category here could have been defined better (which also goes for the measure for support for the petroleum tax). "Neither nor" is a category that invariably opens up for interpretation. It is not impossible to say whether the respondents are indifferent to the proposal, whether they do not know what to answer because they do not understand, or if they are stalling – that is understanding, but waiting for a "better" solution.

This variable deviates more from the normal distribution, than the other dependent variables. This can be observed in the two rightmost coloumns of table 3-1 above. The distrubution is clearly left-leaning, which may be observed in graphic in the appendix to this chapter. Using the Stata command "ladder" shows that a square transformataion of the varibale could absolve the problem to a (very) limited extent (see table A3-4 in the appendix). Since this transformation still renders the deviation from the Gaussian distribution statistically significant, I have decided to leave it be (Midtbø 2012: 71).

3.3.2 The independent variables

Watching TV news

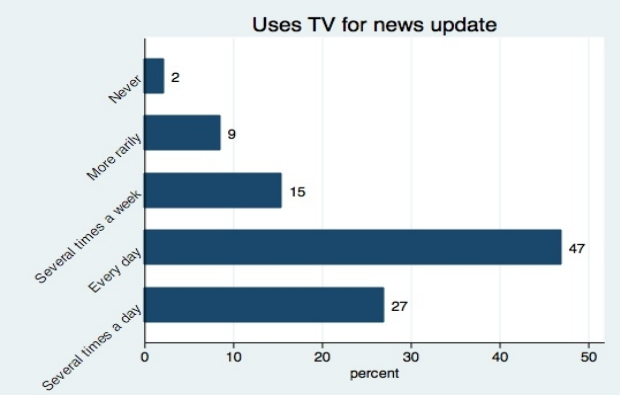
This variable is derived from the question “How often do you use TV in order to stay updated on the news?”. The variable is coded 1 for "never", 2 for "more rarily", 3 for “several times a week”, 4 for “every day”, and 5 for “several times a day”. The category of “non-response” is recoded to missing values, and thus omitted from the analysis. This order of the category is the reverse of the original, but I find it is easier to interpret the findings in the analysis when more is actually more.

A rather large majority of the respondents watches tv every day or several times a day. Combined, these two categories make up 74% of the respondents, of which 47% say they watch the news every day (see figure 3-3). This is also confirmed by the mean: the average amount of TV-news watching was 3.88, so almost every day (see table 3-2).

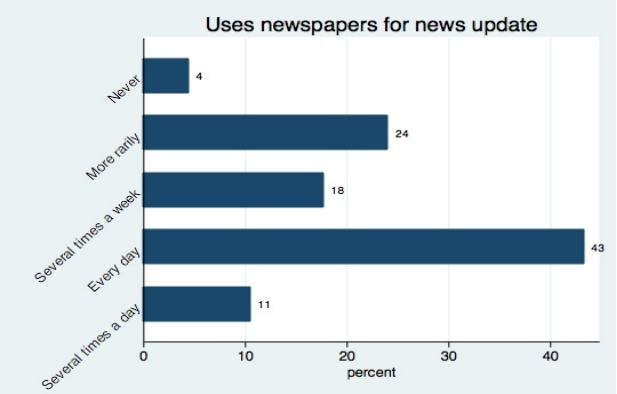
Again, the variable deviates slightly from the Gaussian distribution, and again, I have decided not to transform it. First of all, the deviation is quite small (see table 3-2). Second, there are not really any good alternatives (see table A3-5 in the appendix). Since this is not a premise for the analysis, I choose to leave is as it is (Midtbø 2012: 60).

Figure 3-3

A) TV-news use



B) Newspaper reading



Reading newspapers

Derived from the question “How often do you read newspapers to stay updated on the news?”, this measure is coded 1 for "never", 2 for "more rarily", 3 for “several times a week”, 4 for “every day”,

and 5 for “several times a day”. The category of “non-response” is recoded to missing values so as to omitt it from the analysis. The variable was originally coded in the reverse order.

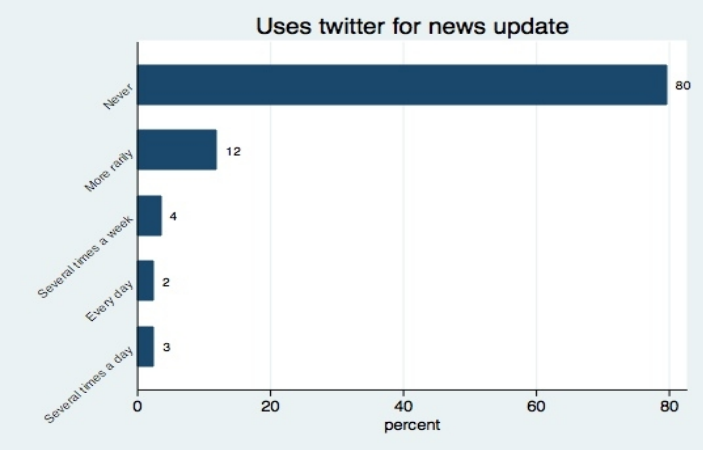
As can be observed in figure 3-3 B, a little over half of the respondents read newspapers every day or more. 28% of the respondents says they rarily or never read newspapers. The average newspaper reader reads the paper somewhere between several times a week and every day (3.31, see table 3-2).

This measure too, deviates slightly from the Gaussian distribution. However, the deviation is small (see table 3-2), and there really are not any good alternatives (see table A3-6 in the appendix). Since adherence to the Gaussian distribution is not a premise for the analysis, I choose to ignore the issue (Midtbø 2012: 60).

Using Twitter

This variable was derived from the question "How often do you use Twitter to stay updated on the news?", and it is, same as TV-news use and newspaper reading, coded 1 for "never", 2 for "more rarily", 3 for “several times a week”, 4 for “every day”, and 5 for “several times a day”. The category of “non-response” is here also recoded to missing values so as to omit it from the analysis. The variable was originally coded in the reverse order.

Figure 3-4: The use of Twitter



A large majority, 80%, of the respondents never uses Twitter as a source of news, and only 5% report that they use Twitter in this capacity every day or several times a day, see figure 3-4, above.

This creates a heavy lopsidedness on the variable, which can be seen in table 3-2 below, where the level of kurtosis sky rockets. Here, it has reached the critical level of 10, and it is recommended that one does something about the problem. (Midtbø 2012: 60). However, there does not seem to be a transformation that ameliorates the problem (see appendix, table A3-7), so I prefer to keep it as it is. One should, however, keep this slant in mind while interpreting the results of the analysis.

Table 3-2: Descriptive stats for the explanatory variables

Variable name	Mean	Median	Std. dev.	Number of obs.	Skewness	Kurtosis
TV	3.880209	4	.9718018	4583	-.8804403	3.43967
Newpaper	3.313909	4	1.083252	4479	-.360011	2.134535
Twitter	1.36321	1	.8657356	4050	2.778985	10.44102
Trust in Government	4.767184	5	1.327795	4510	-.8192711	3.095221
Interpersonal trust	6.631174	7	2.237635	4677	-.761089	3.364308
Political influence	3.578298	3	1.799375	4700	.3288639	1.884873
Political view	1.91401	1	1.000047	4140	.2697397	1.250164

Interpersonal trust

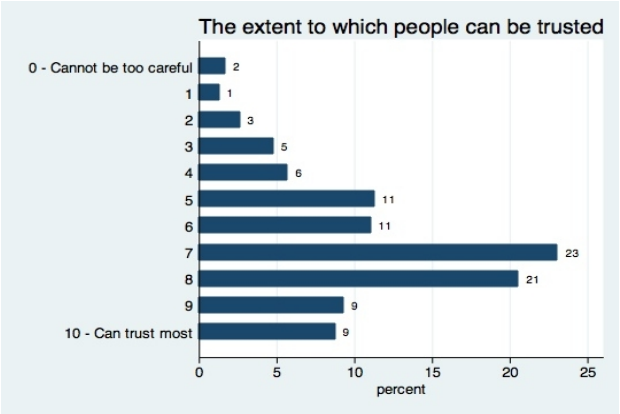
To measure interpersonal trust, an 11-point scale was used. Respondents were asked to tick off on this scale from 0-10 how much they believed other people can be trusted, where 0 represented “One cannot be to careful in relation to other people”, i.e. no trust, and 10 represent “most people can be trusted”. In this case, I have kept the original variable, save the category of “non-response” which I recoded to missing values so as to omit it from the analysis.

As can be seen in figure 3-5 A) below, a majority of the respondents are high trusters. The middle category is category 5, and 73% of the respondents have given their level of trust a higher score than that. 18% fall into the two highest categories, and only 17% fall into the categories 0-4, which indicates low trust. Thus, Norway is a high trust society, which is a confirmation of other research (Rothstein & Uslaner 2005: 42).

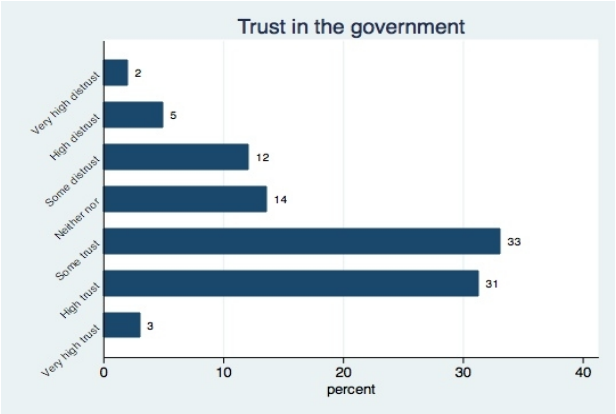
In table 3-2 we may observe that the measure suffers from a lopsidedness. This is also observable in figure 3-5. I have chosen to leave it as it is, because there are not any transformations that can alleviate the issue in a satisfactory manner, and also that adherence to the Gaussian distribution is not a premise for the later analysis. (Midtbø 2012: 71).

Figure 3-5:

A)Interpersonal trust



B) Trust in the government



Trust in the government

To measure trust in the government, people were asked to define their trust in the government according to an eight point scale ranging from 1, being "very high trust", to 7, being "very high distrust". The eighth category is "do not know". I have reversed this scale, due to considerations of interpretation, and also recoded the category "do not know" to missing. This operation lowers the number of observations, but the effects of different levels of trust in the government will become clearer.

In figure 3-5 B) above, we may obeserve that 67% of the respondents places some level of trust in the government. This implies that Norwegians tend to trust the government regardless of who the current incumbents are, although it is reasonable to believe that one places more trust in the government that one has voted for, as one may, conscious or not, place more legitimacy in this government (Mutz: 2007). 19% of the respondents claim to place some degree of distrust in the government.

This measure also suffers from some degree of lopsidedness, but, as can be seen in table 3-2 above, it is not a serious slant. Since the analysis does not require me to do anything about it, I will leave it as it is (Midtbø 2012: 71). In addition there are no transformations of the variable that alleviates the problem (see table 3-8 in the appendix).

Political influence

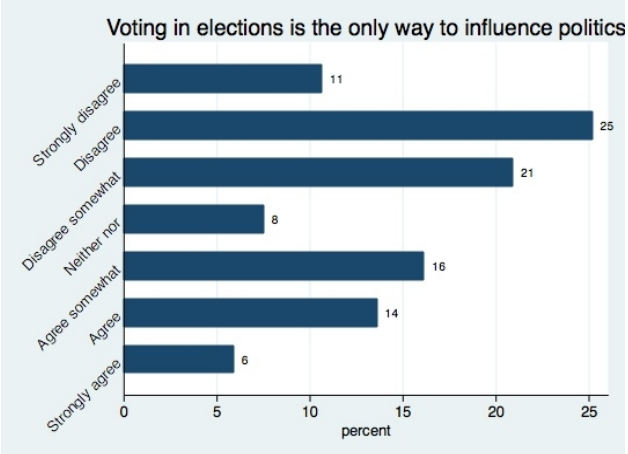
Beliefs about political influence was measured on a eleven point scale, asking people to take a stand to the statement "The only way to influence politics is through voting in elections". The original measure was coded from 1, "strongly agree" through to 7, "strongly disagree" (Ivarsflaten et al. 2014: 47-48). Again, I have recoded the variable to make interpretation of the analysis easier. The result may be found in figure 3-6 A) below. I also dropped the category "not answered" from the analysis, so that the effects of beliefs about political influence could become more clear.

57% of the respondents say they disagree with the statement, whereas 36% say they agree with the statement. 8% are in the middle category "neither nor". As I have discussed earlier, this category is not ideal, because it does not give any ideas as to what the respondents are actually thinking about it.

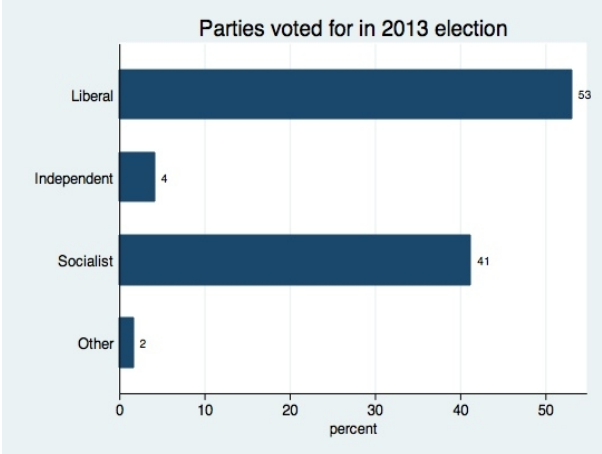
This measure too suffers from a slight slant towards the left, which makes sense according to the distribution of answers. I have not tried to correct this slant, as it small, and that a normal distribution of values on a variable is not a premise for the analysis to come (Midtbø 2012: 71).

Figure 3-6:

A) Voting is the only way to influence politics



B) Parties voted for in 2013 election



Political view

To measure the respondents political view, they were asked which party they voted for in the 2013 election. The categories was each of the parties represented in Stortinget (the Norwegian

parliament), and one additional category for smaller parties. I have recoded this variable so as to reflect the current collaboration in Stortinget, and the political discourse on climate change in the election campaign prior to the election in September 2013 (Gloppen *et al*. 2014: 28-29). This means that the votes for the Conservative party (Høyre), the Progress party (Fremskrittspartiet), the Liberal party (Venstre) and the Christian democrats (Kristelig folkeparti) were all coded 1 and dubbed "Liberal". Only one party was coded 2, and that was the Green party (Miljøpartiet de grønne), which was labeled "Independent". The parties coded 3 for "Socialists" was the Centre party (Senterpartiet), Labour (Arbeiderpartiet), the Socialist Left (Sosialistisk Venstre parti), and the Red party (Rødt). The category of "Other" was kept, and coded 4. A few respondents did not receive this question, and these where omitted from the analysis by a recoding to "missing values".

Let it be clear, however, that this coding is used on the basis of cooperation in parliament, and, to some degree, the respective parties climate change or environmental engagement. I do doubt, quite strongly, that the Centre party, for instance, would accept being called "socialist", even though they do share some of the environmental values of the socialist parties. Whereas the Liberals, who do actually argue a quite progressive environmental policy, would probably loath being put in the same category as the Progress party – who is known for their very progressive petroleum policy (Venstre 2015, Fremskrittspartiet 2015).

In figure 3-6 B) above, we may observe that 53% of the respondents voted for the Liberals, 4% voted for the Independents, and 41% for the Socialist parties. 2% voted for "other" parties.

The variable has a small slant to the left, but again it makes no sense to transform the measure as the transformations will not make any improvement to the variable (see appendix).

3.3.3 Controls

Age

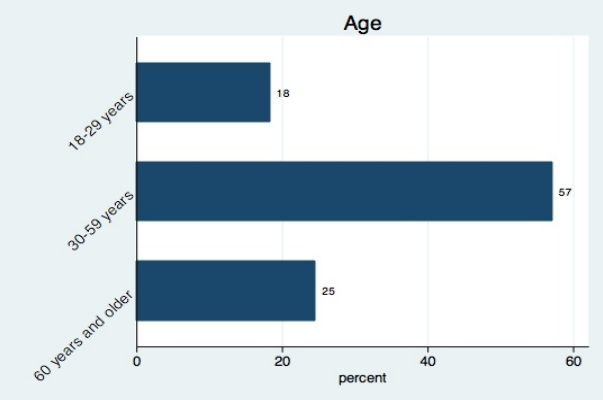
The measure for age contains 3 categories: "18-29 years", "30-59 years" and "60 and older". Here the original variable is used, because it was recommended in connection with the use of weights and the de slight over representation of groups on some of the variables (Høgestøl & Skjervheim 2013: 7-9).

In figure 3-7 A) below, we can observe that 57% of the respondents are between 30 and 59 years of age. 18% are in the younger category and 25% are 60 years of age or older. The variable is skewed

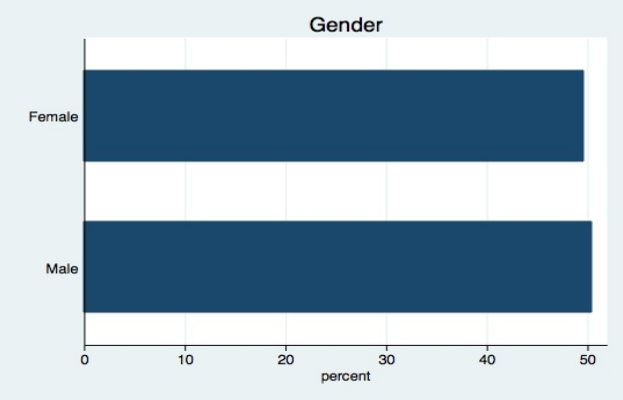
slightly to the left, but I have chosen to do nothing about it, as the deviance is quite small (see table 3-3).

Figure 3-7:

A) Age



B) Gender



Gender

Gender is a natural dummy variable. It was originally coded 1 for "male" and 2 for "female". I have recoded it to 0 for "female" and 1 for "male". Other than that it is unchanged. In figure 3-7 B) we can observe that there is a tiny overrepresentation of men in the population (50.36%). Because of this, the variable is skewed slightly towards the left, as can be observed in table 3-3. But since the kurtosis does not deviate too far from 3 (Midtbø 2012: 60), which is the value that indicates normality, I will use the measure as it is.

