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Environmental Concern and Economic Growth: Public Opinion Across 107 Countries From 1995 to 2022

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Abstract

This study examines three questions across countries and over time. First, how the public is prioritizing between the environment and economic growth is investigated. Second, the association between how the public prioritizes between the environment and economic growth, and the public's level of political confidence is examined. Third, the opinion of wanting a radical change of society's organization is studied in relation to the opinion of how to prioritize between the environment and economic growth. The purpose is to gain knowledge about the public's standpoint in the environment-economy dilemma in several countries over time, valuable for policy creation and policy changes. On the basis of describing the dominant practices as staying within the economic growth paradigm, this is discussed with relation to the theoretical notion of ecological modernization, contrasted with the view shared by the degrowth movement. The environmental conflict about what role economic growth should take in society is explained by use of political ecology and political ontology, acknowledging that, in fact, different ontologies exist simultaneously. Political confidence captures the public's feelings about their government and is included to determine its association to the prioritization choice. Multivariate imputation by chained equations (MICE) was performed to deal with some missing data, successfully improving the data. Using multilevel regression including a set of control variables on the World Values Survey's time-series dataset, involving 107 countries where each has up to 5 measurement points between the years 1995 to 2022, a mapping of the current political landscape was enabled. Countries do differ both in their starting points and in the form of their trajectories. An overview of the analyzed countries will be shown, illustrating trends both within countries, between countries and over time. Main findings are that the public opinion on the prioritization question is stable throughout the years, as well as the public opinion on whether they wish a radical change of society, and a significant association is found between the prioritization choice and people's level of political confidence but this depends on the year. The study inspires questions on what future society the public wants, globally, and fits within the study of environmental sociology, political sociology and the sociology of social movements.

Keywords: environmental concern, economic growth, political confidence, public opinion, multiple imputation

Table of Contents

1. Introduction

This thesis will investigate attitudes about the prioritization between the environment and economic growth, and also ask about the public's confidence in current political system. More knowledge on public opinion on the environment-economy question matters in democratic societies since it helps to bring information about the possibilities for political decisions (Drews et al. 2018: 265-266; Drews & van den Bergh 2016: 12; Tomaselli et al. 2019: 41; Xu & Li 2018: 16), because public support for policy implementation can affect the policies' feasibility (Drews et al. 2018: 266). It is sociologically relevant to capture current views on the topic to get a snapshot of the public opinion and identify possibilities for change, which matters when green transformations need to happen (see for instance: Scoones et al. 2015: 1; Intergovernmental Panel on Climate Change [IPCC] 2021: 36; United Nations Framework Convention on Climate Change [UNFCCC] n.d.; United Nations 2015: 1).

Different ways of looking at the prioritization between the environment and economic growth exist. If someone wants to prioritize the environment it is often motivated by the wish to reassure that there are resources left for future generations – something environmentalists often stress (see e.g. Ariztia et al. 2016: 901; Guzmán Rincón et al. 2021: 12-13, 16). Another opinion is to prioritize economic growth and justify this by arguing that economic means are needed for technological improvements to combat climate change and other environmental problems. This idea is belonging to the perspective of ecological modernization, where an environmental reform takes place, but still within the context of a market-oriented economy (Nightingale et al. 2019: 47; Mol & Jänicke 2009: 18-19, 20). Since such different perspectives exist, asking what kind of societal development is most desirable according to the public when it comes to the economy's role in society and what prioritization between the environment and economic growth should be maintained is a justifiable question.

The reason why members of protest groups interact is because they share a common distrust for political leaders and current policies (Newton et al. 2017: 43), and thus, distrust can be seen as a driver for public demand to change political policies (Davidovic & Harring 2020: 3). It is then interesting to relate the choice of prioritization – environment or economic growth – to the public's perceived level of political confidence and clarify how these aspects relate to each other. Specifically, this is interesting when humanity is facing a climate crisis and needs to collaborate to solve the issue (Shiva 2009: 22; OECD 2020: 9, 13; IPCC 2022a: 59).

2. Aims and Research Questions

One aim of the study is to gain knowledge about current views among the public on the prioritization between the environment and the economy and whether these differ between countries and have changed over time. Another aim is to investigate whether a prioritization of the environment over economic growth correlates with people's level of confidence in their current political system, and if the level of confidence changes over time and across countries. A third aim is to examine if people prioritizing the environment over economic growth also

ask for a radical change of society's organization, and determine whether the level of asking for radical change differs over time and between countries.

The goal with these endeavours is to assess the public's standpoint in the environment-economy dilemma globally and bring knowledge valuable for policy creation, policy changes and other practices where the environment and the economy need to be weighed against each other. If people prioritizing the environment over economic growth also have less confidence in their political system, this can indicate if the public is satisfied with the way current politics handles environmental challenges. If having the attitude that the environment should be prioritized over economic growth is associated with an opinion that society needs to be radically changed, then this knowledge can be used to evaluate people's perceived degree of urgeness of societal change linked to environmental concern. Ultimately, fulfilling these aims will paint a picture of the current viewpoints of the environment-economy dilemma and place this in a historical perspective where countries' opinions can be compared.

2.1 Research Questions

The following research questions will guide this study:

1. Has the public opinion of the prioritization between the environment and economic growth changed over time and across countries?
2. Is the level of confidence in current political system explained by the attitude that the environment needs to be prioritized over economic growth? Does the level of confidence vary over time and across countries?
3. Is having the attitude that society needs a radical change of its organization explained by the attitude that the environment needs to be prioritized over economic growth? Does the level of wanting a radical reorganization vary over time and across countries?

2.2 Sociological Relevance

The topic is sociologically relevant because it yields knowledge about how people envision their ideal society to be: if they want to prioritize the environment or economic growth. The results of the analysis will give a description of the political landscape on the matter which will be helpful to understand human behavior on a planet where the climate crisis is around the corner (Shiva 2009: 22; OECD 2020: 9, 13; IPCC 2021: 36) in a context where the economy is pushing consumer behavior to flourish (Jackson 2009: 9). The comparative part when taking countries into account and also comparing the matter over time is often used in sociology since the goal is not to limit the analysis to a single society (Giddens 2007: 17-18). Societies do not exist in a vacuum; they are surrounded by other societies (ibid.), and comparing them is helpful to get a nuanced picture and make it easier to capture what different opportunities are possible for the social matter in question.