Table 3-3: Descriptive stats for the control variables

Variable	Mean	Median	Std. Dev.	Number of obs.	Skewness	Kurtosis
Age	2.062385	2	.6520313	4905	-.0628228	2.343185
Gender	0.5035678	1	.5000382	4905	-.0142715	1.000204
Education	2.420004	3	.6853519	4469	-.7637841	2.406895
Income	629.7497	648.0741	252.0165	4126	.7165032	10.39939

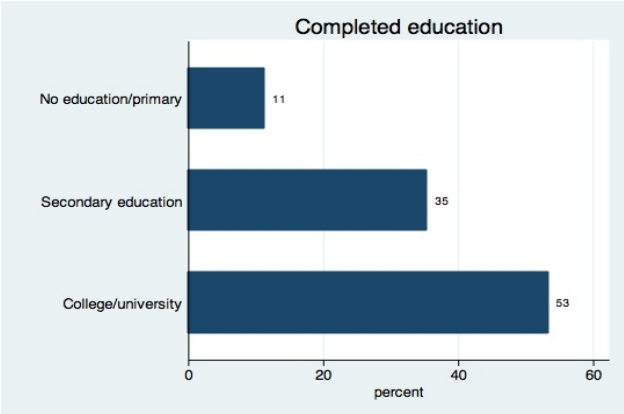
Education

As a measure for education I have used an original variable from the first wave of the Norwegian Citizens Panel. It contains three categories, and was chosen because the adjusted wieghts was adjusted to this variable, among others. In addition it gave fewer degrees of freedom, by having fewer categories. This measure is based on respondents reporting their highest completed education, and as figure 3-8 A) shows, 11% reported no education or primary school only. 35% reported secondary school, and 53% reported completed education at college or university.

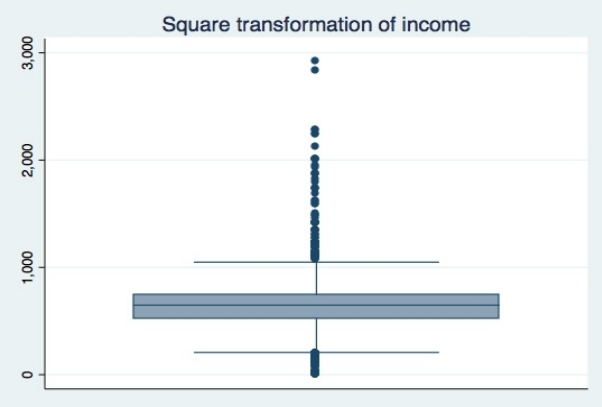
In table 3-3 we can observe that the Gaussian distribution of the measure is slanting slightly to the left, because the mean is somewhat lower than the median (Midtbø 2012: 60), but since the population in the dataset is quite large, this will not constitute a major problem (Midtbø 2012: 61).

Figure 3-8:

A) Completed education



B) Squared transformation of income



Income

This variable constitues of self reported data from the respondents. It consists of how much the respondents claim to earn a year, before tax. The values here were quite spread out, and the kurtosis almost reached a value of 100 (see appendix to chapter 3). After a bit of testing, the best option seemed to be a square transformation. This lowered the kurtosis to a little over 10, as can be seen in table 3-3, so I settled for this.

The average income, after the transformation is just under 630 000 NOK. The median is a little higher, which would normally indicate a slant to the left, but as we see the skewness is indicating a

slant to the right. This is probably due to a few very high values – as can be seen in figure 3-8 B), above. The box plot also indicates the quartiles of the distribution, along with the unusual values. And indeed there are quite a few values, marked by dots, that fall outside the "fences" of the figure. These dots indicate extreme values, and although there are extreme values on both sides of the figure, the most extreme are above the figure.

3.4 Multivariate regression analysis

3.4.1 A cross-sectional study

Case studies are, perhaps, more often guided by a qualitative approach, but seeing as there is no antagonism between a case study and the use of a quantitative method, I have chosen the path of a cross-sectional analysis (Yin 2014: 19). Being interested in public opinion, which is most often studied through public opinion surveys that are representative of a population (see for instance Austgulen og Stø 2013, Lewandowsky *et al*. 2013, Leizerowits *et al*. 2012, Kahan *et al*. 2011), a quantitative approach is the best way to approach the research question, also considering the way my research question is posed (Yin 2014: 9-12).

It would have been interesting to see how public opininon on the issue of climate change and the petroleum industry develops over time and, strictly speaking, one only need data from two points in time to conduct a longitudinal study (Skog 2010: 74). However, some of the variables I have chosen to work with are only part of the first wave. For instance, the second wave also contains media variables, but they measure different things (Ivarsflaten *et al*. 2015). It should be mentioned that the media variables in the second wave of the Norwegian Citizen Panel are more differentiated than the media variables I have chosen to use. Although a few scholars have adviced the use of such differentiated variables (Newton 1999, Holtz-Bacha 1990), I have still decided to use these rather wide "catch all" variables. This choice is justified for reasons of causality: Some of my dependent variables only exist in the first wave (support for taxation of petroleum exploration and support for a general reduction of CO_2 emissions), and logically a cause need to precede a consequence in time (Gerring 2012).

3.4.2 Ordinary least square regression

I will use ordinary least square (OLS) regression as the method for two models, namely the ones

describing support for the proposed climate change mitigation policies: heavier taxation of the exploration activities of the petroleum industries, and a reduction of CO_2 emissions. OLS is a "method for obtaining estimates of regression equation coefficients that minimizes the error sum of squares." (Knoke *et al*. 2002: 174).

However, one of the preconditions for the use of OLS are the intervals between the categories on the dependent variable. Usually, a metric scale is preferable, but ordinal dependent variables can be used as well (Grønmo 2004: 314), particularily if there are several categories (6 or more) on the dependent variable that can be easily ranged (Midtbø 2007: 33). This made OLS regression possible for two out of the four models I will conduct.

If the results from an OLS regression model is to be valid, certain assumptions must be met. The model must be homoscedastic, the residuals of the model must be normally distributed and uncorrelated with each other, and, since the OLS regression predicts linearity, the model must be linear (Midtbø 2012, Skog 2010).

Homoscedasticity

The *Breusch-Pagan test* (BP) has been used to identify any heteroscedasticity (Midtbø 2012: 106-110), and the results are displayed graphically in the appendix to this chapter. As can be seen there, the model describing the support for regulation of CO_2 emissions suffers from this problem. The variance in the residuals are dependent on the variance of the values on the explanatory variables, meaning that the ability of the model to predict the outcome varies with the values on the explanatory variables (Midtbø 2012: 106-107). This is most likey due to a mis-spesification of the model (Midtbø 2012: 109). However, the model depicting the dependent variable of main concern – support for more tax on the petroleum exploration activities – passes the BP-test. Therefore, I choose not to change the model specification, but instead rely on robust standard errors in the model where heteroscedasticity is a problem (Wooldridge 2009: 264).

Normally distributed residuals

There should be about equal chance of over-estimation as of under-estimation of the values in the models, therefore the distribution of the residuals should be symetrical (Midtbø 2012: 114). In the appendix to chapter 3, these distributions are showed graphically. The residuals in the model

depicting support for regulation of CO_2 emissions are *not* normally distributed. This has consequences for the testing of hypotheses because the probability distribution of the parameter estimate will not follow the t-distribution (Skog 2010: 249). However, it is argued that this is not the most important assumption (Midtbø 2012: 114, Skog 2010: 250).

Linearity

To test the linearity assumption of the models I have used Ramsey's regression specification error test (RESET) and linktests (Midtbø 2012: 131). The simple RESET tests do not reject linearity for the models, but including the individual explanatory variables in the tests lead to rejection. The linktest was also ambiguous, as the test statistics are insignificant for both the predicted and the squared predicted values (Midtbø 2012: 131).

Lack of linearity may lead to misleading coefficients as well as misleading standard errors (Midtbø 2012: 130). One possible avenue to try to rectify the models is to transform the variables. However, as I have showed above, there are no transformations that are a great fit. Therefore one must assume that the ambiguity is down the qualitative capacities of the dependent variables, and also of several of the explanatory variables. One may, therefore, find it fruitful to repeat these analyses with an ordinal logistic regression in the future (Fullerton 2009).

Multicollinearity

The models were tested for multicollinearity by using the Variance Inflation Factor (VIF), but this turned out not to be a problem. Resluts can be seen in the appendix to this chapter.

3.4.3 Logistic regression

For the other two models still unaccounted for, worry about climate change and opinions about the Norwegian petroleum production rate, the method of choice is logistic regression.The goal with this analysis is the same as for the other two models: the best fitting, most parsimoneous, and clinically interpretable model that describes the relationship between the dependent variable and the covariates I wish to investigate. However, there are differences between OLS and logistic regression in both the form of the model and the set of assumptions the model must fulfill (Hosmer *et al*. 2013:

1). The logit model is estimated by the maximum likelihood method, which estimate parameter values that chooses the set with the highest probability of generating the sample observations (Knoke et al. 2002: 307).

For the two remaining models I will apply the method of binary logistic regression, which rests on maximum likelihood estimation, and the interpretation of the model is in the form predicted probabilities: odds and oddsratios, which basically means that we measure the effects in odds rather than probabilities. The odds and oddsratios measure the effect in relative terms rather than absolute terms (Skog 2010: 361-367).

The logistic models also rest on some assumptions that must be fulfilled if the results are to be valid. The first is that the shape of the curve from the logistic model gives a correct image of the empirical relationship between the variables. For binary models this can be tested with the Hosmer-Lemeshow test, which assume that the modeled shape is indeed a curve. If the test is significant, the assumption does not hold (Skog 2010: 380-381, 384). In this case the test statistic is not significant for any of the models, and the assumption holds.

The second assumption deals with the autonomy of the observations. I am conducting cross-sectional analyses, hence this assumption is, by definition, fulfilled (Skog 2010: 380).

At last, and analogous to the OLS method, it is assumed that there are not any underlying variables that are neither the cause of the dependent variable nor correlated with the explanatory variables (Skog 2010: 381). The variables and the methods chosen for this study rests on a firm and well documented theoretical framework, which reduces the chance of spuriousness significantly. In addition, all the models used here, are multivariate. This reduces the risk for spuriousness significantly. Finally, there are, as I have showed above, no better functional form to the variables included in the analysis (Hosmer *et al*. 2013: 153). The Hosmer-Lemeshow test will, in multivariate cases, also reveal interaction effects by a significant test statistic (Skog 2010: 423).

3.4.4. Bivariate tabulations and regressions

After analysing the four models, I will compare the effects of the indepenent variables across the four models. In order to explain some of these effects, for instance if my theoretical framework do not readily explain the outcome, some bivariate regressions will be used. In these cases I will stick to the methods already accounted for. As the pitfalls of the different types of regressions are

alreaddy discussed, the testing of the assumptions of these bivariate regressions can be seen in the tables presenting the result in chapter 4.

3.5 Summary

This chapter has been used to present the data from the first wave of the Norwegian Citizen Panel. These data will be used in the four analysis I will present in the next chapter. The variables have also been operationalised, and some space have been used to describe each variable thoroughly. This provides a better understanding for the methods of choice, which are binary logistic regressions of the two first dependent variables presented here, and OLS of the two last, with particular emphasis on the variable measuring support for heavier taxation of the petroleum industry's exploration activities.

The main concern here is to seek verification (or rejection) of the results from the model describing the support for taxation of the petroleum industry's exploration activities. Therefore, I will compare the results by the coefficients estimated in each model, and not the explained variance of the models which will not be directly comparable. I have also gone through the assumptions of each type of regression, and made sure that my analysis meet these requirements, both theoretically and methodologically.

Chapter 4
Media influence on public opinion concerning climate change mitigation

4.1 Introduction

I will conduct a four cross-sectional analysis in my search for answers to whether and how the news media influence public opinion on climate change mitigation policies - more specifically those that target the petroleum industry. As the strengths and weaknesses of the methods applied here are discussed in the previous chapter, the sole focus of this chapter will be the analysis, explaining the findings, and discussing their implications. First, I will go through each analysis in a rather matter-of-fact fashion, creating a foundation for understanding by beginning with Norwegian worry about climate change, and opinions about the Norwegian petroleum production rate. Then I will move on to the mitigation policies, starting with the model describing support for heavier taxes on the exploration activities in the petroleum sector. In these sections I will explain, by refering to the theoretical framework, each phenomenon as it appears in the given analysis. At the end of the chapter I will tie the findings from each analysis together in order to answer the research question in chapter 5.

4.2 Worry about climate change and news media use

As we have seen in the previous chapter, 82% percent – a large majority – of the respondents declare that they experience some level of worry about climate change. This worry has yet to be translated into political action, and many factors are affecting the lack of engagement. Among these are political perspectives limited to four-year periods – equaling the period between national elections, climate change as a non-engageing media issue, a political issue without impact, and a threat to the Norwegian economy – an economy that is dependent on the production of fossil fuels (Eide *et al.* 2014).

4.2.1 A binary logistic regression of Worry about climate change

This analysis was conducted with a binary logistic regression. At first, I wished to conduct a OLS regression, as the original variable was a 5 category ordinal variable. This, however, proved to violate the linearity assumption, which is the most important assumption in OLS regression (Midtbø 2012: 130). In such cases, a good alternative is to dichotomise the dependent variable and use a binary logistic regression instead (Skog 2010). Particularily in cases where the loss of information is not a great risk, which is the case here. This is also a quite common approach (Levi *et al*. 2009: 361-362).

The analysis reported here, have not been subject to weights. The co-ordinators of the NCP recommended using weights that adjusted for bias in the selected population (Ivarsflaten *et al*. 2014: 4-5, Høgestøl & Skjervheim 2013: 7-9). I conducted seperate analyses with and without weights, which can be seen in the appendix to this chapter. I used a likelihood ratio test to make sure that there was no significant difference between the two models (Skog 2010: 375).
The further assumptions of the binary logistic regression were discussed in the previous chapter.

4.2.2 Findings

The results of the binary logistic regression may be observed in table 4-1 below. Since the newsmedia variables are of particular interest here, I will present them first.

The media

TV and national newspapers are the most important sources for news consumption about climate change (Eide *et.al.* 2014: 11), and the social media Twitter had major impact on climate change demonstrations in England and Denmark (Segerberg & Bennett 2011).
As can be seen in table 4-1, respondents who frequently watch the TV-news are less likely to be worried about climate change. When looking at the two other media variables, Twitter-use and newspaper reading, they have the opposite effect. Both of them are associated with being worried about climate change, and the association is stronger for reading the newspaper than it is for using Twitter. Of all three media variables, only reading the newspaper has a statistically significant impact upon the level of worry about climate change. The direction of the coefficients were anticipated for the reading of newspapers and twitter, but the negative impact from TV news watching was not. This may, however, be explained by similar findings from the US in particular, but also the UK, where the negative effect of TV is known as «video malaise». Mutz (2007), for

instance, connects the negative effect watching TV news has on political trust to the way political debates are presented on TV. She shows how incivilities between participants and close up filming have a negative impact upon what people thought of the legitimacy of the views of the opposing side.
Newton (1999) on the other hand shows that in the UK the problem mounts to spending a lot of time in front og the TV *in general* that is the problem, whereas actually watching the TV news rendered more political mobilization.

Although the empirical evidence is somewhat inconclusive, it may be argued that Norwegians who are using the TV news to stay updated on the events of the world have less confidence in the political leadership, scientists and other authorities on the subject of climate change. It might also be probable that the negative impact from TV-news is related to the notion of motivated reasoning and climate change denial (Lewandowsky *et al*. 2013, Kahan *et al.* 2011 Nordgaard 2011). Perhaps climate change is treated differently on TV than it is in Norwegian newspapers, and allows people who are already sceptical towards the phenomenon to continue their motivated thinking in terms of climate change. This issue should be pursued in future research, but falls outside the scope of this thesis.

It should also be noted that this general measure of TV news use, may be interpreted differently among the respondents. Some may include political debates over current issues and other programs that cover current issues in an educational or humorous way, but which do not necessarily constitue a news broadcast in the traditonal sense.

Trust
Three measures of trust were included in the model. The variables measure trust in the government, interpersonal trust and whether one believes that it is possible to influence politics outside elections. The latter may be seen as a proxy for a more general trust in the functioning of the Norwegian democracy.

Low trust in the government is associated with a higher level of worry. This effect is statistically significant at the 1% level. The effect is not anticipated, but can be explained readily enough: This may happen for two reasons: On the one hand, and independent of ruling party, it may be the expression of a general lack of confidence in political institutions or politicians. On the other hand, and more plausible, it is possible that people who worry about climate change vote for parties that

are currently in the opposition. The litterature points to a quite distinct cleavage between the political left and the political right on the issue of climate change, where the right is significantly less concerned about climate change, both in terms of its existence and its human component (Austgulen & Stø 2013, Kahan *et al*. 2011). Mutz' (2007) findings, as they were discussed above, points in this direction. In addition, Braithwaite (1998) shows how different trust norms are tied to different sets of values – security and harmony values – and that the political right relies more on security values and thus more often apply exchange trust norms. The political left are more prone to hold harmony values, and rely on communal trust norms more often (Braithwaite 1998: 67-68).

Interpersonal trust had a positive, and barely statistially significant effect upon how much people worry about climate change. This was anticipated. Trusting people would be more inclined to believe in climate science, and would also believe that solutions to this problem will be found. Since climate change is seen as a collective action problem, and trust is needed to "organise" collective action, this effect could be regarded as a normatively positive one (Tvinnereim 2013, Rothstein 2013). As we saw in chapter 2 of this thesis, reciprocity seem to be an important condition for the alleviation of collective action problems as it helps build trust (Kahan 2003, Rothstein 2000). Reciprocity seem to be important to Norwegians, as Tvinnereim and Lachapelle (2014) have demonstrated.

The measure included for believing that one can only influence politics through elections shows a negative impact upon the dependent variable, meaning that people who do believe that elections are the only means by which to influence politics tend to be less worried about climate change. This was anticipated. Although high levels of interpersonal trust exists (see Chapter 3, and Rothstein & Uslaner 2005: 42), there seems to be little trust in the influence of the collectivity in other respects. The belief that one is unable to influence politics outside elections in a democracy may be tied to the respondents level of education, which could explain why it has a negative impact upon the level of worry about climate change Because people with higher education also tend to be more worried about climate change. I will return to this issue below.

Politics

As expected, respondents who voted centre-left in the last parliamentary election are more worried about climate change than those who voted centre-right. The effect is thus positive, and statistically significant at the 1% level. Due to the parliamentary agreement among the Norwegian political parties (save the Progress party) (Regjeringen 2012), I expected this effect to be non-significant –

although the direction of the coefficients are as expected. I also expected the effect to be weaker than what the model stipulates because the Labour party, which is a leftist party, traditionally has never emphasised environmental protection. Rather, after the second world war they have advocated industrial interests, albeit for the benefit of the worker. In more recent years, the Labour party is positive to the opening of new areas to petroleum production in the arctic, although at the same time work for renewable energy industries (Arbeiderpartiet 2015a, Arbeiderpartiet 2015b, Asdal 2011).

As outlined in chapter 2, evidence of significant political cleavage regarding the existence and causes of global warming and climate change have emerged over the years. Evidence of polarization is particlarly strong in the US, where republicans are significantly less likely to believe in the existence of climate change and that it is caused by human activity (McCright & Dunlap 2011). Scientists have reached a consensus on the issue of climate change, yet this realisation is often undercommunicated or rejected by conservative parties. Some scientific evidence points to motivated reasoning as the cause of this cleavage. Essentially this means that people who vote for conservative parties are more likely to not believe in climate change because it is more suitable in their overall world view. This is also closely related to what the consequences of climate change as a real phenomenon might be (Austgulen & Stø 2013, Lewandowsky *et al*. 2013)

Controls

Three out of the four control variables show statistically significant impacts at the 1% level on the dependent variable. As expected, women are more worried about climate change than men, and respondents with more education also state that they are worried about climate change. Respondents who claim to have earn more, are also less likely to worry about climate change. This is in line with theoretical stipulation (McCright & Dunlap 2011, Hamilton 2011, Poortinga *et al*. 2011). Older people actually turn out to be more worried about climate change than younger people in Norway, which is contrary to results from other scientific investigations (Poortinga *et al*. 2011, Hamilton 2011), and thus my expectations. One explanation may be "climate change fatigue" where younger people experience that the action at the political level and by other people in society (perhaps including themselves and their friends) does not match the seriousness of the threat posed by climate change as it is portrayed in the Norwegian newspapers (Duarte 2010), and thus they believe that nothing can be done about the issue. Younger people may wish to keep the issue at an arms length, resulting in the collective organization of denial (Norgaard 2011). This reinforces the argument about reciprocity, and shows why it is important: If people would readily believe that their

actions mattered in a joint effort, it is more likely that people would participate (Tvinnereim & Lachapelle 2014, Kahan 2003).

Table 4-1: Worry about climate change, and opinions about production rate

Dependent variable	**Worry about climate change**		**Reduce or increase petroleum production**	
N	3003		2987	
Pseudo R^2	0.09		0.10	
Log likelihood	-1236.97		-1848.19	
LR chi2	(11) 230.52		(11) 408.61	
	Coef.	**P-value**	**Coef.**	**P-value**
TV	-0.08	0.174	0.24	0.000***
Twitter	0.05	0.425	-0.13	0.005***
Paper	0.16	0.004***	-0.12	0.008***
Trust in government	-0.13	0.006***	0.26	0.000***
Interpersonal Trust	0.04	0.097*	-0.06	0.003***
Political influence	-0.12	0.000***	0.13	0.000***
Political view	0.34	0.000***	-0.30	0.000***
Age	0.31	0.001***	-0.34	0.000***
Gender	-0.87	0.000***	0.49	0.000***
Education	0.31	0.000***	-0.37	0.000***
Income	-0.00	0.675	0.00	0.000***
Constant	0.74	0.106	-0.05	0.88

P < 0.01*** p < 0.05** p < 0.1*

4.3 Reduce or increase petroleum production and news media influence

In the previous chapters, we learned that the petroleum industry is not only very important in the Norwegian economy, but also that it has a significant cultural impact and that it may affect Norwegians' perception of climate change and other issues pertaining to climate change (Hornmoen 2014, Naper 2014, Norgaard 2011). Although the primary objective here is to assess media impact on the public opinion on taxation of the petroleum industry as a means to mitigate climate change, it is easier to do so if we have some knowledge about what the population think of the petroleum

industry in relation to climate change.

4.3.1 A binary logistic regression of Opinions about the Norwegian petroleum production rate

Here, I use a measure of whether people think the petroleum production rate should be reduced, increased or kept as it is, as the dependent variable. This measure has, as outlined in chapter 3, been dichotomised. Loss of information was, in this case not a great risk, and the approach is quite common with variables of a similar kind (Levi *et al*. 2009: 361-362).

I do not used weights in this analysis, although such an approach was recommended in order to adjust for bias in the selected population (Ivarsflaten *et al*. 2014: 4-5, Høgestøl & Skjervheim 2013: 7-9). I do, however, conduct seperate analysis with and without weights, which can be seen in the appendix to this chapter. The likelihood-ratio test is applied to make sure that there is no significant difference between the weighted and the unweighted models (Skog 2010: 375). The further assumptions of the binary logistic regression were discussed in the previous chapter.

4.3.2 Findings

The results from the logistic regression of what the respondents think about the petroleum production rate shows diverging results from the regression with *Worry about climate change* as the dependent variable. Again, the media variables are of particular interest, so I will start with them. Results are presented in table 4-1 above.

The media

All three media variables have a statistically significant impact at the 1% level on the dependent variable. Using TV-news for a news update has strong positive effect on whether people think that a reduction or an increase of Norwegian petroleum production is in order. This means that people who watch TV-news are more likely to think that the production rate should stay as it is or increase. This effect is anticipated.

The negative effect of Twitter use – meaning that the respondents who rely on this medium want a reduction of the petroleum production rate – is also as expected, although perhaps a little stronger than anticipated due to the limited number of respondents who actually uses the medium. Respondents who rely on reading newspapers for their news consumption, however, are also more likely to be wanting a decrease in the petroleum production rate. This is contrary to my expectations.

These findings do not lend much support for the «video malaise» explanation on their own, but the petroleum industry enjoys a peculiarly high status in Norway, and this cultural phenomenon may influence peoples minds more than alleged televised attack journalism (McCombs et al. 2011: 100-108). It may also be the case that the petroleum industry is not "under attack", so to speak. This is, at least, possible to test empirically, but it falls outside the scope of this thesis.

Trust

The trust variables show diverging effects also in this analysis, but the effects are opposite of the effects in the previous analysis. High trust in the government is associated with supporting status quo or increasing the petroleum production rate on the Norwegian continental shelf, and the effect is statistically significant. This may happen for two reasons: On the one hand, and independent of ruling party, it may be an expression of confidence in the political institutions (Levi *et al*. 2009). On the other hand, we do have a liberal-conservative government in Norway at the moment. Economic growth, expansion of the petroleum sector and a reduction of public expenses are important to these parties (Fremskrittspartiet 2015, Høyre 2014, Høyre 2008). It is possible that the people who places a lot of trust in the government are sharing these views. This possibility is supported to some extent by the notion of different trust norms as related to values that are to some extent political (Braithwaite 1998: 67-68).

This renders trust important in the equation of policymaking on climate change, because it may explain why it is so difficult to convince someone who are motivated in their reasoning, since the value base we build our trust upon is profound – we are socialized into these ways of thinking from we are children (Braithwaite 1998: 47-51). It takes time to change peoples opinion on an issue, particularily if recognizing this issue threatens ones life as one knows it (Norgaard 2011, Clark & York 2005). We must also remember that climate change was not a very important issue in the last parliamentary election in Norway, although it became more important than most of the parties bargained for (Gloppen *et al*. 2014). Being aware of a problem does not entail that one recognizes ones own part in causing the problem – although we might be seeing this starting to change here.

Interpersonal trust has a negative and statistically significant effect upon the dependent variable. People who report high levels of trust in others are more inclined to think that the rate of petroleum production on Norwegian territory should be reduced. This effect is most likely due to the fact that 82% of the respondents are worried about climate change at one level or other. From this we may deduce that they also believe in global warming, and thus realizes the need to reduce the

consumtion of petroleum products and fossil fuels in general.
On the other hand, this also means that people who are more sceptical of other peoples intentions tend to want the Norwegian petroleum production to stay as it is or increase. These findings also fit with Braithwaites (1998: 49) notion of exchange vs. communal trust norms. People with a propensity for relying on exchange trust norms, would, most likely, also emphasise economic growth, authority and competitiveness. They would, perhaps, also be more inclined to demand reciprocity, as in "others must reduce their petroleum production rate if we are to do it too" (Kahan 2003).

The last trust variable, which is measuring whether people believe that the only way to influence politics is through elections, has a positive and statistically significant effect on the dependent variable. People who do believe that elections are the only way to affect politics also tend to think that the petroleum production should be kept at todays level or increase. The belief that one is unable to influence politics outside elections in a democracy may be tied to the respondents level of education. I will return to this issue in the last part of this chapter. On the other hand, as climate change has become a politicized issue, although less so, perhaps, than in the US (Austgulen & Stø 2013), and the lack of confidence in ones own ability to influence politics may point to some sort of fatalism regarding the democratic system. The issue of climate change has been in the state of relative grid lock in national as well as international politics for the good part of the last 25 years. It is likely that this will affect peoples faith in the political system, as it hampers the political efficiency (Levi *et al*. 2009). Again, this may also be affected by media representations, such as the in-your-face theory of Mutz (2007).

Politics
We may observe in table 4-1 above, that the respondents are politically polarised when it comes to whether the production of petroleum should be reduced or increased. The voting behaviour variable have a strong, significant negative impact upon the dependent variable, meaning that voters leaning towards the right are more positive to keep the production rate as it is or increase it. Left-leaning voters, on the other hand are more likely to want a reduction.

With the significance of the petroleum industry in the Norwegian economy in mind, it is possible to relate this to how much weight the political parties asign to climate change. The more plausible explanation, however, is the political debate about petroleum production in the area around the Lofoten islands, Vesterålen and Senja. This debate has evoked a tremendous engagement at the

grasroot, and have resulted in a political decision to not exploit the petroleum resources in this area, at least for now (Regjeringen 2014). The political image is roughly the same as with climate change: Leftist parties, in collaboration with the christian democrats (KrF), the Liberals (V) and the Centre party (Sp) are working for a definate protection of the area, whereas the Right, Progress and to some extent Labour is working for industrial development (Høyre 2014, Fremskrittspartiet 2015, Arbeiderpartiet 2015a).

With regards to Labour, I say to some extent, because the party *has* supported drilling for petroleum in these areas, but strong forces within the party, particularly its youth party, are trying to make Labour go for a green development rather than the petroleum option (Arbeiderpartiet 2015a, Arbeiderpartiet 2015b). Although petroleum production is related to climate change, especially through its consumption, I doubt that people generally think of the long term consequences when asked to contemplate the issue of reduction versus increase of petroleum production. I believe it is the short and long term *local* environmental consequences in the Lofoten islands, Vesterålen and Senja people have mind when answering this particular question, because this is where the emphasis have been placed in the communication of the issue in the mass media (NRK 2015). The issue of protecting these areas is a salient media issue, and it is possible to argue that it is a cultural clash as well as a political one: The serenity and picturesque nature as an image of the Norwegian «living close to nature» way of life versus the hardworking, brave Norwegians who defied big international petroleum companies in a cunning way, grew rich and use the wealth to benefit all Norwegians (Norgaard 2011).

Controls

All the control variables show strong, statistically significant impacts on whether the petroleum production rate should be increased, stay at the current level, or be reduced. Age has a negative impact on the dependent variable, meaning that older people are more likely to think that the production rate should be reduced. This is unexpected, as earlier research have found that it is generally younger people who are worried about climate change and general environmental issues, whereas older people tend to care less (Poortinga *et al*. 2011, Hamilton 2011). The effects of the other control variables are as expected (Poortinga *et al*. 2011, Hamilton 2011). Gender is a very important predictor, in this case it has a positive impact indicating that men are more likely to support status quo or an increase in the petroleum production rate than women. People with more education are more likely to support a reduction in the production rate, whereas people with a

higher income are more prone to support the current state of affairs or an increase.

4.4 Support for heavier tax on the petroleum industry's exploration activities

As we remember from chapter 2, income from petroleum related activity is subject to ordinary business tax, which is 27%. In addition, a special tax on income from extraction, processing, and pipe transport is to be payed to the state. Totally, the tax rate for the exploration and extraction companies operating in Norway is 78% (KPMG 2015). This have not hindered investments on Norwegian territory, and a higher tax on exploration may generate higher income for the Norwegian state. However, it has also been argued that a higher tax rate will prohibit companies from investments when the oilprice is low, which may have negative effect on the economy as a whole. Even if the petroleum sector is extremly important in the Norwegian economy, it has not been exempt from the pricing of CO_2 emissions, as other, land based, industries have been (Gullberg & Skodvin 2011: 123).

4.4.1 An OLS analysis of support for an increased petroleum tax rate

This analysis was conducted with a regular ordinary least square (OLS) regression of an ordinal dependent variable. As outlined in chapter 3, this is possible when there are 6 or more categories on the dependent variable. This model is both homoscedastic, and normally distributed, and also passed a RESET test.

The analysis reported here, have not been subject to weights. Based on recommendations from the co-ordinators of the NCP (Ivarsflaten et al. 2014: 4-5, Høgestøl & Skjervheim 2013: 7-9), I conducted a quick analysis where I compared the results from models with and without weights. These can be seen in the appendix.

4.4.2 Findings

Since the primary objective is to assess the impact of various news media on the support for further taxation of the petroleum industry as a climate mitigation policy, the media variables are of particular interest here. The results may be seen in table 4-2 below.

The Media

All the media variables are statistically significant, albeit their effects go in different directions, and vary in strength. TV-use had the strongest effect upon the dependent variable, and this effect was negative. This means that respondents who use TV as their main source of news are less likely to support further taxation of the petroleum industry. Twitter-use and reading the newspaper had the opposite effect. Both of them are associated with the support of a higher tax rate, although the association is stronger for Twitter.

The strength and direction of the coefficients are as anticipated for Twitter-use and newspaper reading. As we have seen, Norwegian newspapers are mostly covering climate change is a manner consistent with the scientific consensus (Duarte 2010), which may lead to more support for the proposed tax. In addiotion, newspaper reading have a tendency to build trust (Brehm & Rahn 1997), which is, as we have seen, important in mounting collective action (Kahan 2003). Similarily, Twitter is known to have been used by environmental activists to rally for collective action in relation to the climate change issue (Segerberg & Bennett 2011).

The negative impact from TV-news use is somewhat unexpected. It may be explained by the notion of «video malaise»: Mutz (2007) has showed that how political issues are being represented on TV, particularily in political debates, influence peoples perception of the legitimacy of the opposing view. Newton (1999) has also elaborated on the notion of video malaise, but he finds that watching TV in general has a detrimental effect upon political mobilization, so not quite the same. However, I think it is fruitful to look for other explanations, as the theory of video malaise is not consistently proved across my models.

Trust

The variable measuring trust in the government is statistically significant and negative. Meaning that people who trust the government are more sceptical of the proposed tax. This can readilly be explained away as a political issue: The current Norwegian government is conservative, thus poeple who trust it would probably support their politics and also share their view on taxation. However, the measure for interpersonal trust have a statistically significant positive impact upon the dependent variable, meaning higher levels of trust is associated with higher levels of support for the proposed tax.

In a climate change context this is interesting. Seeing these findings together may suggest that trust

in the government and interpersonal trust is grounded in different trust norms (Braithwaite 1998), meaning that political trust is more of an exchange, and thus rests on a security value base, whereas trusting a stranger on the street is more built on communal trust norms. I will return to this at the end of the chapter, when I compare findings across models.

The measure of whether people think voting is the only way to influence politics has a negative effect on the dependent variable, and the effect is statistically significant. In essense it means that those who support further taxes on the petroleum industry also tend to believe that it is possible to influence the political process outside elections.

Politics

People voting for left-leaning parties are more likely to support of the proposed tax. This is hardly surprising, as leftist parties are more fond of taxation as a political instrument in the first place. Also, since these questions were asked in a context of climate change mitigation efforts, it is possible that this has contributed to a poltical polarization along the lines seen in the anglo-saxon countries (Levandowsky *et al*. 2013, Austgulen & Stø 2013, McCright & Dunlap 2011).

Controls

All the control variables have statistically significant impacts upon the dependent variable. Age is positively associated with the dependent variable, meaning that older people are more supportive the proposed tax. Again, this is unexpected given previous research (Poortinga *et al*. 2011, Hamilton 2011).

Gender has a negative impact upon the dependent variable, as expected. This means that women tend to support the proposed tax more than men do, and it is most likely due to the fact that women are more worried about climate change than men (see table 4-1, Hamilton 2011).

As anticipated, higher education is associeted with a higher level of support for the proposed tax. Again, this effect is most likely due to the fact that people with higher education are more worried about climate change (see table 4-1, Poortinga *et al*. 2011).

People who earn more tend to be unsupportive of the tax. People who are better educated also tend to earn more, but with these findings one could muse whether higher income is also related to ones political views. I will not pursue this notion, however.

Table 4-2: Support for proposed mitigation policies

Dependent variable	Support for further taxation of petroleum exploration		Support for regulation of CO_2 emissions	
N	1524		1537	
R2	0.15		0.10	
Adjusted r2	0.14		-	
Standard error	+1.37		+1.18	
	Coef.	**P-value**	**Coef.**	**P-value**
TV	-0.17	0.00***	-0.05	0.228
Twitter	0.14	0.00***	0.07	0.056*
Paper	0.11	0.00***	0.08	0.017**
Trust in government	-0.12	0.00***	0.01	0.819
Interpersonal trust	0.06	0.00***	0.04	0.051*
Political influence	-0.08	0.00***	-0.06	0.002***
Political view	0.24	0.00***	0.15	0.000***
Age	0.18	0.01***	0.04	0.522
Gender	-0.38	0.00***	-0.46	0.000***
Education	0.20	0.00***	0.21	0.009***
Income	-0.00	0.00***	-0.00	0.182
Weight			0.12	0.099*
Constant	+4.11	0.00***	+4.50	0.000***

$P < 0.01$*** $p < 0.05$** $p < 0.1$*

4.5 Support for regulation of CO_2 emissions

As stated earlier, the number one objective in this thesis is to probe the relationship between the news media and climate change mitigation policies targeting the petroleum industry. However, it is useful to also probe the relationship between other mitigation policy proposals and the news media. As a means to see if there are differences in public perception between different types of policies this may prove important with regard to future policy making, although two analyses are not enough to draw firm conclusions. In addition an analysis of one other policy proposal may shed more light on the main research question.