3. Previous Research

The specific research questions for this study have not been investigated before, but there exist research on parts of this puzzle. Valuable research findings on the topic will be presented below.

3.1 Public's Prioritization of the Environment and Economic Growth

Many studies address a lack of evidence about the prioritization among the public and express that more research is needed (Tomaselli et al. 2019: 48; Gugushvili 2021: 224, 227-228, 237; Drews & van den Bergh 2016: 2, 12; Drews et al. 2018: 266). A call for more research on respondents from different areas of the world to capture several perspectives on economic growth among people from many different contexts has emerged (Tomaselli et al. 2019: 48; Gugushvili 2021: 227-228, 237; Drews & van den Bergh 2016: 12; Bakaki & Bernauer 2018: 72; Drews et al. 2018: 271). The relevant contribution for this study is then to compare public opinion across many different countries at once while also comparing the public's prioritization over time, which has not been done before.

Following studies find that the public more often wants to prioritize the environment. These results regard different contexts, such as Europe (Gugushvili 2021: 232-233), Spain (Drews & van den Bergh 2016: 2, 1, 12), Georgia (Hand & Macheski 2003: 5-6), Vietnam (Nguyen & Malesky 2021: 19), United Kingdom (Kenward & Brick 2021: 327), a comparison between Europe and USA (Drews et al. 2018: 265-166), and survey data comparing results from the public in Spain as well as from researchers, from different fields and countries (Drews et al. 2019: 141-142, 150). Xu and Li (2018: 17-18) compare US respondents with Chinese respondents and find that economic growth should be prioritized according to the majority of the US respondents, whereas the majority of the Chinese respondents wants to prioritize the environment.

Some interesting findings will be addressed specifically. Gugushvili (2021: 225, 227-228, 237) concludes that European residents are surprisingly more opposed to economic growth than they are often described as. Drews and van den Bergh (2016: 2, 1, 12) are dissatisfied with available data and create their own survey with four positions to choose from. One conclusion is that public opinion on the question does not consist of two conflicting parts but instead a plethora of positions (ibid.: 7, 11). Bakaki and Bernauer (2018) investigate whether economic conditions have an impact on environmental policy support in Brazil and they do not find a connection. They conclude that policy-makers can keep on with their environmental policies as support for policies mitigating deforestation as well as climate change among the public is strong (ibid.: 72, 69). Kenward and Brick (2021: 327, 323, 324) describe how the people in the United Kingdom prioritize between the environment and the economy in relation to the COVID-19 pandemic and prioritizing the environment was preferred among 62 percent of the participants for the post-COVID-19 situation. Kenward and Brick conclude that it is "urgent to inform policy makers that experts and the public agree that the environment should be prioritized" (ibid.: 330).

Two studies find that a majority of their respondents supports the idea that protection of the environment is possible to combine with economic growth (Drews et al. 2018: 267-269; Tomaselli et al. 2019: 46-47). Tomaselli et al. (2019: 46-47) also find that a majority of their respondents express that the overall consumption needs to be reduced and that a shift to an economic model with lower consumption levels needs to happen.

3.2 Confidence in Political System

There is a consensus describing a global trend of a steady decline in confidence in one's political system (Citrin & Stoker 2018: 51-52. 53; Bertsou 2019: 213, 227; Kulin & Johansson Sevä 2020: 43; Newton et al. 2017: 51). In the words of Bertsou: "[p]olitical distrust appears to be the norm in established democracies" (Bertsou 2019: 227). There exists no consensus, however, as to why this decrease of political trust differ between individuals, different contexts and points in time, and different explanations are given – such as policy dissatisfaction, political performance, partisanship and polarization (Citrin & Stoker 2018: 56-59; Bertsou 2019: 227). Growing, right-wing, populism in many countries world-wide, such as in the USA as well as Europe, is a clear sign of this lowered trust and an example mentioned by many researchers (see e.g. Citrin & Stoker 2018: 63; Bertsou 2019: 213; Newton et al. 2017: 50). Particularly, the events when Trump became the president of the USA and the Brexit referendum are mentioned as examples connected to political distrust (Bertsou 2019: 213; Newton et al. 2017: 50).

To manage environmental problems, collective action is regulated through policies and states play an important role for this implementation, and it is necessary for such implementations to have public support (Davidovic & Harring 2020: 1). The connection between the public's support of policies and their level of political trust relates to the logic that people trusting their government is more probable to accept regulations from institutions they see as trustworthy (ibid.: 3). It makes sense that the public must have confidence in the current government to be able to support even more government (Hetherington & Husser 2012: 312-313). A literature review concludes that many researchers describe how political confidence and related attitudes are important for stability, durability and effectiveness in democratic countries (Citrin & Stoker 2018: 50).

If political policies involve costs and different types of sacrifices, it is essential that the public has confidence in their government for them to believe in the reasons and justifications of said policies (Hetherington & Husser 2012: 313). Regarding climate policies, findings show that political confidence is associated with the level of public support for policies such as taxes, subsidies and bans (Davidovic & Harring 2020: 4, 5; Gao et al. 2022: 11; Fairbrother et al. 2019: 2). Lack of confidence in political systems and governments could be a significant threat to implement successful climate or environmental policies in general (Kulin & Johansson Sevä 2020: 34).