4.5.1 An OLS analysis of support for regulation of CO_2 emissions

This analysis was also conducted with a regular ordinary least square (OLS) regression. The regulation variable has 7 independent categories, ranging from no support to very much support for regulation of emissions. In this case, it has proved somewhat difficult as the initial model was both heteroscedastic, indicating a mis-specification, and deviated from the normal distribution. As outlined in chapter 3, the first problem was solved by using robust standard errors, since the specification of the model could not be changed due to the fact that the theoretical framework is set – targeting the model presented in section 4.4. The deviation from normality is ignored (Midtbø 2012: 114, see appendix).

The analysis reported here, has been subjected to weights. The co-ordinators of the NCP recommended using weights that adjusted for bias in the selected population (Ivarsflaten *et al*. 2014: 4-5). In this case, the added weight variable was statistically significant (see appendix to this chapter), albeit just barely. I choose, therefore, to use weights in this analysis.

4.5.2 Findings

As can be observed in table 4-2 above, there seems to be a number of differences between the two policy proposals analysed. Since the media variables are of particular concern, I will again let those be the point of departure.

The Media

Here, the TV-news watching has a negative, but non-significant effect upon the dependent variable. This means that people who use TV for their news update are more likely to be unsupportive of the proposed policy, but that this effect is not particularly strong. Respondents who use Twitter and read newspapers to stay updated on the news are more likely to be positive toward the the proposed policy, and these effects are statistically significant at the 10% and 5% levels, respectively.

Again, the direction of the coefficients lends some support to the notion of "video malaise", in the way the term is deployed by Mutz (2007). The effects of all the media variables are weaker in this case, which may indicate that the issue of regulation of CO_2 emissions is less salient in the media, perhaps particularily on the TV-news, when compared to the issue of the petroleum tax. On the other hand, the issue may not be less salient in the media since, after all, the press and people active on Twitter are supportive of this kind of policy. It may very well be the case that issues pertaining to the petroleum industry raise peoples engagement to a larger extent, than a general reduction of CO_2

emissions among the land based industries. It may also be the case that since "everybody" knows that emissions must be reduced, the issue is not contentious enough for a "good story" (Boykoff & Boykoff 2007).

Trust

The variable measuring trust in the government has a positive, but neglible effect. Meaning that people who trust the government do have a slight tendency to be supportive of the regulation of CO_2 emission. Interpersonal trust, on the other hand, is of more importance. The marginally statistically significant postive effect shows that people who believe that other people can be trusted, are more likely to favour the proposed policy of regulation of greenhouse gas emissions. This finding verifies the importance of interpersonal trust in relation to climate change policy issues. Rothstein & Stolle (2008) show how institutions matters to the creation of social capital and social trust. In this case, it seems that social trust may be important in the establishment of legitimate policies on climate change.

The variable measuring whether people believe that voting is the only means of influencing politics is negatively associated with the dependent variable, meaning that respondents who do think that voting is the only way to influence politics are more likely to be unsupportive of the proposed regulation of greenhouse gas emissions. This effect is statistically significant, and slightly peculiar: The lack of support may be regarded as an uncooperative attitude on behalf of the respondents, which could be the result of little trust in democratic instituions. If the trust-relationship between the citizens and the government is one of exchange (Braithwaite 1998) it is, in a sense, one of give and take. If the citizens feel they get nothing, they will not give anything (Kahan 2003).

Politics

The variable measuring political affiliation turns out to be very important in this case. It has a statistically significant positive effect upon the dependent variable – meaning that people who voted for independent and/or leftist parties are more inclined to support the proposed regulation of greenhouse gas emissions. This is entirely in line with my expectations (see for instance Austgulen & Stø 2013). Independent and left leaning voters seem to percieve greater urgency in relation to climate change, and it is likely that they will be more supportive of policies or legislation that concerns climate change mitigation. Regardless, it seems, of the policy targets.

Controls

There is a positive association between age and the dependent variable, meaning that older people tend to be more supportive of the proposed policy. However, this effect is not statistically significant, so age matters less in this case than it does in the other three analyses.

Again, women tend to be more supportive of the proposed policy, than men. Respondents with more education are also more likely to support a reduction of CO_2 emissions in landbased industry. Both of these variables have a statistically significant impact upon the dependent variable.

Respondents who report a higher income are more likely to be unsupportive of the proposed policy to regulate emissions of greenhouse gases, but in this case the effect is not statistically significant. From this, I gather that income is not an important in the prediction of support for regulation of CO_2 emissions.

4.6 Combining the findings

The purpose of all of the analysis above have been to investigate how the Norwegian public opinion on climate change mitigation policies targeting the petroleum industry are influenced by media use.

In this section I will go through the analyses again, but this time I aim for a comparison across the models that will provide some answers to the research question. Such comparison is possible, when the models are made from the same sample of indiviuals, and I can compare the coefficients of the models, rather than the fit of the models. If there is consistency across the models, it strengthens the findings substantially, although I would still be careful with regards to making inferences to other countries. As mentioned, Norway became the case of choice, *because* it singles out – in more than one capacity (Gerring 2007: 115-122). This is cross-sectional analysis. It may be possible to draw firmer conclusions based on a panel-analysis or a time series, which will probably be possible in the future, as the Norwegian Citizen Panel project is ongoing.

In the following, I will go through the analyses and findings theme by theme, beginning with the media.

4.6.1 The media

Watching the TV-news

As we have seen in the analyses above, there are quite consistent findings across the models when it comes to the media variables: People who have answered that they use the TV news often (several times a week or more), are more likely to be unsupportive of the suggested climate change mitigation policies, particularly the one that specifically targets the petroleum industry. Respondents who rely on television news are also less worried about climate change, although this effect was of less importance in that particular model. In addition, when considering the last analysis where the attitudes toward the decrease or increase of petroleum production was mapped out, we can observe in table 4-1 that using the TV to stay updated on the news had a statistically significant *positive* effect upon the dependent variable, meaning that those who often use TV as a news source are more likely to favour status quo or an increase in the Norwegian petroleum production rate.

These findings largely reject my first hypothesis – *The use of TV news to stay updated on the news will have a positive effect on all the dependent variables* – as this variable only have a positive effect in the instance regarding the petroleum production rate.

Taken together, these models show that using the TV as a news source on a daily basis seem to contribute to scepticism with regard to climate change. The respondents are less worried about climate change, and they are less supportive of mitigation policies. This *may* be an incidence of "video malaise", a term originally coined by Michael J. Robinson in the 1970s (Holtz-Bacha 1990: 73), which means that watching television news have a negative impact on peoples opinion on democratic ideals and participation, and that they become increasingly cynical and skeptic toward politics and the government. Furthermore, coverage of news has become more sensationalistic and negative, and strategies towards winning has become more important than the issue at hand (McCombs *et al*. 2011: 106-107, Newton 1999: 577-578).

However, the video malaise theory has been contested – especially in terms of how the research it rests on have been conducted (Holtz-Bacha 1990: 74-75), but also in terms of contradictory findings (Newton 1999: 580). So although the video malaise theory seems like a plausible explanation in this case, we cannot accept it without considering some alternatives, and there are a couple of important things in my analyses that ought to be accounted for. Firstly, in the model where the respondents opinion on the Norwegian petroleum production rate was investigated, exposure to TV-news had a *positive* effect. If the video malaise theory was true, one would expect TV-news exposure to have a

negative effect regardless of issue. This is evidently not the case. Secondly, the direction of the coefficients are remarkably consistent: They are negative in the models directly related to climate change, but positive for the one concerning the petroleum industry. This suggests that, perhaps, framing and priming of these issues are different on the TV-news than it is in the papers. Boykoff (2008) have found that 70% of TV-news broadcasts in the US are balanced in its reporting on climate change. The situation may be similar in Norway, but this is an empirical matter that falls outside the scope of *this* thesis. The findings suggests, however, that TV news are an important influence with regards to news about the petroleum industry.

It is important to note that this variable only accounts for TV news use. In terms of terminological validity (Skog 2010: 89-90). It does not give any insights into what kind of news programs people are whatching – that is whether they are watching the evening news, in-depth documentaries on current issues, or humour shows picking at current issues in a satirical way – or give a definition as to what constitue a "news program". Thus, even as this variable proves to have an impact on the matter at hand, nothing can be said as to the effect various types of news programs have on peoples opinion. Some research has been conducted on this in the US and the UK (Mutz 2007, Newton 1999), but based on my data I cannot infere that such is the case in Norway. Further research on TV-news content is necessary.

Reading the newspaper

People who read newspapers are more likely to be worried about climate change, and they are more likely to support mitigation efforts, regardless of whether it targets the petroleum industry or not. Newspaper readers are also more likely to favour a decrease in the petroleum production rate. This variable was statistically significant in all the models, but less so in the model that describes support for general regulation of CO_2 emissions, see tables 4-1 and 4-2 above.

These findings largely confirm hypothesis 2 - *Reading the newspaper will have a positive impact upon all the dependent variables* – except with regards to the model describing the support for level of petroleum production.

However, it is a bit of a puzzle that the difference between TV news use and newspaper reading should be so conspicuous. It implies that there are either rather large differences between readers and viewers as groups, or that there are differences in the way that the press and television news frame and prime their issues. Considering the gatekeeping functions of the media, it may also imply

differences in which issues are actually put on screen and in press, and which issues that will not make the final cut. There exist some support for the first implication, namely that there are socio-demographic differences between readers and viewers. Newton (1999) found that among Britons, a number of socio-demographic variables impacted upon the exposure to TV news and broadsheet newspaper, among them age, gender, education and income. I will return to this in a bit.

The second implication is also plausible. Although we should not accept the notion of video malaise at face value, it is none the less true that the mass media have changed substantially over the past few years. Competition has increased, and it is a constant race to provide news consumers with the freshest stories. Moreover, the world has been shrinking, leaving each editor with more possible news stories to choose from, but not more time on the evening news or more pages in the news paper. The internet is also contributing to this fast forward exchange of news stories – thus providing the consumers only with bits and pieces, not in depth knowledge about and issue (McCombs et al. 2011: Chapter 1).

The third implication also seem to be relevant here: With regards to the press, there exist substantial evidence with regard to the editorial powers (Naper 2014, Eide & Naper 2014, Carvalho 2007). It seems fair to assume that the editorial pressure is no less in a television news room. It is quite possible that the issue of climate change is squeezed out by news stories that are more tangible (i.e. not how global warming will impact Bangladesh in a 100 years), and will fit into a two minute time frame (i.e. not an issue that requires some explanation of scientific research first).

I believe all of the above to be plausible explanations as to the different impact these two variables have, although I believe that the most fruitful way to proceed is through scrutiny and comparison of content in the news of various TV-channels and various newspaper. Possibly also with a distinction between the tabloid press and the broadsheet press. It is important to note that my newspaper variable does not differentiate between different kinds of newspapers, say tabloids and broadsheets. For a later analysis, such a distinction may prove very informative (Newton 1999).

Twitter

Twitter have the same impact upon the dependent variables as newspapers, at least when it comes to the direction of the coefficients, meaning that Twitter users are more likely to be worried about climate change (table 4-1) and support both of the suggested mitigation policies (table 4-2). Twitter users are also more likely to want a decrease in the Norwegian petroleum production rate (table 4-

1). The use of Twitter has a statistically significant impact in three of the four models, but to differing degrees, as discussed above.

This renders my third hypothesis – *Twitter-use has a positive impact on worry about climate change and support for the proposed mitigation policies. It will have a negative impact on opinions regarding the petroleum production rate* – true.

Taken together, these three media variables suggest that there are differences in how different media – namely TV on the one hand side, and newspapers and twitter on the other – are framing and priming news that relates to climate change. The significant impact of Twitter, suggest that even a rather small segment of the overall media world may have a strong impact upon what people think. As a social medium, it's use is probably more about making statements and possibly also rallying, than about tuning in to the news. But this medium has networking functions that are important with regard to collective action, where both a news function and a rally-function is served (Segerberg & Bennett 2011).

These findings strengthens the thesis about media use and motivated reasoning, although my analyses here, are not adequatly geared to actually test this notion thoroughly. The major problem being that the media variables are not differentiated enough. I cannot tell which TV-news channels the respondents use, or whether there are any substantial differences between them.

Now, after scrutinising the media variables, and tying them to the hypotheses, I will move on to the measures of trust. Given the importance of trust in relation to good governance, compliance and collective action (Rothstein 2013, Levi et al. 2009, Kahan 2003), it is natural to expect trust to be of importance in relation to climate change mitigation policies generally.

4.6.2 Trust

Interpersonal trust

The level of interpersonal trust is quite high in Norway (see ch. 3, Rothstein & Uslaner 2005: 42). In this analysis, the measure of interpersonal trust has a statistically significant effect across all models, albeit to a varying degree. The measure has a stronger effect in the models directly concerning the petroleum industry, where the significance level is below 1% (it is below 10% in the two other models). Interpersonal trust, according to my findings, increases worry about climate

change, and levels of support for mitigation policies. At the same time, people who scored themselves high in interpersonal trust would be more likely to support a reduction of the petroleum production rate.

These findings largely confirms my fourth hypothesis - *High levels of interpersonal trust will have a positive impact on all the dependent variables* – except for the impact of the variable in the model predicting opinions about the production rate.

If we consider the possibility that interpersonal or social trust is built on communal trust norms, whereas political trust are may largely be built on exchange trust norms (see Braithwaite 1998), it is possible to explain these findings by relating peoples opinion about the petroleum production rate to a sense of community. As we've seen, Braithwaite (1998: 46) holds that these trust norms are used to a varying degree by everyone – but that they are also tied to political views (Braithwaite 1998: 67-68). If one largely relies on communal trust norms and to a large extent trust other people, one would, most likely also feel obligated to act in a manner consistent with what one expects of others. One would favour a reduction of the Norwegian petroleum production rate, because of a felt responsibility toward the global collectivity.

This notion raises some questions, however, since the effect of the variable is not equally strong across all the models. First, there is the notion of reciprocity (Kahan 2003), which has been confirmed to matter in the Norwegian context (Tvinnereim & Lachapelle 2014). I have tied this notion to Braithwaite's (1998) exchange trust norms, which rests on values that to a larger degree makes a distinction between “us” and “them”, economic prosperity and security. It is possible that the media are contributing here, for instance by framing “the other”: Do they, for example, frame other nations at the COP (Conference Of the Parties) -negotiations under the UNFCCC (the United Nations Framwork Convention on Climate Change) as “the others”? Or is the frame one of solidarity and a joint venture? There is, to my knowledge, not any research conducted on this particular theme in the Norwegian context, but we do know that the media influence peoples political trust elsewhere negatively (Mutz 2007, Mutz & Reeves 2005, Gordon 2000) and in climate scientists (Leizerowits *et al*. 2012).

A series of bivariate OLS analyses, that can be seen in table 4-3 below, shows that both TV-news use and newspaper reading influence interpersonal trust positively. Twitter-use, on the other hand has a negative influence.

Table 4-3: Bivariate analysis with Interpersonal trust the dependent variable

Variable	Coef.	Std. Err.	t	P	N	BP-test	Normality	Reset
TV	0.07	+2.23	+2.11	0.035**	4529	0.659	0.000***	0.001***
Newspaper	0.36	+2.18	+12.01	0.000***	4430	0.011**	0.000***	0.124
Twitter	-0.10	+2.20	-2.37	0.018**	4008	0.220	0.000***	0.293

P < 0.01*** p < 0.05** p < 0.1*

As can be seen in table 4-3, however, the bivariate model with TV-news use as the dependent variable violates the assumption of linearity, and should therefore not be relied upon. So far it seems that, for the most part, paying attention to the news, almost regardless of medium (do not forget that more than 80% of the respondents never use Twitter) have a positve impact upon interpersonal trust. Newton (1999: 592) shows that paying attention to the news mobilizes people politically, and enhance trust. His finding then, may help explain why more trusting people are also more supportive of climate change mitigation policies, and a reduction of the petroleum production rate.

Trust in the government

The variable measuring the respondents trust in the government has a positive impact upon the dependent variable measuring opinions about the petroleum production rate, a positive but neglible impact on support for regulation of CO_2 emissions, and a negative impact on the measures of support for a raise in the petroleum tax rate and worry about climate change. This means that if one is trusting the government, one is likely to want the petroleum production rate to stay as it is or increase, whereas one would be less likely to support the mitigation policies, and be less worried about climate change. These findings where statistically significant at less than 1% in three of the models, except in the model predicting support for regulation of CO_2 emissions.

These findings largely rejects my fifth hypothesis – *Trust in the government will have a positive impact on all the dependent variables* – as it holds only in two of the instances, and barely that (see tables 4-1 and 4-2).

The citizenry's trust is important to the government. If the citizens trust that the government will rule in a good manner, they are more likely to comply with government rules and laws, and the government accuires legitimacy (Levi *et al*. 2009: 354). For a government this is important because if a large minority or even a majority, does not comply with rules and regulations, it would seriously hamper the legitimacy of the government – or even the regime (Levi *et al*. 2009, Hardin 1998). On

the other hand, it is quite possible to trust or distrust a government for political reasons. In fact this may be the rule rather than the exception (Mutz 2007).

I have argued that interpersonal trust is founded on communal trust norms, whereas political trust is more often built on exchange trust norms (Braithwaite 1998). This notion is, to some extent at least, supported by Kahan (2003) and Tvinnereim and Lachapelle (2014) in that people expect reciprocity in political matters – and climate change has turned in to a political issue (McCright & Dunlap 2011). People pay their taxes because they believe other people pay their taxes and because they believe the authorities will do good things with the money (Kahan 2003, Rothstein 2000). But Norwegians are less willing to enter an international agreement on climate change mitigation if countries such as China abstain (Tvinnereim & Lachapelle 2014). Relying on exchange trust norms in political trust also help explain why trust in the government have a positive impact upon peoples opinion of the petroleum production rate: Exchange trust norms are founded on security values such as national economic development (Braithwaite 1998: 49). In Norway this almost equals investments in the petroleum sector. This in turn may then help explain the respondents negative attitude toward the notion of heavier taxes on the exploration activities of the petroleum industry. It is not good for the Norwegian economy – unless other countries follow suit.