Research shows that people having more political confidence in their governments are more supportive of environmental policies overall (Kulin & Johansson Sevä 2020: 38). However,

an opposite finding from a Brazilian context is that people reporting a higher level of trust in their government express a lower level of support for climate policies (Bakaki & Bernauer 2018: 70). This highlights the peculiar nature of confidence where it is difficult for trust research to determine the causal order. Empirically, social trust is connected to successful government, but it is difficult to determine what comes first: social trust or good government (Newton et al. 2017: 41-42). Considering the urgency of the climate crisis (see for instance: IPCC 2021: 36; UNFCCC n.d.; United Nations 2015: 1), it is reasonable to believe that people concerned with the environment have less trust in their government when they experience worry, frustration and anger with the current situation (de Moor et al. 2020: 4, 19).

Since a global, extensive prevalence of climate anxiety exists (Hickman et al. 2021: e866, e870; Clayton 2020: 2, 5; Clissold et al. 2022: 12, 13), it is reasonable to imagine a high prevalence of climate stress and worry among the public, asking if the climate crisis will be solved. Coupled with the trend of declining confidence in the political system (Citrin & Stoker 2018: 51-52. 53; Bertsou 2019: 213, 227; Kulin & Johansson Sevä 2020: 43), it is also reasonable to imagine that this confidence is declining due to the urgency to act, as emphasized by the IPCC (IPCC 2022a: 53).

The most powerful drivers for political distrust are anxiety and uncertainty (Patterson 1999: 190). This, together with the fact that the largest climate strike in human history took place in September 2019 globally (de Moor et al. 2020: 4, 6), it is reasonable to believe that environmentalists have less political confidence. In fact, a study surveying 10 000 children as well as young people, in ten countries, where participants rated governmental performance of mitigating climate change, they expressed a significantly higher level of feelings of betrayal than of reassurance, for each country (Hickman et al. 2021: e863, e869). This can be connected to political confidence.

No study has been found that addresses if there is a connection between how people prioritize between the environment and economic growth, and their level of political confidence. As expressed by Hetherington and Husser (2012: 323), a fruitful area of research would be to examine relationships between political confidence and public's support for environmental policy preferences and this study fits within that, broader, theme.

3.3 The Wish to Radically Change Society

A person arguing for a need to protect the environment and work towards more sustainable practices in society is often described as requesting a considerable shift in how practices are done, which can be seen in the urge of Greta Thunberg's call for action when she said: "Our house is on fire" (The Guardian 2019). An environmentalist asking for radical change is often highlighting the pervasive force brought by the strive for constant economic growth, seen in today's consumerism, presenting economic growth like it is deeply embedded in society's structure, and to change that, a radical reshaping of the society has to take place (Jackson 2009: 5; Assadourian 2010: 3-4; Deriu 2015: 57). The phrase of "System change, not climate change" is often used as a slogan in climate strikes nowadays, referring to the idea that

shifting away from the current capitalistic economic system is the solution to climate catastrophe (de Moor et al. 2020: 82, 203; Beer 2022: 175).

The degrowth movement, described in Section 4.2 below, is one of the environmental groups expressing this wish for radical change (Kallis et al. 2015: 3-4). In connection to the question of how people prioritize, it is reasonable to believe that people prioritizing the environment more often want a radical change of society, than people prioritizing economic growth. This logic is the reasoning behind including research question 3, asking whether there is a connection between people wanting to radically change society and their choice of prioritization. Regarding political confidence, it is likely that this variable also has connections to the opinion of wanting a radical change of society, due to the aforementioned fact that activists are mobilized due to their shared standpoint of wanting political change, and this agency often has connections to a level of political distrust (Newton et al. 2017: 43; Davidovic & Harring 2020: 3). Consequently, the phenomenon of wanting radical societal change likely has connections to both the prioritization question and political confidence, making it interesting to investigate.

3.4 Determinants Affecting the Opinions

Findings about probable determinants impacting the themes under investigation will now be presented. A person with a higher level of environmental concern is significantly more probable to want to prioritize the environment (Xu & Li 2018: 18-19). A membership of an environmental organization is a significant predictor for prioritizing the environment in the USA, but not in China, when compared (ibid.). People being a member of, or doing voluntary work for, an environmental organization are more willing to accept financial costs to protect the environment (Gelissen 2007: 406). Being less politically trusting has been shown to be associated with a stronger belief in climate change (Fairbrother et al. 2019: 7-8). With this in mind, it is interesting that more political trust is associated with a stronger support of environmental policies (ibid., Kulin & Johansson Sevä 2020: 38).

Political engagement has a positive correlation to greater environmental concern (White & Hunter 2009: 980). Being interested in politics is a predictor of climate belief and a predictor for political trust as well (Fairbrother et al. 2019: 7-8). In combination with socioeconomic demographics, political confidence is a determinant for the extent of political participation and activism (Patterson 1999: 196).

Respondent's political affiliation correlates significantly with the choice in the prioritization dilemma (Xu & Li 2018: 19; Tomaselli et al. 2019: 46; Gugushvili 2021: 234; Drews et al. 2019: 149). Having a more leftist political orientation is significantly correlated with wanting to prioritize the environment (Gugushvili 2021: 234; Drews et al. 2019: 149). Being more environmentally concerned correlates with being to the left politically (Tomaselli et al. 2019: 46). A leftist position is significantly associated with expressing an emphasis on environmental limits to growth, and it also correlates with the opinion that "excessive attention is given to economic growth" (Drews & van den Bergh 2016: 6). The level of

political confidence is associated with being placed to the right politically (Fairbrother et al. 2019: 7-8; Newton et al. 2017: 51).

Previous research show different findings regarding age. Younger people in China are more likely to prioritize the economy, but results from the USA show that with increasing age, the probability of prioritizing the economy gets higher (Xu & Li 2018: 18). No significance were found when determining if the inclusion in one of three age groups determines an opinion to reduce economic growth (Gugushvili 2021: 234). No relationship between age and the opinion on the environment-economy prioritization was found (Tomaselli et al. 2019: 46). Older people have been shown to be significantly likely to perceive more environmental limits to economic growth (Drews & van den Bergh 2016: 6), and also being less willing to pay more to protect the environment (Gelissen 2007: 406).