The media may play an important role in influencing political trust. The media serves an important accountability function with regards to the government. What the media reports from the political scene is affecting how much the citizenry knows about public affairs, and the extent to which they trust the government (Gordon 2000: 297). A series of bivariate OLS regressions show that the media variables have diverging effects upon trust in the government (see table 4-4 below). Both TV-news use and newspaper reading has a positive effect on the respondents trust in the government, which disconfirms the notion of video/media malaise. This is in line with findings from Germany and in the UK (Holtz-Bacha 1990, Newton 1999). However, these notions need some further testing in the future as particularily the bivariate regression with TV-news use failed the linearity test, which means that the model is not linear, and thus that the coefficients cannot be trusted (Midtbø 2012: 114, see table 4-4, RESET coloumn).

Table 4-4: Bivariate analysis with Trust in the government as the dependent variable

Variable	Coef.	Std. Err.	t	P	N	BP-test	Normality	Reset
TV	0.14	+1.32	+6.51	0.000***	4375	0.023**	0.000***	0.000***
Newspaper	0.15	+1.31	+8.03	0.000***	4288	0.016**	0.000***	0.227
Twitter	-0.03	+1.32	-1.31	0.191	3887	0.004***	0.000***	0.507

P < 0.01*** p < 0.05** p < 0.1*

Twitter on the other hand has no statistically significant effect, which may be an effect of the rather heavy slant on this variable we saw in chapter 3 – 80% of the respondents do not use Twitter at all. But the effect that remains is a negative one. Twitter is known to have been used in protest movements, and is, in many respects, a critical public forum (Enjolras *et al*. 2014). The average Norwegian Twitter user is more left-leaning politically, somewhat better educated, and younger than the average of the total Norwegian population (Enjolras *et al*. 2014: 8). The combination of these characteristics may result in the negative impact twitter has on trust in the government.

Political influence

The variable that measures the respondents beliefs about their ability to influence politics outside elections has a negative impact upon worry about climate change and support for the proposed mitigation policies, but shows a positive impact on opinions about the petroleum production rate. The more one believes that one can only influence politics through elections, the less likely one is to support mitigation policies and be worried about climate change, but one is more likely to wish to keep status quo or increase the petroleum production rate.

These findings largely confirm my sixth hypothesis – *Believing that one cannot influence the political scene in other ways than by voting, will have a negative impact on all the dependent variables* – except for its positive impact on opinions about the petroleum production rate.

With regards to climate change, we now very little about the effects of such beliefs, hence I have chosen to conduct a few bivariate OLS regressions using the variable Voting as the only means of political influence as the dependent varible against each of the media variables. Again the theory of video/media malaise seems to be disconfirmed. The use of all three different media sources for a news update had a negative impact upon beliefs about political influence. This means that staying updated on the news significantly lowers the risk of believing that one can only influence politics through voting. TV-news use has the weakest, and the only statistically insignificant, impact among

the three news sources. It seems that both individuals and a majority of politicians are using Norways vaulnerable economic position as a justification for continueing the “petroleum fairy tail” and to keep the standards of living.

Table 4-5: Bivariate analysis with Voting as the only means of political influence as the dependent variable

Variable	Coef.	Std. Err.	t	P	N	BP-test	Normality	RESET
TV	-0.02	+1.80	-0.75	0.451	4541	0.197	0.000***	0.373
Newspaper	-0.24	+1.77	-9.72	0.000***	4441	0.023**	0.000***	0.018**
Twitter	-0.07	+1.79	-2.14	0.032**	4020	0.894	0.000***	0.644

P < 0.01*** p < 0.05** p < 0.1*

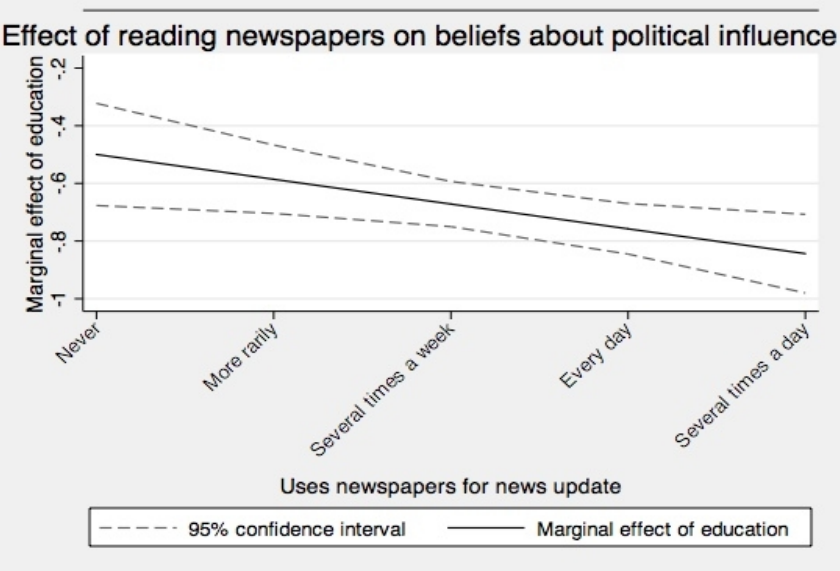
So, by and large, to stay updated on the news have a positive impact upon peoples perception of their own ability to influence politics outside elections, which partly explains why people who are worried about climate change and supports mitigation efforts also tend to believe that their voice matters. This can be related to previous work, for instanse Newton (1999) who shows that staying updated on the news have a positive impact upon peoples mobilization on political issues. These findings does not, however, contradict Mutz (2007), as there is no antagonism between believing that one can influence politics outside elections and still be negatively influenced by media representations of political debates. It should be noted however, that the bivariate regression where newspaper reading was the explanatory variable is not trustworthy as the RESET test rejected linearity (Midtbø 2012: 114).

Why people who have a propensity to believe that they have little or no influence on politics apart from elections also tend to support the petroleum industry more is a different matter, but seeing as education has proved an important variable both in direct connection to opinions/worry about climate change (Poortinga *et al*. 2011, Hamilton 2011), I decided to test this notion. The result can be seen in figure 4-1 below.

The figure shows how the effect of reading the newspaper diminishes with lower education when it comes to beliefs about political influence. This could be an indication that education matters substantially for the understanding of climate change, and that people who do not possess higher levels of education might be more prone to motivated reasoning. Hamilton (2011) shows that in the US, education is less important than political view, but then again, climate change is quite possibly

more politically contentious in the US society than it is in the Norwegian. Although the politicization of climate change is salient also in Norway (Austgulen & Stø 2013, and see below).

Figure 4-1: The marginal effect of education on reading the paper in relation to beliefs about political influence



4.6.3 Politics

Political view

Which political view the respondents have turns out to be a statistically significant effect in all the models, described in tables 4-1 and 4-2. The variable have a positive effect on the three dependent variables that measure worry about climate change and support for the two suggested mitigation policies. The positive direction of the coefficients here means that people who vote for independent, socialist or other parties are more inclined to worry about climate change and support the suggested mitigation policies. The effect of political view on opinions on the petroleum production rate is negative, meaning that respondents who voted for the liberal/conservative parties are more likely to want the petroleum production rate to stay at todays level or they advocate an increase.

These effects confirm my seventh hypothesis - *The variable will impact the climate change variables positively, and the production rate variable negatively.*

These effects on the various dependent variables largely supports the notion of motivated reasoning,

which, as we remember, means that people perceive and interpret facts, events, or similar, according to their own outlook on the world and politics (Austgulen & Stø 2013, Levandowsky *et al*. 2013, Norgaard 2011).

Since my main objective is the effects of the media variables, I wanted to see if news media use made any impact upon peoples voting behaviour. I split the political view variable back into indvidual parties in order to be able to conduct an OLS regression.

Table 4-6: Bivariate analysis with Political view as the dependent variable

Variable	Coef.	Std. err.	t	P	N	BP-test	Normality	Reset
TV	-0.12	+2.65	-2.64	0.008***	3954	0.850	0.000***	0.670
Newspaper	0.13	+2.64	+3.29	0.001***	3884	0.565	0.000***	0.075*
Twitter	0.11	+2.64	+2.01	0.044**	3488	0.614	0.000***	0.651

P < 0.01*** p < 0.05** p < 0.1*

In table 4-6 we can observe that all the bivariate regressions are statistically significant. These regression show that watching the TV-news influence political view negatively. This means that people who watch the TV-news often have more often voted for the liberals or for the conservative parties, wheras those who read newspapers and use twitter are more likely to vote for leftist parties. None of the regressions could show forth normally distributed residuals, but this is of little consequence (Midtbø 2012: 114), but they are homoscedastic, and linearity could not be rejected. These three models show that media shapes political attitudes also in the Norwegian context. Of corse, this is bivariate regressions, so there are bound to be underlying variables that affects the results (Skog 2010), but to some extent they confirm the findings from the analysis above: TV-news use affects the climate change mitigation variables negatively, which might indicate that the representation of these issues on the TV-news are different from the newspapers. When the use of TV-news also influence political view, it strengthens the case for motivated reasoning substantially. However, it must be repeated that these are all cross-sectional analyses, and therefore I cannot say anything definete about the causal direction (Skog 2010: 71-74).

4.6.4 Controls

Age

From previous research we have learned that older people tend to be more sceptical of climate

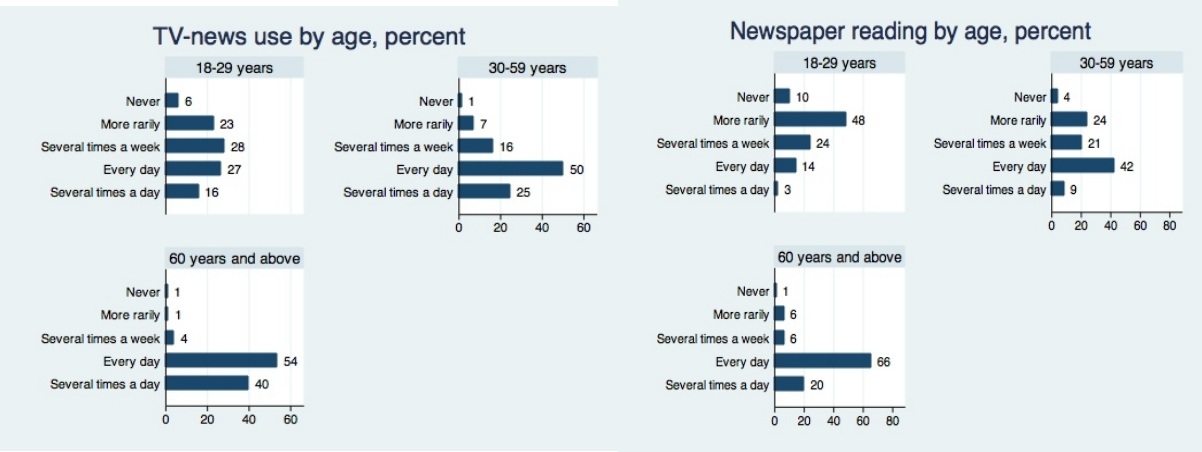
change (Poortinga *et al*. 2011, Hamilton 2011). In my analysis this seems not to be the case. In all of the four analysis conducted above, the general image is that older people are more worried about climate change, and more supportive of the proposed taxation of the exploratory undertakings of the petroleum industry. Both of these results were statistically significant. In the model depicting influences on public opinion regulation of CO_2 emissions the effect of age was positive – meaning that older people were more supportive, but not significant.

When it comes to the opinion about an increase or decrease of the petroleum production rate, the coefficient was negative and statistically significant. This indicates that younger people are more likely to support an increase or status quo when it comes to the production rate. This is a direct rejection of my eighth hypothesis – *Age have a negative impact worry about climate change, and support of the proposed mitigation policies. Age will have a positive impact on opinions about the petroleum production rate* – and requires an explanation.

We do know that following the news, whether on TV or in the papers, have a positive effect on political engagement (Newton 1999). To assess the impact of age on the use of news sources I conducted two bivariate cross-tabulations, with TV and newspaper use as dependent variables, and age as the independent variable. I did not do this for Twitter. We may remember from chapter 3 that 80 % of the respondents do not use Twitter as a news source at all. In addition, Enjolras *et al*. (2014) have mapped out the average Twitter-user, and describe them as young males with high education.

My simple cross-tabulations revealed that younger people use TV and newspapers more rarily than older people do, which can be observed in figure 4-2. This may explain why older people tend to be more worried about climate change and support mitigation efforts to a larger degree than younger people – they simply pay more attention to the news. This may also explain the negative coefficient in the model depicting opinions about petroleum production – since, after all, people get their information on climate change through the media. This finding suggest that there might be something to the information deficit model after all (Austgulen & Stø 2013). Still, we know very little about young peoples motivation for avoiding the news. It is possible that young people are experiencing "political fatigue" in relation to climate change, as the issue has been salient on the political agenda since 1988 (Asdal 2011). After almost 30 years, very little progress have been made. These are, however, speculations on my part, and should be subject to further scrutiny.

Figure 4-2: Age effects on TV news use and newspaper reading, based on cross-tabulations.



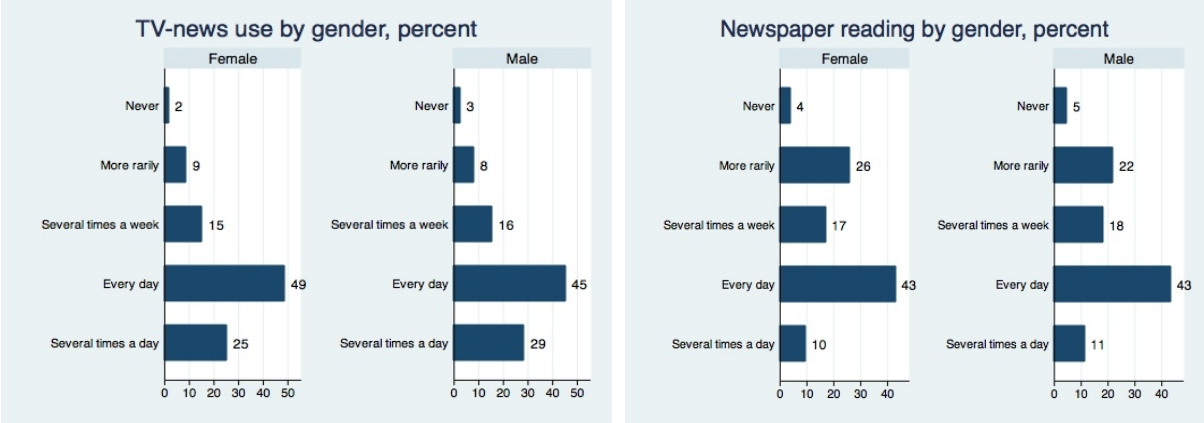
Gender

Gender is one of the demographic variables that has proved important across a host of previous studies, and it is also important here. The impact of gender is statistically significant across all models at the 1% level. The coefficients are negative in the three models concerning worry about climate change, and the two models describing support for mitigation policies. This means that women are more worried about climate change, and are more supportive of its mitigation, although between the two mitigation policies the impact was larger on the one concerning regulation of CO_2 emissions.

In the last model, the one describing opininons about the petroleum production rate (table 4-1), the coefficient is positive, which indicates that men are more supportive of status quo or an increase in the petroleum production rate. These findings together confirms my nineth hypothesis – *Gender will impact worry about climate change, and the mitigation policies negatively, but will a positive effect on opinion about the petroleum production rate*.

Do these findings suggest that women pay more attention to the news? Again some simple cross-tabulations may provide some answers, which can be viewed in figure 4-3 below. These cross-tabulations do not yield any revolutionary findings. Women tend to watch the TV-news a little more often than men, whereas the opposite holds for reading the newspaper. Again, I remind my reader that these media variables are not differentiated. I do not know which papers the readers read, whether tabloids or the eqvivalent to the British broadsheet, or which news broadcasts the respondents watch.

Figure 4-3: Gender effects on TV-news use and newspaper reading, based on cross-tabulations.



Education

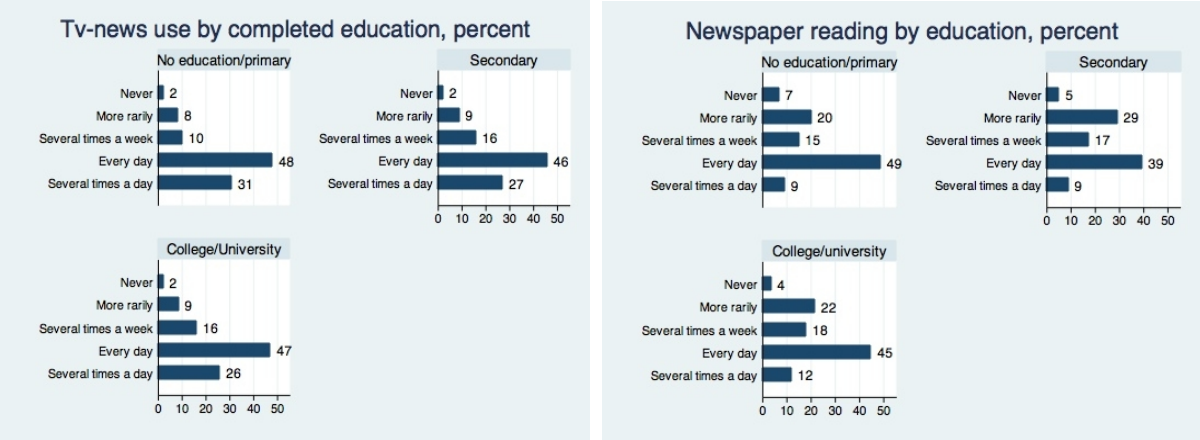
This variable received some attention when I looked at its effect upon whether people believed they could influence politics outside elections or not, and how gender affects the level of education. More genereally, my findings coroborate with previous research (see Poortinga et al. 2011, Hamilton 2011). People with more education tend to be more worried about climate change, and to support mitigation efforts to a higher degree. They are also more prone to believe that the Norwegian petroleum production rate should decrease. These findings confirm my tenth hypothesis - *Education have a positive impact on worry about climate change and support for both mitigation policies. Education has a negative impact on opinions about the petroleum production rate*.

The variable is statistically significant across all models, but less so in the model that describes support for regulation of CO_2 emissions (see tables 4-1 and 4-2). It is uncertain whether this is an expression for higher engagement when the petroleum industry is mentioned, or whether support for regulation of CO_2 is more widespread among the public. It does, however, leave some indirect support for the information deficit theory (Austgulen og Stø 2013, Norgaard 2011), in that people with less education are, perhaps, less likely to perceive the urgency for swift mitigation action, and also less likely to make the connection between large scale local petroleum production and increasing emissions of greenhouse gases globally.

As we have already seen, choice of media channels may have an effect upon what people think about climate change, and mitigation policies, particularily when it comes to the petroleum industry. Based on bivariate cross-tabulations using education as the independent variable, and the TV-news use and newspaper reading as dependent (it is more likely that level of education have an impact

upon choice of media channel, than the other way around). The results may be seen in figure 4-4 below.

Figure 4-4: Education effects on TV-news use and newspaper reading, based on cross-tabulations.



These cross-tabulations do not reveal much. It would seem that the least educated pay as much attention to the news, or more, than those in the next category. However, these cross-tabulations do not say much about the the quality of news that are watched and read, nor do they tell us how these news are perceived. Hamilton (2011), finds that perception is not really shaped by education, as more education did not change peoples minds about climate change to a very large degree. Based on the regression analysis above, and the marginal effect in figure 4-1, I would say that Hamiltons conclusion *may* not hold in Norway.

Income

In previous research, income has proved an important determinant with regards to opinions about climate change policies (McCright & Dunlap 2011). It has been linked to motivated reasoning, in that those who earn more are more interested in keeping the status quo. Mitigation efforts may be expensive, and they may alter the current economic order (Dunlap & McCright 2011, NME 2011, Clark & York 2005).

In my models, income has also proved to be an important predictor in determining what peoples opinions on various climate change issues are. In the models depicting worry about climate change, and support for taxation of the petroleum industry and support for a general reduction of emissions of greenhouse gases, income have a negative effect, meaning that people with a higher income was less worried, and less supportive of the mitigation policies. The effect, however, was statistically

significant at the 1% level only in the model predicting the respondents support for heavier taxes on the petroleum industry's exploration activities. The effect was not significant in the other models, describing support for general regulation of emissions and worry about climate change, which may suggest that the respondents are worried regardless of their income, or that people who do not earn so much are less supportive of general regulations of CO_2. People who earn more, are also more likely to support status quo or an increase in the Norwegian petroleum production rate (see table 4-1). The coefficients are quite low for all the models, but I suspect that this is caused by the initial transformation of the variable (see chapter 3). This leads to a confirmation of my eleventh hypothesis - *Income has a negative effect on worry about climate change, and support for the mitigation proposals. It will affect opinions on the petroleum production rate positively*.

Based on these findings, it is fair to say that income does affect ones views upon climate change and mitigation policies, which could be politically motivated.

4.7 Summary

In this chapter I have used cross-sectional analysis, bivariate regressions and cross-tabulations in order to explain the impact three different news-media have on opinions about climate change, the petroleum industry, two climate change mitigation policy proposals. Across the four the findings are relatively consistent: Watching TV-news renders support for the petroleum industry and opposition towards mitigation policy proposals that specifically target it, whereas reading newspapers and using twitter leads to increased levels of worry about climate change, and more support for the climate change mitigation efforts.

The strength of these effects, however varies across the models, and it seems opinions regarding the petroleum industry is particularily influenced by the media. This strengthens the thesis of the medias agenda setting (McCombs 2014). But seeing as the various media outlets also had diverging effects upon public opinion, there may be differences in the way these issues are *represented* in various news media (Carvalho 2007, Boykoff & Boykoff 2007)
I believe that a fruitful avenue of inquiry will be a comparison of content inTV-news and newspapers, but also between the news in various TV-channels.

The measures of interpersonal and political trust that have been included in the analysis also had

large impacts. This is a relatively new avenue of research in relation to climate change, and should be followed up in subsequent studies. My findings here, indicate that political trust have a negative impact upon worry about climate change, and the mitigation policy targeting the petroleum industry, but positive with regard to the petroleum production rate and regulation of CO_2. Whereas interpersonal trust had more or less the opposite effects, save with regard to regulation of CO_2 emissions.

I have tied these findings to Braithwaits (1998) exchange and communal trust norms, where the former emphasise, among other things, national economic development and competitiveness. This successfully explains, with some aid from the notion of reciprocity (Tvinnereim and Lachapelle 2014, Kahan 2003) the support for a status quo or increase in the petroleum production rates and the negative attitude towards the proposed petroleum tax. In addition it explains the non-significant outcome with regards to regulation of CO_2 emissions, because this may not threaten the Norwegian economy. The communal trust norms are tied to harmony values that emphasize, for example, personal knowledge and solidarity, which may explain the positive impact of this variable, particularily with regards to support for the proposed petroleum tax.

In my analysis, age turned out to have the opposite effect from previous studies. Older people tend to be more worried about climate change, and they support the proposed mitigation policies to a larger extent than younger people. It seems that this may be explained, in part, by media use, as older people both watch the TV-news more often and they read the newspapers more often than do younger people.

Table 4-7: Summary of the initial hypotheses and the outcome

Initial	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**	**H8**	**H9**	**H10**	**H11**
Worry	+	+	+	+	+	-	+	-	-	+	-
Production rate	+	+	-	+	+	-	-	+	+	-	+
Tax	+	+	+	+	+	-	+	-	-	+	-
Emission	+	+	+	+	+	-	+	-	-	+	-
Outcome											
Worry	-	+	+	+	-	-	+	+	-	+	-
Production rate	+	-	-	-	+	+	-	-	+	-	+
Tax	-	+	+	+	-	-	+	+	-	+	+
Emission	-	+	+	+	+	-	+	+	-	+	+

Chapter 5
Conclusion and future research

5.1 Conclusion

My key objective with this thesis has been to study the effects of various media variables upon public opinion regarding climate change mitigation efforts targeting the Norwegian petroleum industry. Under the notion that climate change mitigation policies needs legitimacy in order to be defered to, and that this legitimacy comes from the public, I have used Norwegian survey data in my investigation into what effects TV-news, newspapers and Twitter have on peoples support for mitigation efforts that target the petroleum industry. Four models were computed, using OLS and binary logistic regressions. To elaborate further on the findings from the four models bivariate OLS regressions and some cross-tabulations were used.

Given that the burning of fossil fuels is the main culprit with regard to emissions of greenhouse gases globally, it is both interesting and necessary to know which opinions the general public have toward the industry that provides the world with these fossil fuels – particularily in petroleum producing countries. The salience the Norwegian petroleum industry has in the Norwegian economy, and also in Norwegian culture, has already been seen to cause cognitive dissonance among the citizens in one Norwegian community, resulting in collective organised denial of climate change in this sample (Norgaard 2011). This may be part of the explanation as to why Norwegians tend to be more sceptical toward climate science and why they are less worried about climate change than citizens of the EU (Austgulen & Stø 2013), and also why climate change mitigation becomes a difficult political task in Norway (Gloppen et al. 2014).

5.1.1 Answering the research question

Against this backdrop, I asked *What effects do various news media have on public opinion on climate change mitigation policies targeting the Norwegian petroleum industry?* And the most striking finding in this study is that watching the TV-news renders more support for the petroleum industry and less for climate change mitigation efforts, especially when the mitigation policy targets the petroleum industry. Reading newspapers and using Twitter have the opposite effect. These findings show that the different media variables have different effects on public opinion, and particularily so when the petroleum industry is concerned.

Furthermore, it seems that people may not only be motivated to perceive the news according to their world views (Lippmann 1991), but also that they choose a preferd medium that may make this motivated reasoning easier (see table 4-7), similar to some evidence from the US (Feldman *et al.* 2011).

My findings reveal that interpersonal and political trust are important predictors also when it comes to public opinion on the issue of climate change mitigation. First, my findings suggest that interpersonal trust and political trust are built on different trust norms, understood according to Braithwaits (1998) notions of exchange and communal trust norms. Reliance on exchange trust norms in relation to politics can explain why people can be worried about climate change on the one hand and still want an increase in the production of petroleum on Norwegian territory, as exchange trust norms are built on values such as national economic development and competitiveness. Drawing on the notion of reciprocity (Tvinnereim & Lachapelle 2014, Kahan 2003) which is important in the building of trust, it makes no sense for many Norwegians to "dismantle" the contry's most important industry by increasing its tax rate or reducing the production rate, if other petroleum producing countries do not follow suit.

Second, the level of interpersonal trust is quite high in the Norwegian society, and this affects opinion on the mitigation efforts positively, whereas it affects opinions related to the petroleum production rate negatively. If interpersonal trust is built on communal trust norms these effects may be explained by the underlying value base of these trust norms – such as democracy, international cooperation, peace and a good life for others – if, at the same time, we consider climate change mitigation to constitute a global common good (Tvinnereim 2013).

Third, beliefs about one's ability to influence politics, a variables that was included as a proxy measure for the overall confidence in the Norwegian democracy, has a negative effect in all the models except the one regarding the petroleum production rate. Even if my theoretical framework justified the inclusion of the variable, I still could not readily explain these findings, even if they appear logical. Bivariate regressions with the media variables suggest that paying attention to the news influences ones belief in ones own ability to affect politics positively, but an interaction effect shows that less education seem to hamper peoples understanding of the the messages mediated by the media.

Based on these findings, I conclude that TV-news use have a negative effect on climate change mitigation policies targeting the petroleum industry. Further, reading the newspaper and using Twitter have a positive effect on the support for climate change mitigation policies targeting the petroleum industry. My findings suggests further that the effects of the media on opinions about climate change mitigation policies are also influenced by media effects on variables such as interpersonal and politcal trust, which in turn will influence public opinion.

5.1.2 Theoretical implications

Taken together, these findings lend support to the notion of motivated reasoning, showing that our motivated reasoning is also connected with values associated with our trust norms. These trust norms are deeply embedded our cognitive and perhaps also emotional behaviour (Kunda 1990, Festinger & Carlsmith 1959). The high level of worry about climate change indicates that the notion of collective cognitive denial needs some revising, at least as it was formulated by Nordgaard (2011). However, when seen in connection with the level of support for the mitigation policies, which was generally quite low and may have been hampered by the middle category "neither-nor", this notion cannot be dismissed.

Media representations are proved to be important, although I have not looked at them directly. The media in Norway seem to, generally, enhance the level of both interpersonal trust and political trust in the Norwegian society, which is contrary to the findings from the US, at least when it comes to TV-representations (Mutz 2007). But the fact that the political trust is low with regards to the climate change mitigation policy that targets the petroleum industry, suggests that the government may be struggeling with their legitimacy with regards to climate change policy specifically targeting this industry (Austgulen & Stø 2013, Levi *et al*. 2009).

The diverging effects of political trust and interpersonal trust on the dependent variables suggest that the two types of trust are, more or less, built on different trust norms (Braithwaite 1998), as argued by Levi (1998). But based on the evidence here, it may be that the trust norms are also applied in a way similar to that of motivated reasoning. Most people Norwegians claim to place a significant degree of trust in others, and this is important when people are forming their opinions on climate change issues. I have been unable to tie notion of reciprocity to individual behaviour, based on my findings, but there may be a link, since it seems to matter in relation to politics.

5.1.3 Future research

It seems fair to claim that this thesis has broken new grounds. The findings do none the less also raise a host of new questions. Here I will present three possible avenues of further research.

There might be substantial differences between the content of the TV-news as compared to the newspapers, given the diverging effects related to the petroleum industry. One line of inquiry may be to continue with surveys, albeit with more differentiated media variables, as suggested by Holtz-Bacha (1990) and Newton (1999). Another will be content analysis of TV-news from varying TV-channels, as Boykoff (2008) have done. Are there differences in the representations of climate change between TV-news and the press? Are there differences in the representations between TV-channels? The notion of video malaise seem to be largely disconfirmed by the evidence from my research, but the strong negative impact TV-news watching have in some instances may warrant some more research, particularily on climate change mitigation efforts pertaining to the petroleum industry, and political trust in a vein similar to that of Mutz (2007).

Second, my findings suggest that the media may be spending more time and space reporting on the petroleum industry relative to other industries, given the salience of the findings in the models predicting opinions about the Norwegian petroleum production rate and the model predicting support for the proposed tax on petroleum exploration activities relative to the model predicting support for a regulation of CO_2 emissions from the industry in general.

Third, my findings show that both interpersonal and political trust are important predictors of peoples opinions about climate change mitigation efforts. This should be followed up in subsequent studies. I have probed the relationship between trust and the media, albeit to a very limited extent. I believe this theme deserved more attention in the Norwegian context, particularily the intersection between political and interpersonal trust. There are, perhaps, ways of connecting this to media representations that may influence trust. For example, Tvinnereim & Lachapelle (2014) have found that Norwegian citizens are more sceptical of Norway signing an international climate agreement where it is known that China does not participate. How do the media construct China as "the other"? It would also be interesting to know more about how the notion of reciprocity works between Norwegian citizens. How important is the behaviour of others when an individual decides how to act in matters that are related to climate change and environmentalism?

5.2 The limitations of this study

Although this study has contributed to the cumulative knowledge on Norwegian public opinion on climate change through focusing on what effects the media have on opinions on climate change mitigation policies targeting the petroleum industry, there are certain limitations to the study.

First, this is a case study of Norway. Although I draw on litterature from other national contexts, most notably the US, this does not mean that my findings can be directly applied to other national contexts. There is, however, no reason to believe that this study is not representative of the Norwegian population, see chapter 3.2 about data.

Second, this is a cross-sectional study, meaning that there are not really grounds for drawing firm conclusions regarding causality. The relationships presented here are correlations, and a time series or a panel study is needed in order to establish the causal chain in a more firm fashion.

Third, I have use relatively simple tools from the methods toolkit: OLS regressions, binary logistic regressions and cross-tabulations. Although I do not consider this a limitation as such, an ordinal logistic regression could have replaced the binary logistic regressions. This would have yielded richer results from the models predicting opinions about the petroleum production rate, and worry about climate change.

Fourth, on the whole I consider the validity of this study to be good, particularily since the findings are consistent across the four models. However, in a quantitative study there is always room for improvement, particularily with regards to the measures used. For the most part, I do not believe this to be a large problem in my study, but there some improvements to be made.

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Appendix to chapter 3

A3.1 Describing dependent variables

Table A3.1.1: Possible transformations of Worry about climate change

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.1.1: Frequency, percent, and normal distribution of Worry about climate change

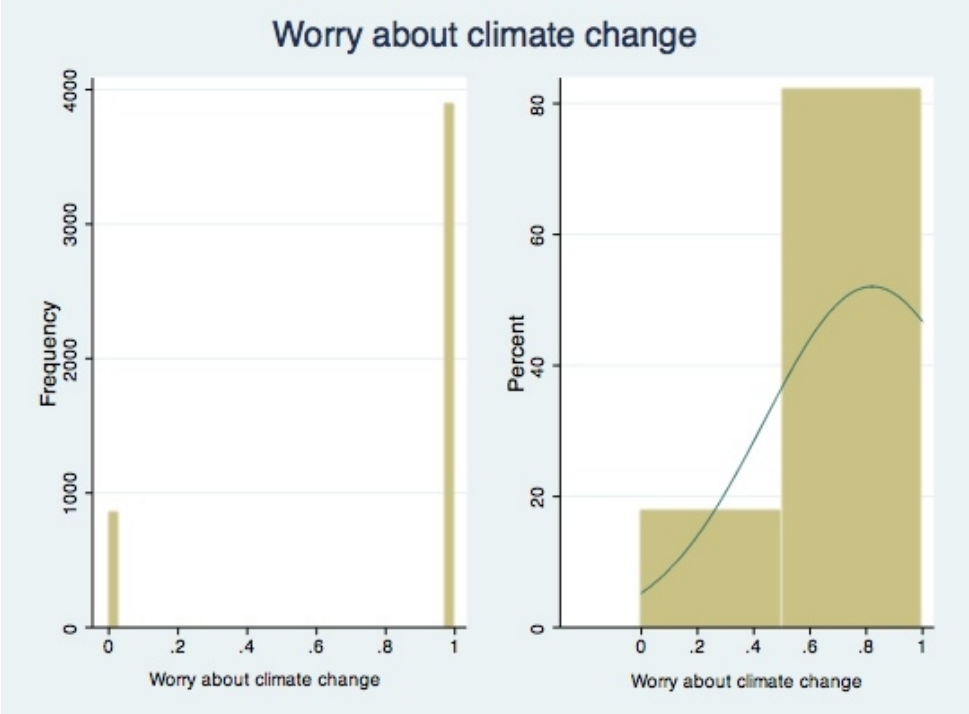


Table A3.1.2: Possible transformations of Opinions about the Norwegian petroleum production rate

Transformation	**Chi2(2)**	**P(chi2)**
Cubic	-	-
Square	-	-
Identity	-	-
Square root	-	-
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.1.2: Frequency, percent, and normal distribution of Opinions about the Norwegian petroleum production rate

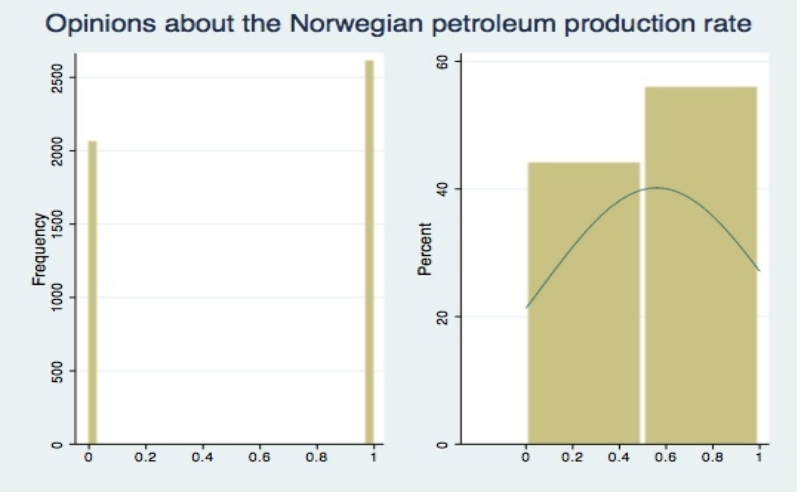


Table A3.1.3: Possible transformations of Attitudes toward taxation of petroleum search

Transformation	**Chi2(2)**	**P(chi2)**
Cubic	-	0.000
Square	-	0.000
Identity	18.89	0.000
Square root	-	0.000
Log	-	0.000
1/(square root)	-	0.000
Inverse	-	0.000
1/square	-	-
1/cubic	-	-

Figure A3.1.3: Frecuency, percentage, and normal distribution of the support for taxation