Income has a positive relationship to environmental support (Gelissen 2007: 406; Gugushvili 2021: 234), and being more environmentally concerned (Tomaselli et al. 2019: 46). Income was not a determinant when prioritizing between environmental costs and economic benefits (Nguyen & Malesky 2021: 21), and not in relation to the choice between the environment and the economy (Xu & Li 2018: 19). A larger income increases the support for policies mitigating climate change (Bakaki & Bernauer 2018: 70). Having a higher income is a determinant of a higher level of political trust (Fairbrother et al. 2019: 7-8), as well as trust towards other people in general (Patterson 1999: 187-189). It is common to find connections between trust, or distrust, and socioeconomic factors such as income, education, social class, work satisfaction, happiness, etcetera (Newton et al. 2017: 39).

More education is connected to a significantly higher probablility of wanting to prioritize the environment (Xu & Li 2018: 17; Gugushvili 2021: 234; Drews & van den Bergh 2016: 6; Kenward & Brick 2021: 326), and also connected to being more environmentally concerned (Tomaselli et al. 2019: 46; Gelissen 2007: 406). Being more educated has been associated to the position of perceiving higher risks of climate change and an expression of stronger support for policies mitigating climate change (Bakaki & Bernauer 2018: 70). Connections between level of education and a person’s political confidence have also been found (Patterson 1999: 190; Newton et al. 2017: 39).

4. Theoretical Framework

4.1 Within the Economic Growth Paradigm

For today's modern economy to be stable it is dependent on constant economic growth (Jackson 2009: 5). During the period after World War II until today, the world economy with a capitalist system and an economic growth imperative has made the per capita income grow rapidly worldwide, but a high and increasing degree of inequality and an extensive degradation of the environment have happened simultaneously (Figueroa 2017: vii).

The economic growth paradigm refers to the trend of keeping economic growth as the main policy goal, which is the key characteristic of capitalist societies (Daly 1972: 945-946; Schmelzer 2018: 166). The concept of paradigm originates from Kuhn's idea on how sciences develop over time through different phases and when a scientific field reaches a point of a broader consensus, it is called "normal science" and refers to the current paradigm (Kuhn 1970: 10-11). The economic growth paradigm shares the mechanisms of Kuhn's paradigm concept, having a broader application but still involving an idea of a hegemonic social paradigm legitimating certain practices as the norm, and for the growth paradigm, the norm is constant economic growth (Schmelzer 2018: 167).

4.2 Different Views on Economic Growth

Ecological modernization can be defined as a discourse acknowledging current environmental problems but with the assumption that existing social, political and economic institutions are able to incorporate environmental care into already established practices (Hajer 1997: 25). A central idea within the perspective is that solving environmental problems is possible to do within an economic growth economy (ibid.: 26; Nightingale et al. 2019: 47; Mol & Jänicke 2009: 18-19, 20). The discourse of ecological modernization started in the 1980s within environmental politics and has become a trend in Western parts of the world (Hajer 1997: 25-26). The way of action is seeking to make it possible to calculate environmental degradation and discussions of costs and benefits of, for instance, pollution have been initialized (ibid.). Environmental problems, as they are described within the viewpoint of ecological modernization, become issues of management and if a successful collaboration would be achieved between all relevant actors – countries, firms, individuals, etc. – then no other fundamental obstacle hinders the solution of them (ibid.).

Opponents to economic growth fit under the umbrella term "limits to growth perspectives" with the main idea that the economic system must be "greened" to stop exploiting nature (Death 2015: 2217). These perspectives have many labels: degrowth, prosperity without growth, steady-state economics (ibid.), anti-growth, green growth, green economy (Wanner 2015: 21-22) – etcetera. The degrowth movement defines degrowth as a viewpoint that wants to abolish economic growth as an economic goal and wants society to go in a direction where less natural resources are used – to stay within Earth's capacity – and to achieve this, it is said that the whole society needs to be reorganized (Kallis et al. 2015: 3-4). An economic model seeking constant economic growth is not seen as sustainable since that fosters consumption levels exceeding available resources (Hill 2011: 71-72; Jackson 2009: 16). The solution is described as a revolutionary shift in the economy's organization, to solve the problems with ecological unsustainability and social injustice of current system (Jackson 2009: 103; D'Alisa et al. 2015: xx; Kallis et al. 2015: 3-4; Anguelovski 2015: 34-35).

4.3 Environmental Conflicts as Opposing Ontologies

Political ecology is a research field that "seeks to unravel the political forces at work in environmental access, management, and transformation" (Robbins 2012: 3). Thus, it assumes that ecological systems are power-laden and these power relations are investigated (ibid.: 13, 20). Political ontology is a related field with a focus on distributions of knowledge statements, revealing if it exists different ontologies that are given different degrees of justification in a society (Burman 2017: 935). Within the economic growth paradigm, the idea of maintaining economic growth is ascribed more ontological weight worldwide than another type of economy.

An environmental conflict can be epistemological or ontological (Blaser 2013: 21). The epistemological conflict regards how different cultural perspectives operate within the same, shared ontology of "what there is" but having different knowledge about it, where the positions look at the matter differently but they have agreed on what the matter is about. In an ontological environmental conflict, however, the issue is that the parts have not agreed about "what there is" (ibid.). Climate justice is asking questions about responsibility and sheds a light on how privileges and risks are unevenly distributed (Burman 2017: 924), and one aspiration is to clarify "whose knowledge is allowed to count as legitimate knowledge (a critique of the coloniality of knowledge)" (ibid.: 925). Deeming an environmental conflict as ontological is to change focus and instead discuss different coexisting realities, and within a strive for more climate justice the question is instead to clarify "whose reality is allowed to be real (a critique of the coloniality of reality)" (ibid.: 925).

To acknowledge that an environmental conflict is a deeper, ontological one, is to explain that the matter is not due to different cultures; that things are done differently in different contexts. Rather, the perspectives are explained as opposing worldviews; opposing ontologies having different starting points about the world and "what there is" (Blaser 2013: 15). A way to describe how the two opposing views on economic growth clash is to acknowledge that both sides share the idea that current path is unsustainable and that action is needed, but they ascribe fundamentally different roles to economic growth in society and if it is possible – or impossible – to maintain the status quo.