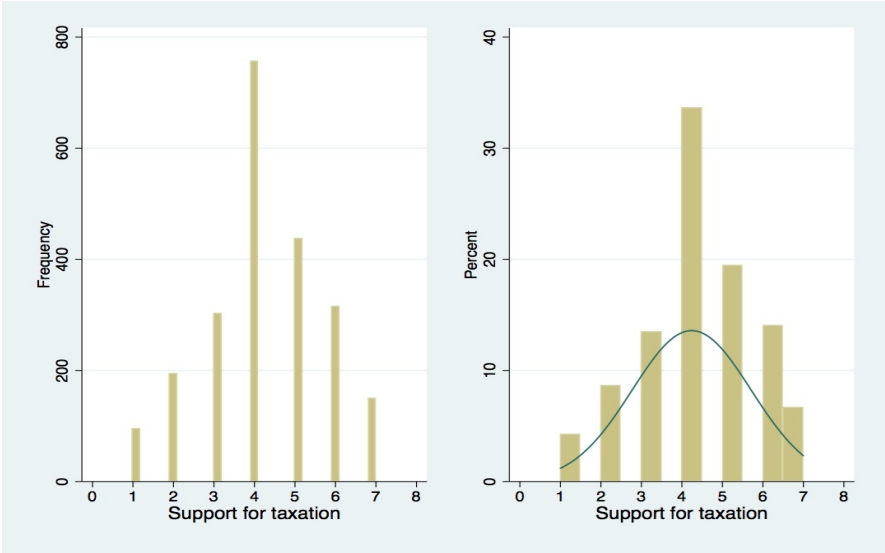
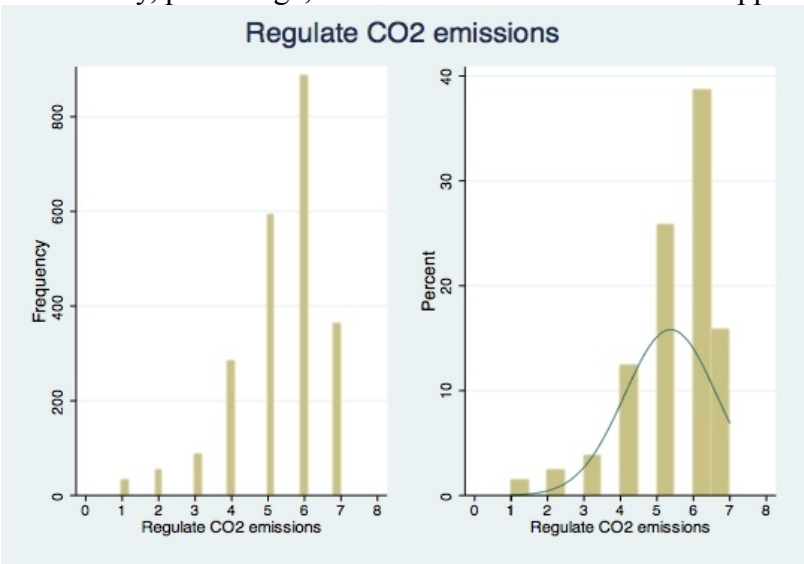


Table A3.1.4: Possible transformations of Attitudes toward general regulation of CO_2 emissions

Transformation	**Chi2(2)**	**P(chi2)**
Cubic	-	0.000
Square	49.66	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	0.000
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.1.4: Frecuency, percentage, and normal distribution of the support for regulation



A3.2 Describing the explanatory variables

Table A3.2.1: Possible transformations of TV-news use

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.2.1: Frequency, percentage and normal distribution of TV-news use

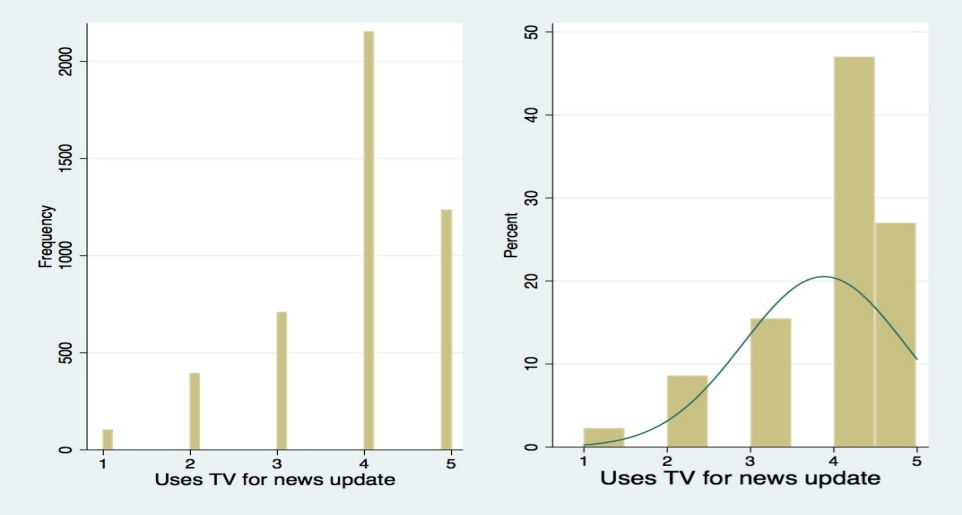


Table A3.2.2: Possible transformations of newspaper reading

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	0.000
1/(square root)	-	0.000
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.2.2: Frequency, percentage and normal distribution of newspaper reading

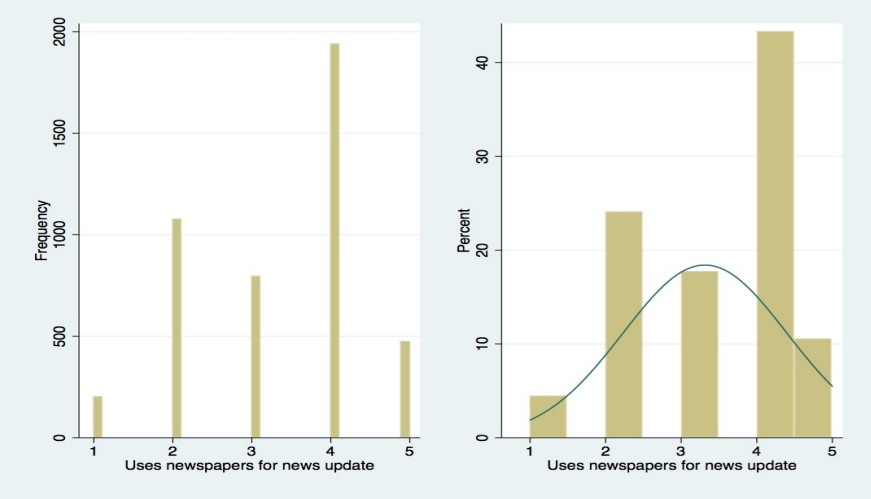


Table A3.2.3: Possible transformations of Twitter use

Transformation	Chi2(2)	P(chi2)
Cubic	-	-
Square	-	-
Identity	-	-
Square root	-	-
Log	-	-
1/(square root)	-	0.000
Inverse	-	0.000
1/square	-	0.000
1/cubic	-	0.000

Figure A3.2.3: Frequency, percentage and normal distribution of Twitter use

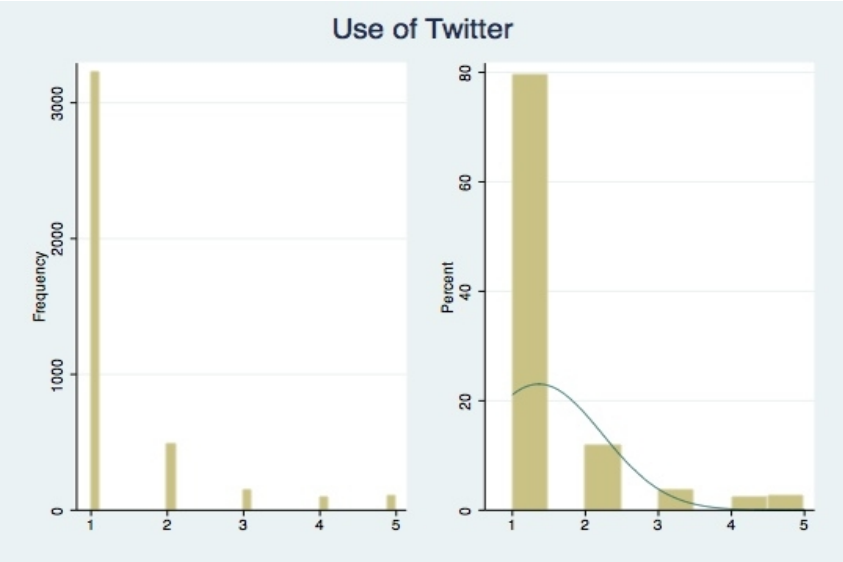


Table A3.2.4: Possible transformations of Trust in the government

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.2.4: Frequency, percentage and normal distribution of Trust in the government

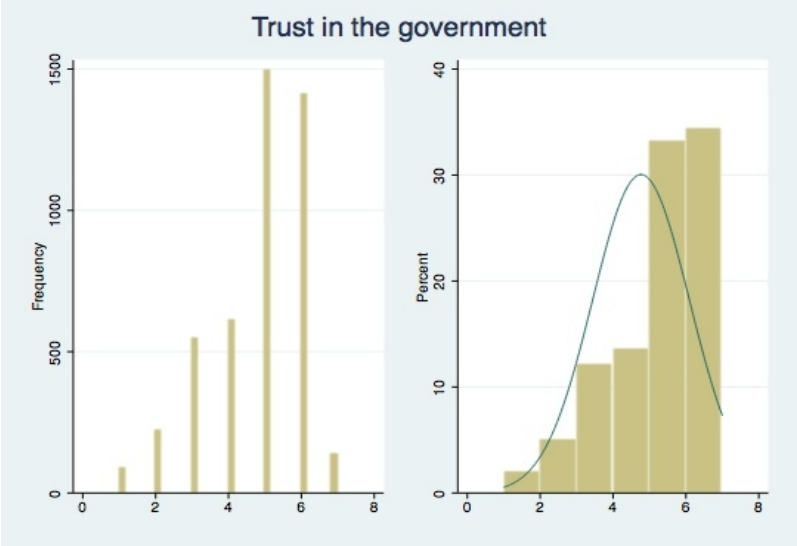


Table A3.2.5: Possible transformations of Interpersonal trust

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	-
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.2.5: Frequency, percentage and normal distribution of Interpersonal trust

Table A3.2.6: Possible transformations of Voting is the only way to influence politics

Transformation	**Chi2(2)**	**P(chi2)**
Cubic	-	0.000
Square	-	0.000
Identity	-	-
Square root	-	-
Log	-	0.000
1/(square root)	-	0.000
Inverse	-	0.000
1/square	-	-
1/cubic	-	-

Figure A3.2.6: Frequency, percentage and normal distribution of Voting is the only way to influence politics

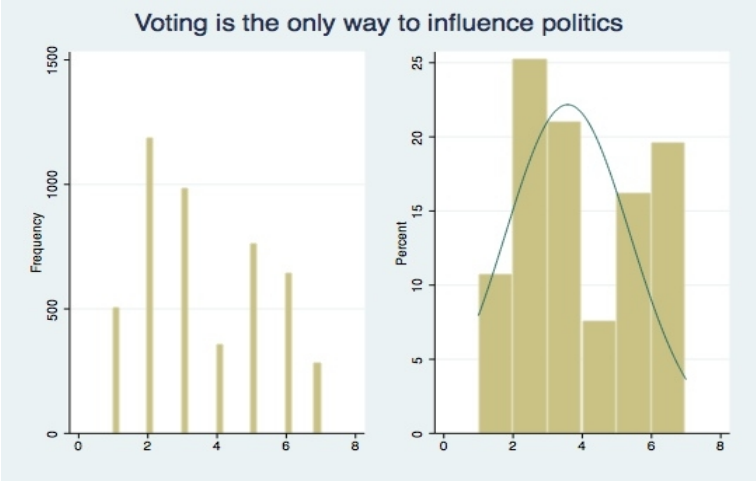
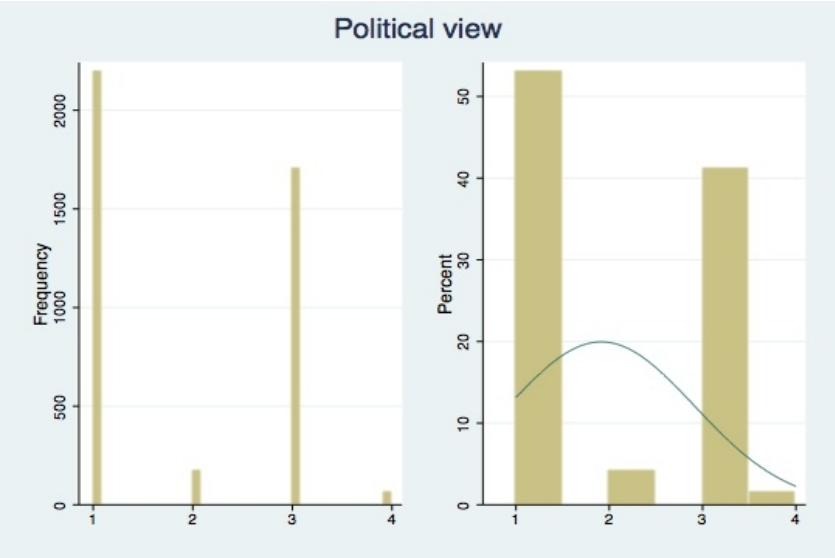


Table A3.2.7: Possible transformations of Political view

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	-
Identity	-	-
Square root	-	-
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.2.7: Frequency, percentage and normal distribution of Political view



A3.3 Describing the control variables

Table A3.3.1: Possible transformations of Age

Transformation	Chi2(2)	P(chi2)
Cubic	-	0.000
Square	-	0.000
Identity	-	0.000
Square root	-	0.000
Log	-	0.000
1/(square root)	-	0.000
Inverse	-	0.000
1/square	-	0.000
1/cubic	-	0.000

Figure A3.3.1: Frequency, percentage and normal distribution of Age

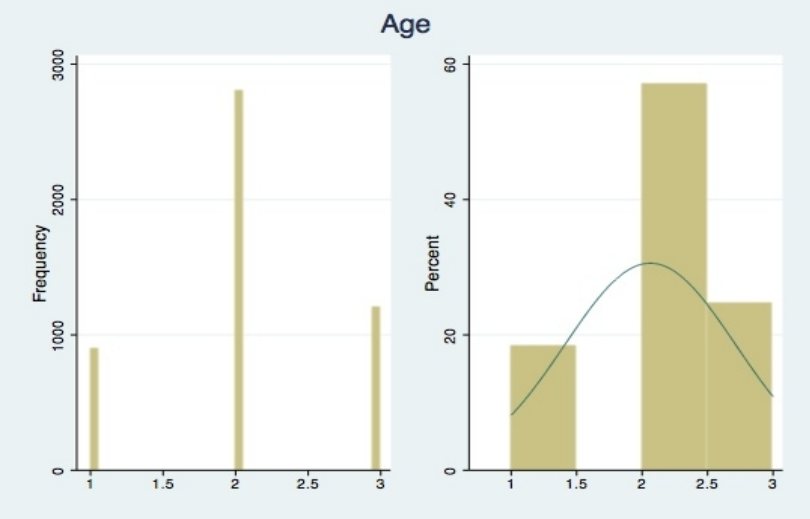


Table A3.3.2: Possible transformations of Gender

Transformation	Chi2(2)	P(chi2)
Cubic	-	-
Square	-	-
Identity	-	-
Square root	-	-
Log	-	-
1/(square root)	-	-
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.3.2: Frequency, percentage and normal distribution of Gender

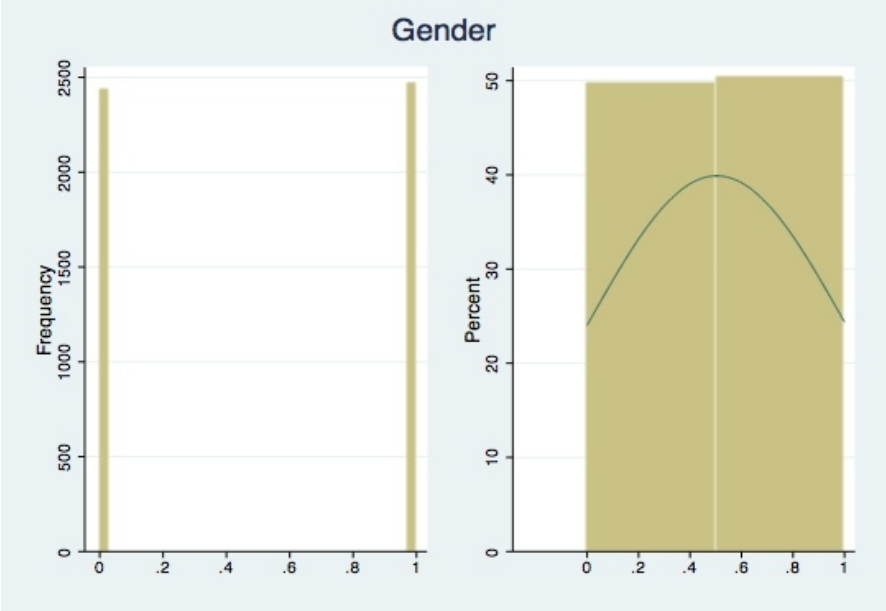


Table A3.3.3: Possible transformations of Education

Transformation	**Chi2(2)**	**P(chi2)**
Cubic	-	-
Square	-	-
Identity	-	0.000
Square root	-	0.000
Log	-	0.000
1/(square root)	-	0.000
Inverse	-	-
1/square	-	-
1/cubic	-	-

Figure A3.3.3: Frequency, percentage and normal distribution of Education

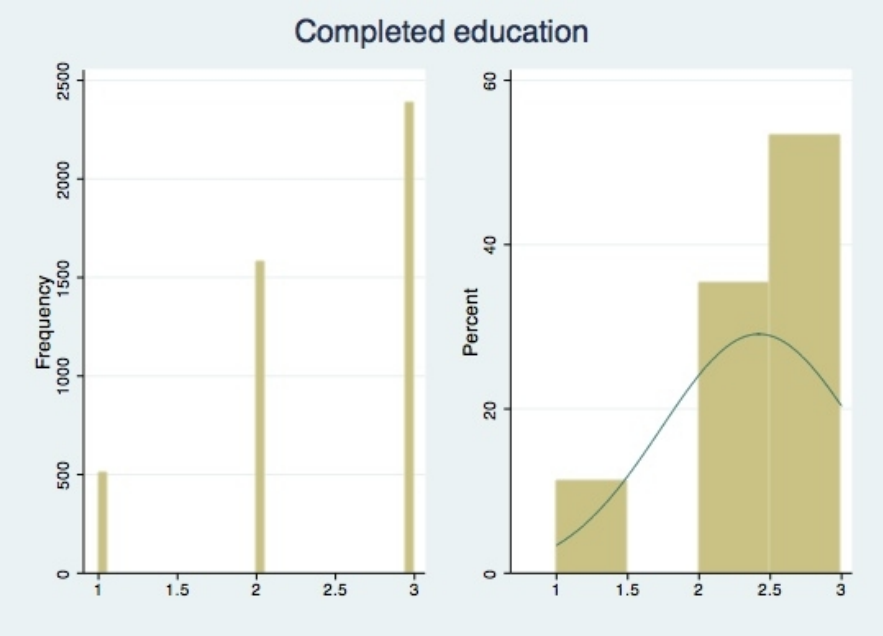
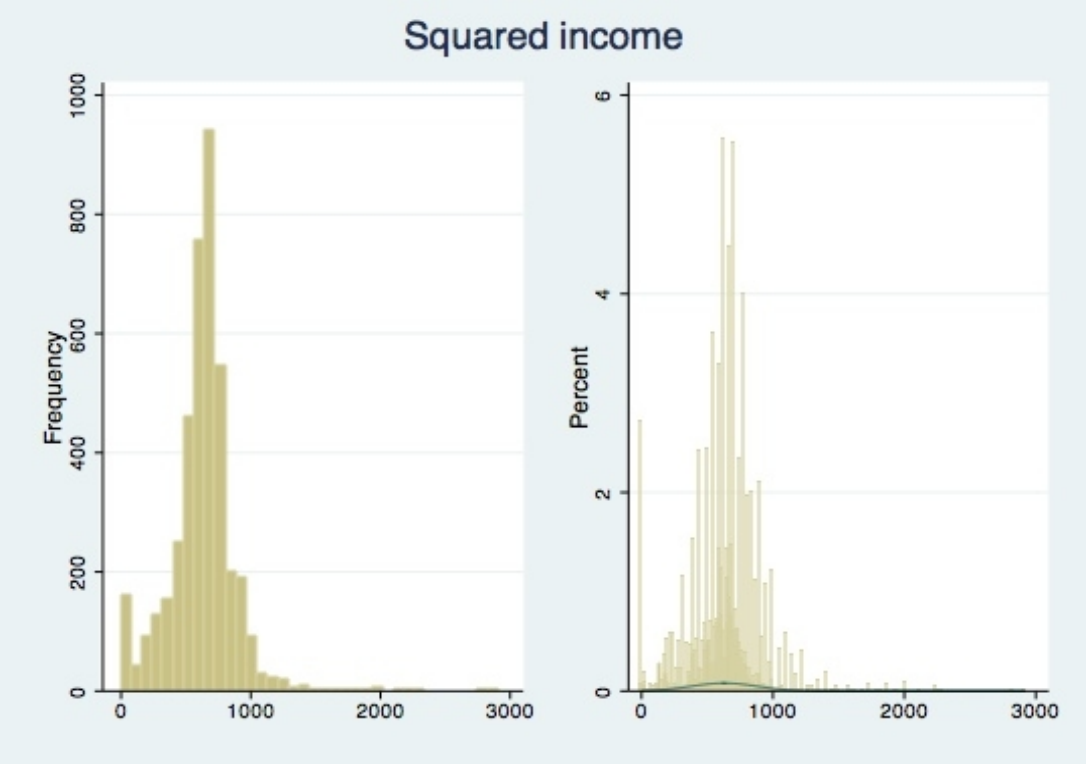


Figure 3.3.4: Frequency, percentage and normal distribution of Squared income



A3.4 Assumptions of OLS regressions

A3.4.1 Homoscedasticity

Figure A3.4.1.1: Graphically showing homoscedasticity in the model depicting support for more tax on the petroleum industry's exploratory activities

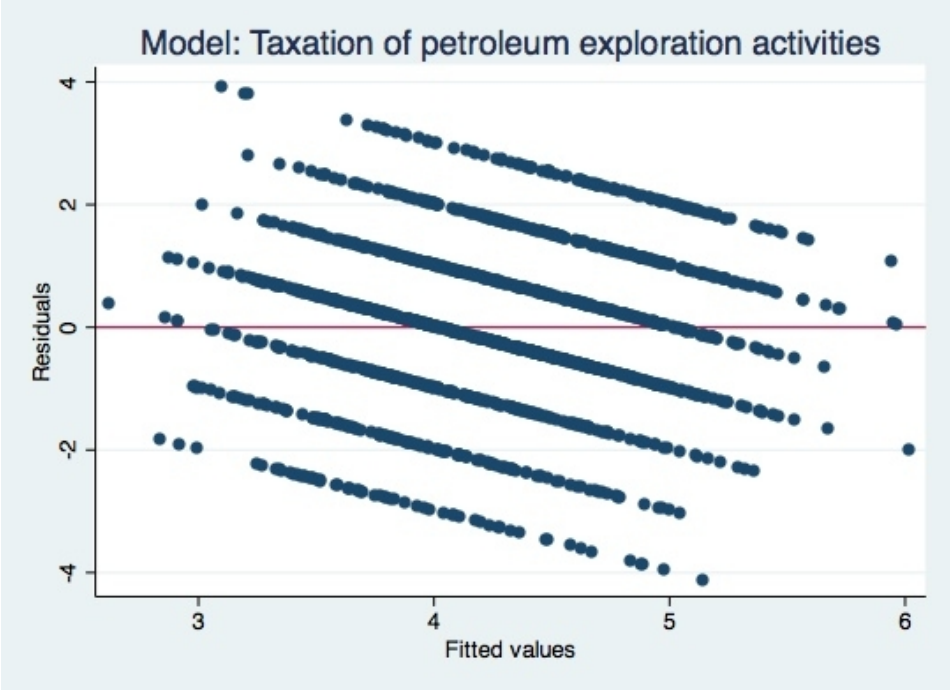
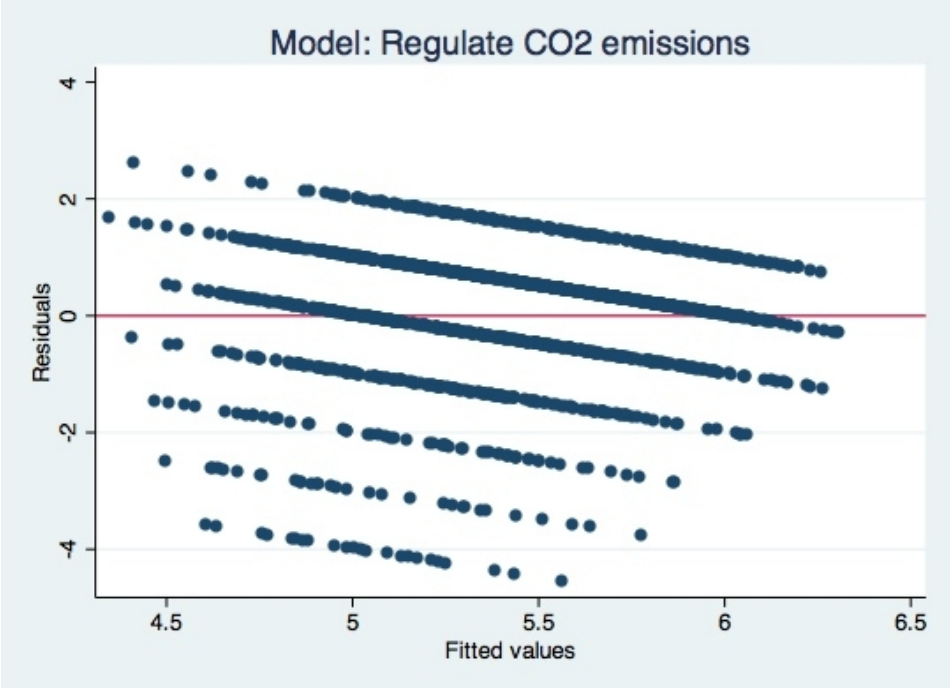


Figure 3.4.1.2: Graphically showing heteroscedasticity in the model depicting support for a general regulation of CO_2 from the industries



A3.4.2 Normal distribution of residuals

Figure A3.4.2.1: Graphically showing the normal distribution of the residuals in the model depicting support for further taxation of the petroleum exploration activities

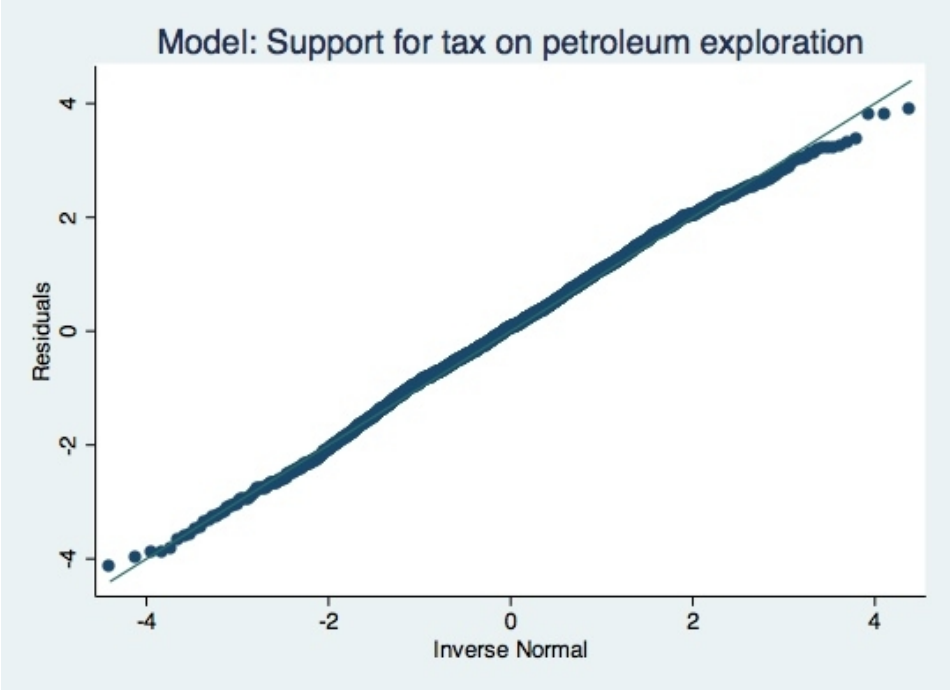
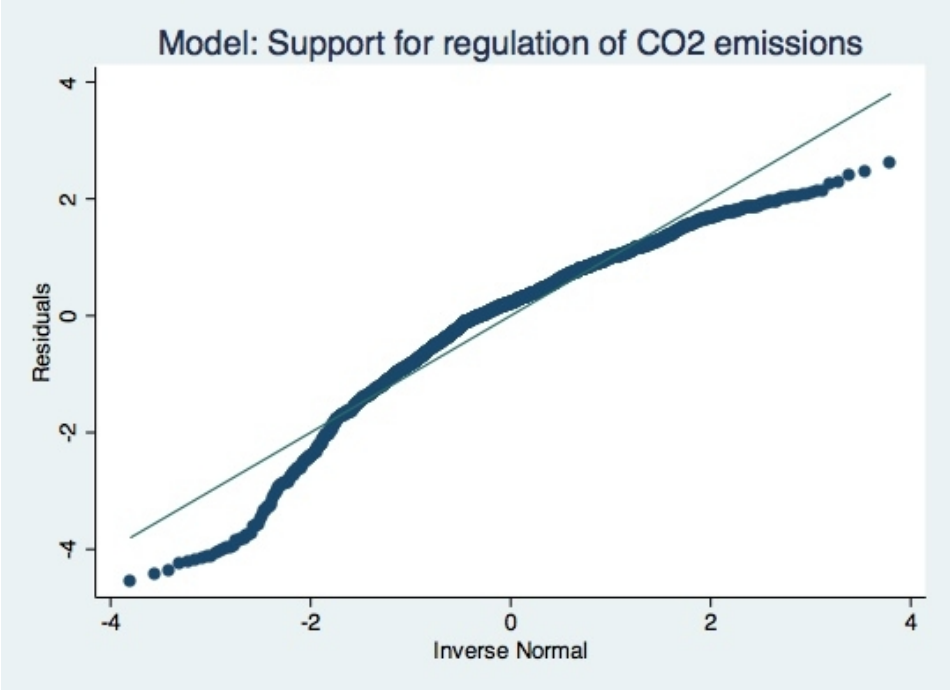


Figure A3.4.2.2: Graphically showing the normal distribution of the residuals in the model depicting support for regulation of CO2 emissions



A3.4.3 Multicollinearity

Table 3.4.3.1: Multicollinearity in the OLS models

Variable	**Support for petroleum tax**		**Support for regulation of CO2 emissions**	
	VIF	1/VIF	VIF	1/VIF
Age	+1.41	0.71	+1.41	0.71
Newspaper	+1.36	0.73	+1.36	0.73
Income	+1.29	0.78	+1.29	0.78
TV	+1.25	0.80	+1.25	0.80
Education	+1.18	0.85	+1.18	0.85
Political Influence	+1.17	0.85	+1.17	0.85
Trust in the government	+1.13	0.88	+1.14	0.88
Political view	+1.15	0.87	+1.15	0.87
Interpersonal trust	+1.14	0.88	+1.14	0.88
Gender	+1.09	0.92	+1.08	0.92
Twitter	+1.06	0.94	+1.06	0.94
Mean VIF	**+1.20**		**+1.20**	

Appendix Chapter 4

Weighted and unweighted results from the regressions.

Table A4-1: Worry about climate change

	Worry about climate change (unweighted)		**Worry about climate change (weighted)**	
N	3003		3003	
Pseudo R_2	0.09		0.09	
Log likelihood	-1236.97		-1236.19	
LR chi2	(11) 230.52		(12) 232,07	
	Coef.	**P-value**	**Coef.**	**P-value (t-value)**
TV	-0.08	0.174	-0.08	0.177
Twitter	0.05	0.425	0.04	0.485
Paper	0.16	0.004***	0.16	0.004***
Trust in government	-0.13	0.006***	-0.13	0.006***
Interpersonal trust	0.04	0.097*	0.04	0.110
Political influence	-0.12	0.000***	-0.12	0.000***
Political view	0.34	0.000***	0.34	0.000***
Age	0.31	0.001***	0.30	0.001***
Gender	-0.87	0.000***	-0.86	0.000***
Education	0.31	0.000***	0.42	0.000***
Income	-0.00	0.675	-0.00	0.692
Weight			0.14	0.221
Constant	0.74	0.106	0.36	0.512

Likelihood-ratio test — LR chi2(1) = 1.55
(Assumption: Unweighted nested in weighted) — Prob > chi2 = 0.2127

Table A4-2: Opinions about petroleum production

	Opinions about petroleum production (unweighted)		Opinions about petroleum production (weighted)	
N	2987		2987	
Pseudo R^2	0.10		0.10	
Log likelihood	-1848.19		-1847.50	
LR chi2	(11) 408.61		(12) 409.99	
	Coef.	**P-value**	**Coef.**	**P-value**
TV	0.24	0.000***	0.24	0.000***
Twitter	-0.13	0.005***	-0.13	0.006***
Paper	-0.12	0.008***	-0.11	0.010***
Trust in government	0.26	0.000***	0.26	0.000***
Interpersonal trust	-0.06	0.003***	-0.06	0.004***
Political influence	0.13	0.000***	0.13	0.000***
Political view	-0.30	0.000***	-0.30	0.000***
Age	-0.34	0.000***	-0.33	0.000***
Gender	0.49	0.000***	0.48	0.000***
Education	-0.37	0.000***	-0.46	0.000***
Income	0.00	0.000***	0.00	0.000***
Weight			-0.11	0.240
Constant	-0.05	0.88	0.25	0.572

Likelihood-ratio test LR chi2(1) = 1.38
(Assumption: Unweighted nested in weighted) Prob > chi2 = 0.2401

Table A4-3: Support for taxation on exploration activities

Dependent variable	Support for taxation of petroleum exploration activities (unweighted)		Support for taxation of petroleum exploration activities (weighted)	
N	1524		1524	
R^2	0.15		0.15	
Adjusted r^2	0.14		0.14	
Standard error	+1.37		+1.37	
	Coef.	**P-value**	**Coef.**	**P-value**
TV	-0.17	0.000***	-0.17	0.000***
Twitter	0.14	0.001***	0.14	0.001***
Paper	0.11	0.003***	0.11	0.003***
Trust in government	-0.12	0.000***	-0.12	0.000***
Interpersonal trust	0.06	0.002***	0.06	0.002***
Political influence	-0.08	0.000***	-0.08	0.000***
Political view	0.24	0.000***	0.24	0.000***
Age	0.18	0.007***	0.18	0.006***
Gender	-0.38	0.000***	-0.38	0.000***
Education	0.20	0.001***	0.16	0.079*
Income	-0.00	0.000***	-0.00	0.000***
Weight			-0.05	0.573
Constant	+4.11	0.000***	+4.24	0.000***

Table A4-4: Support for general reduction of CO_2 emissions

Dependent variable	Support for reduction of CO_2 (unweighted)		Support for reduction of CO_2 (weighted)	
N	1537		1537	
R^2	0.10		0.10	
Standard error	+1.18		+1.18	
	Coef.	**P-value**	**Coef.**	**P-value**
TV	-0.05	0.232	-0.05	0.228
Twitter	0.07	0.047**	0.07	0.056*
Paper	0.09	0.013**	0.08	0.017**
Trust in government	0.00	0.868	0.01	0.819
Interpersonal trust	0.04	0.045**	0.04	0.051*
Political influence	-0.06	0.002***	-0.06	0.002***
Political view	0.15	0.000***	0.15	0.000***
Age	0.04	0.492	0.04	0.522
Gender	-0.47	0.000***	-0.46	0.000***
Education	0.11	0.018**	0.21	0.009***
Income	-0.00	0.173	-0.00	0.182
Weight			0.12	0.099*
Constant	+4.82	0.000***	+4.50	0.000***