4.4 Political Confidence

Political trust can be defined as associated to "citizens' feelings about their government" (Citrin & Stoker 2018: 50) and closely related terms are confidence, legitimacy and system support (ibid.). When someone trusts another person, vulnerability is accepted, which means that the trust can be challenged due to failures or betrayal (ibid.), and for the trust to exist, a constant evaluation of whether the trustee deserves that trust is happening (Hamm et al. 2019: 17). Thus, political trust, or confidence, is a relational attitude, always having a target, from one person to: another person, group, institution or even a political system, trusting that they will act competently in line with the person's interests (Bertsou 2019: 220; Citrin & Stoker 2018: 50). This type of confidence can then be seen as something that helps in overcoming

perceived uncertainty (Hetherington & Husser 2012: 314; Yamagishi et al. 1998: 170; Gao et al. 2022: 11). Put simpler: trust makes it easier to cope with uncertainty.

Political trust is described as a complicated concept, since it overlaps with the concepts of confidence, trustworthiness and satisfaction making it rather diffuse to capture in research (Hamm et al. 2019: 1; Bertsou 2019: 227), and disagreement regarding its function in democratic societies exists among researchers (Bertsou 2019: 227). The terms "confidence" and "trust" are often used interchangeably regarding confidence in societal institutions (Citrin & Stoker 2018: 50). The word "confidence" will be used for the results of the analysis of this study, since the chosen material, presented in Section 5.2, uses the "confidence" term, but political trust and political confidence are seen as synonyms throughout.

5. Method

5.1 Research Approach

Statistics in social science is more about reducing the level of uncertainty as much as possible, than establishing a solid "truth", and it seeks to reveal general principles adhering to the average person in a certain context without ignoring that the social world is complex, that human behavior is not possible to fully predict and that individual differences coexist within these larger trends (Aneshensel 2013: 416-417). The goal for this study is to keep this humility alive as any analysis is never able to yield results with absolute certainty (King et al. 1994: 8-9; Aneshensel 2013: 7-8, 32; Mehmetoglu & Jakobsen 2017: 56).

Finding a statistical connection is not the same as establishing causation between two variables (Djurfeldt et al. 2018: 139-140). Theory is used to guide the interpretations of the associations, and by use of inferential statistics conclusions are drawn from the sample to the population. The main indicator showing generalizability is the test of statistical significance, or the p-value (Aneshensel 2013: 47-48), referring to the chance of claiming that an association between two variables exists when it does not, which is connected to the level of certainty about a relationship's actual existence, when excluding randomness (Djurfeldt et al. 2018: 186). If the p-value passes a certain threshold, the examined relationship is said to be statistically significant and generalizable to the population (Mehmetoglu & Jakobsen 2017: 5).

Doing research is about balancing between previous knowledge and new insights; the continuum of deduction and induction. Complete deduction is to entirely let theory steer the research ship and impact the observation, and complete induction would be to let go of previous knowledge and try to practice looking at something for the first time (Aneshensel 2013: 33-35). It might be easy to depict these as opposites but when the research journey begins the sharp edges around the concepts start to fade. Abduction shares similarities with both options, since it alternates between theory and empiricism while also building upon each other (Alvesson & Sköldberg 2018: 4-5). The research problem for this study was first vaguely depicted and the combination of knowledge from previous research and data

availabilities shaped the formulation of the research questions. The process of testing models and deciding what variables to include has involved exploration. Thus, the final creation of the elaboration models, presented in Section 5.5, has been guided by a process more deductive than inductive, but with many abductive phases.

5.2 Material

The material used for analysis is already collected by the World Values Survey (WVS), which is a large survey with seven waves, freely available through their website (Inglehart et al. 2022). The goal with their survey is to enable a comparative analysis both cross-national and over time, of norms, values and beliefs of people worldwide, by conducting a representative survey every five years (World Values Survey Association [WVSA] n.d.-e). After discovering that the desired variables did not exist in all seven waves, the choice was to exclude wave 1 and 2 from the analysis. The analyzed material is then WVS's wave 3 from 1995-1999 up to wave 7 from 2017-2022, and the dataset file is version 3.0.0 released on March 1, 2022 (WVSA 2022c). Table 5.1 shows the waves' starting year when the data collection began and the ending year when that particular wave was closed.

Table 5.1 Waves of World Values Survey

WVS Wave	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7
Year	(1981-1984)	(1989-1991)	(1995-1999)	(1999-2004)	(2004-2009)	(2010-2016)	(2017-2022)

Despite having seven waves, WVS does not follow the same group of people, as is the case for longitudinal panel data, where a sample is interviewed several times (Mehmetoglu & Jakobsen 2017: 228). Thus, the data from WVS is a time-series type of dataset and not panel data (WVSA 2022e). Nationwide representative random sample designs are used, meaning that the samples in each wave are representative for each country (ibid.). A large majority of the data collection is conducted through face-to-face interviews in the respondents' homes or their places of residence, and a few through phone or post (WVSA n.d.-a).

Wave 3 up to wave 7 have data from 107 countries, corresponding to 396 041 observations (Inglehart et al. 2022). The questionnaire is originally created in English and translated into the first language for at least 15 percent of the population in each country (WVSA n.d.-d; n.d.-a). Throughout the waves, 60 percent of the questionnaire is the same, and 40 percent new questionnaire elements are added (WVSA n.d.-c). The usefulness of the questions is analyzed for each wave, to drop non-useful ones and introduce some new questions for next wave (WVSA n.d.-d). The analysis variables' wave availabilities are shown in Table 5.2. Multiple imputation will be used to combat some missing data issues for some of the analysis variables – more about this process in Section 5.6.

Table 5.2 The analysis variables' wave availability

Variable name in this paper	Name in the WVS dataset	Research question	WVS Wave						
			7	6	5	4	3	2	1
Country	COW_NUM	1, 2, 3	7	6	5	4	3	2	1
Year	S020	1, 2, 3	7	6	5	4	3	2	1
Weight variable	S017	1, 2, 3	7	6	5	4	3	2	1
Income	X047_WVS	2, 3	7	6	5	4	3	2	1
Left-right scale position	E033	2, 3	7	6	5	4	3	2	1
Index in this paper: Political confidence									
Confidence in parliament	E069_07	2	7	6	5	4	3	2	1
Confidence in government	E069_11	2	7	6	5	4	3	2	-
Confidence in political parties	E069_12	2	7	6	5	4	3	2	-
Education W2-6	X025	2, 3	-	6	5	4	3	2	-
Education W7	X025A2	2, 3	7	-	-	-	-	-	-
Age	X003	2, 3	7	6	5	4	3	2	a
Interest in politics	E023	2, 3	7	6	5	4	3	2	b
Protect environment	B008	1, 2, 3	7	6	5	4	3	-	-
Wish for radical change	E034	3	7	-	-	4	3	2	1
Environmental organization	A103	2, 3	7	6	5	-	3	-	c

Notes:
* All the waves' codebooks: (WVSA 2014f; 2014g; 2014h; 2014i; 2022d), and all the waves' questionnaires (WVSA 2014a; 2014b; 2014k; 2014l; 2022a).
* "The WVS dataset" refers to the time-series dataset (WVSA 2022f).
***** - = not included in this wave.
* a = Confusing information. According to the WVSA (2022f), the "age" variable "X003" of the time-series dataset is called "V216" in wave 1, which exists in wave 1 codebook (WVSA 2014d), but not in the wave 1 questionnaire (WVSA 2014c).
* b = Confusing information. According to the WVSA (2022f), the "interest in politics" variable "E023" of the time-series dataset is called "V117" in wave 1, which exists in wave 1 codebook (WVSA 2014d), but not in the wave 1 questionnaire (WVSA 2014c). A related variable exists ("V449") but it is not the same.
* c = Confusing information. According to the WVSA (2022f), the "environmental organization" variable "X003" of the time-series dataset is called "V33" in wave 1, which exists in wave 1 codebook (WVSA 2014d), but not in the wave 1 questionnaire (WVSA 2014c).

To enable a comparison between countries, the availability of already collected data was assessed. Several datasets were excluded due to their restricted area of examination – such as European Social Survey, Eurobarometer, Afrobarometer and Latinobarometer – or too few measuring points for environmental variables – such as the International Social Survey Program (ISSP) (ISSP n.d.-a; ISSP n.d.-b). Not much data on public attitudes on economic growth exists overall, unfortunately (Drews & van den Bergh 2016: 2, 12). Ultimately, WVS was chosen due to the "protect environment" variable, the "wish for radical change" variable, and because it has many waves.

One weakness with using secondary data, not collecting it oneself, is that as an "outside researcher" you cannot create the questions and you are restricted to the set of questions and the exact formulations that "the original researchers" used (Eliasson 2013: 53). Hence, the questions were designed with another purpose than the own study and it is common to miss

some variables one wants to investigate, as a "later" researcher (Devine 2003). Discovering flaws in existing data is common but you need to make the most of it (King et al. 1994: 27). The goal is not to have perfect data – the goal when doing social science is "to arrive at valid inferences by the systematic use of well established procedures of inquiry" (King et al. 1994: 6). Thus, it is what is done with the data that matters most.

All data preparations, multiple imputation and statistical analyses have been performed using the software "Stata" (StataCorp 2019), as well as the creation of all graphs – except for Figure 6.2 and 6.6 created by Hans Ekbrand in R. Details about the coding are found in Appendix D.

5.3 Ethical Considerations

Since no data collection is carried out for this project, no further ethical updates in connection to the respondents can be made in my position. Nevertheless, ethical considerations made by the WVS when they collected their data are still important to convey and evaluate to ensure the respondents' ethical rights were maintained in a responsible way – a hallmark playing an important role in assessing the quality of any research project (Swedish Research Council 2017: 2).

All data in WVS are anonymized (WVSA n.d.-a). Among the documentation on the website, it is only possible to read specifics on how the conditions of participation in the WVS is communicated to the respondents for wave 7. The wave 7 questionnaire informs that the WVSA has formulated guidelines every interviewer must follow, including giving respondents information about their anonymity, the purpose of WVS, and that withdrawal at any point is their right (WVSA 2022a: 2) – in accordance with the requirements of good research practice (Swedish Research Council 2017: 10, 13, 40, 41). It can be assumed that this is the case for the other waves, but specifics cannot be found to confirm this, other than the fact that all WVS data is anonymized (WVSA n.d.-a). Since the datasets from WVSA do not have any traces of the respondents' personal details, and WVSA ensures anonymity on their end (ibid.), it is impossible for me to get hold of respondents' personal information.

5.4 Operationalizations

Operationalization is the tool to transform theoretical abstractions to measurable entities (Aneshensel 2013: 31; 39). Assessment tools for research are to discuss the aspects of validity and reliability in capturing the research object. Validity refers to how well the chosen measurement corresponds to the theoretical construct that was desired to examine (ibid.: 42). The idea of reliability asks if repeated observation would give the same answer, and both validity and reliability are necessary for an accurate estimation of the study object (ibid.: 43).

Table 5.3 presents the operationalization of every variable in the analysis, where the variables' survey questions as well as their response options are described. The validity and reliability of the main variables will be assessed. Other variables from WVS could have been valuable for this study if they had better data availability – see Appendix E.

Table 5.3 The analysis variables' survey questions, response options and chosen coding

Variable name ... in this paper ... in dataset	**Survey question in questionnaire** *Comment*	**Response options**
Country (numeric) COW_NUM	[COW country code] *Numeric variable with name in label, i.e. each country corresponds to a code. Not asked. Interviewer fills in based on what country the survey is conducted in.*	[Country name]
Country (string) -	- *Coding: This variable was created by cloning the "COW_NUM" and turning it into a string variable. The original labels from "COW_NUM" were kept. The numeric variable is used in the imputation model and the string variable in the analysis.*	-
Year S020	[Year survey] *Numeric variable with the survey year. Not asked. Interviewer fills in based on what year the interview is taking place.*	[Year]
Protect environment B008	"Here are two statements people sometimes make when discussing the environment and economic growth. Which of them comes closer to your own point of view?" *Coding: 1 = {Protecting the environment} and 0 = {Economic growth}.*	"1 Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs 2 Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent"
Confidence in parliament E069_07	"I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? > Parliament" *Coding: reversed order so a higher value means more confidence. Used in the index "confidence index" (3-12).*	"1 A great deal 2 Quite a lot 3 Not very much 4 None at all"
Confidence in government E069_11	"I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? > The government (in your nation's capital)" *Coding: reversed order so a higher value means more confidence. Used in the index "confidence index" (3-12).*	"1 A great deal 2 Quite a lot 3 Not very much 4 None at all"
Confidence in political parties E069_12	"I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? > Political Parties" *Coding: reversed order so a higher value means more confidence. Used in the index "confidence index" (3-12).*	"1 A great deal 2 Quite a lot 3 Not very much 4 None at all"
Wish for radical change E034	"On this card are three basic kinds of attitudes concerning the society we live in. Please choose the one which best describes your own opinion." *Coding: 1 ={The entire way[...]}, 0 = {option 2 and 3}.*	"1 The entire way our society is organized must be radically changed by revolutionary action 2 Our society must be gradually improved by reforms 3 Our present society must be valiantly defended against all subversive forces"
Environmental organization A103	"Now I am going to read out a list of voluntary organizations; for each one, could you tell me whether you are a member, an active member, an inactive member or not a member of that type of organization? > Environmental organization" *Coding: 1 = {option 1 and 2}, 0 = {Don't belong/Not a member}.*	"0 Don't belong [or: "Not a member", in codebooks] 1 Inactive member 2 Active member"

Interest in politics E023	"How interested would you say you are in politics?"	"1 Very interested 2 Somewhat interested 3 Not very interested 4 Not at all interested"
	Coding: reversed order so a higher value means a greater political interest.	
Left-right scale position E033	"In political matters, people talk of "the left" and "the right." How would you place your views on this scale, generally speaking?"	"1 Left 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9 10 Right"
	Coding: same as original.	
Age X003	"This means you are ____ years old (write in age in two digits)"	[Number of years]
	Numeric variable. Previous question was: "Can you tell me your year of birth, please?"	
Income X047_WVS	"On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in."	"1 Lower step 2 Second step 3 Third step 4 Fourth step 5 Fifth step 6 Sixth step 7 Seventh step 8 Eight step 9 Nineth step 10 Higher step"
	Coding: same as original.	
Education W2-6 X025	"What is the highest educational level that you have attained? "	"1 No formal education 2 Incomplete primary school 3 Complete primary school 4 Incomplete secondary school: technical/vocational type 5 Complete secondary school: technical/vocational type 6 Incomplete secondary: university-preparatory type 7 Complete secondary: university-preparatory type 8 Some university-level education, without degree 9 University-level education, with degree"
	This variable has been merged with "Education W7".	
Education W7 X025A2	"What is the highest educational level that you have attained?"	"0 Early childhood education (ISCED 0) / no education 1 Primary education (ISCED 1) 2 Lower secondary education (ISCED 2) 3 Upper secondary education (ISCED 3) 4 Post-secondary non-tertiary education (ISCED 4) 5 Short-cycle tertiary education (ISCED 5) 6 Bachelor or equivalent (ISCED 6) 7 Master or equivalent (ISCED 7) 8 Doctoral or equivalent (ISCED 8)"
	This variable has been merged with "Education W2-6".	

Notes:

* Quotes from the WVS questionnaires are given. Small differences exist between questionnaires and codebooks in some waves, but the relevant ones are commented upon when the variable is presented. The table shows the most common formulation.

* All variable names differ between waves. The column "in dataset" refers to the variable name in the time-series dataset, with all variables, and WVSA has provided information about equivalent names throughout waves (WVSA 2022f).

"Protect environment" is a variable where the respondent chooses one of two statements: if they prioritize the environment or economic growth (see Table 5.3). This question has received criticism since it is not a clear-cut dichotomy, involves vagueness in the phrases "*some* loss of jobs", or "*slower*" economic growth (Drews & van den Bergh 2016: 2), and the wording of the response alternatives makes it appear like environmental practices and economic growth *can* be combined without problems (Drews et al. 2018: 270). The aspect of bringing the topic on job supply into the matter can most certainly "steal" the attention from the environment-economic growth dilemma, because unemployment is an important public issue (Drews & van den Bergh 2016: 2), and if the question did not include "jobs", the results could be different (Drews et al. 2018: 270). More vagueness exists in the formulation "even if the environment suffers to *some* extent" where one can wonder how much environmental suffering seems reasonable within this position. It is possible to imagine a threshold where a larger amount of environmental suffering might make the respondent want to prioritize the environment instead. The wording of questions might seem trivial but it has implications when investigating public opinion. A study focusing on question wording related to the topic of beliefs in climate change in the US found that the wording "climate change" and "global warming" yielded different results. When "climate change" was used, 8 percentage points more reported that they believed in it (Schuldt et al. 2015: 67, 80, 82).

Three confidence themed variables were chosen: "confidence in parliament", "confidence in government" and "confidence in political parties", and they constitute an index in the analysis, called "political confidence", and the idea is that these variables together measure the respondents' confidence in their current political system. Before the index was created, a Cronbach's alpha test was carried out, measuring the variables' reliability, i.e. their internal consistency showing internal correlations (Mehmetoglu & Jakobsen 2017: 282; Barmark 2009: 100). The Cronbach's alpha of 0.84 passed the threshold value of 0.70, meaning that the index is considered satisfactory (ibid.).

The variable "wish for radical change" originally consists of three options and the question is titled "Basic kinds of attitudes concerning society" (WVSA 2014a; 2014b; 2022a). The formulations of the options are rather peculiar: "1. The entire way our society is organized must be radically changed by revolutionary action", "2. Our society must be gradually improved by reforms", "3. Our present society must be valiantly defended against all subversive forces". One could argue that a respondent choosing option 2 could want an entire reorganization of society but that they specifically want this to be achieved through gradual reforms. Thus, a certain wish for change is present in both option 1 and 2.

The wording of "defended" and "subversive forces" in option 3 could perhaps bring associations of military forces, but this societal defence is not specified, nor what the "subversive force" is referring to. Again, the wording impacts how the respondent is evaluating the question, and even a single word can influence the respondent in a certain way giving certain associations (Bautista et al. 2020: "Wording", para. 1). The word "subversive" could be defined as something with a tendency to, or intentionally trying to, subvert something – which could be a system, an institution or a person (Oxford English Dictionary 2022, subversive entry). It could also refer to something seeking for a destabilization or an

overthrow of a certain political regime (ibid.). In fact, the current climate crisis is a threat for the societal system and this threat is clearly on the verge of destabilizing the whole planet, according to the research (see e.g. IPCC 2021: 35, 54; IPCC 2022a: 53; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES] 2019: XIV, XV-XVI; WWF 2020: 6), which seems to have some, although vague, connections to option 3 as well. Since the wish was to capture the attitude of wanting a radical change of society, the first response option was coded as "1" and the other two were coded as "0", to turn this into a dummy variable measuring the presence of this wish, or not (Mehmetoglu & Jakobsen 2017: 86-87).

Other variables included are "country", "year", "environmental organization", "interest in politics", "left-right scale position", "age", "income" and "education", and all specifics are found in Table 5.3. The variable "income" has some differences throughout the waves, shown in Appendix F. The education variables "Education W2-6" included in waves 2 to 6, and "Education W7" in wave 7, have been merged together, and this process is fully described in Appendix G. The variables "year" and "age" have been standardized because that was needed for the most advanced models to converge. Standardizing, or z-transforming, a variable means to transform the scale where the mean of the variable gets the value of "0" and the standard deviation of the variable gets the value "1" (Djurfeldt et al. 2018: 116) – the characteristics of a normally distributed variable (Mehmetoglu & Jakobsen 2017: 326-327). Standardizing is a common practice to deal with the problem where variables have different scales and need to be more similar for comparison matters (Djurfeldt et al. 2018: 72).

5.5 Elaboration Models

Based on the review of previous research, the theoretical framework and the data availability, the decisions of what variables to include in the analysis were made. This resulted in two elaboration models. The two main variables of interest make up the focal relationship, anchoring the analysis to this relationship, and other variables have the purpose of bringing information about the focal relationship (Aneshensel 2013: 83-84). The causal mechanism of this relationship is the idea that the independent variable makes a change in the dependent variable, so deciding the order of the two variables in the focal relationship clarifies the direction of the causal relationship; the idea of what construct is impacting another (Djurfeldt et al. 2018: 138).

Research question 1 is seen as a stepping stone for the other questions, only investigating one variable's variation over time and across countries – "protect environment". Research question 2 and 3 are illustrated each with their own elaboration model to depict the approach of how the theoretical reasoning will guide the models, in line with Aneshensel's approach (2013: xv, 4, 9) inspired by Rosenberg's idea about the analytical procedure of elaboration (Rosenberg 1968: 3, 24, 201). Figure 5.1 and 5.2 show the elaboration models of research question 2 and 3, respectively, and both have a focal relationship and six control variables. The focal relationship of research question 2 consists of "protect environment" and "political

confidence", and for research question 3 the focal relationship is between "protect environment" and "wish for radical change".

Figure 5.1 Elaboration model of research question 2

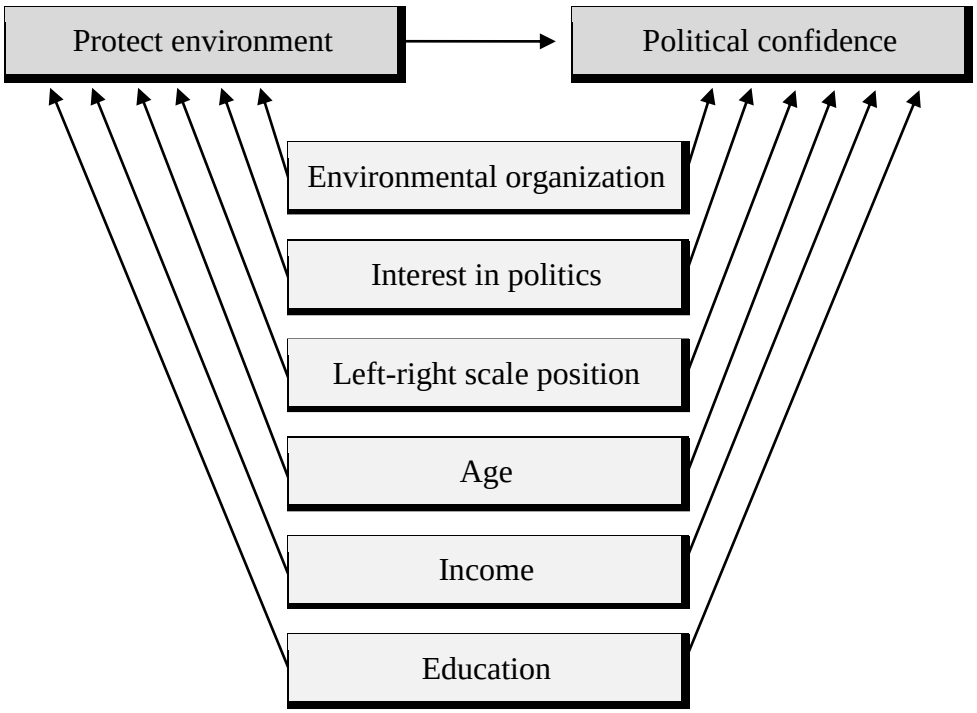
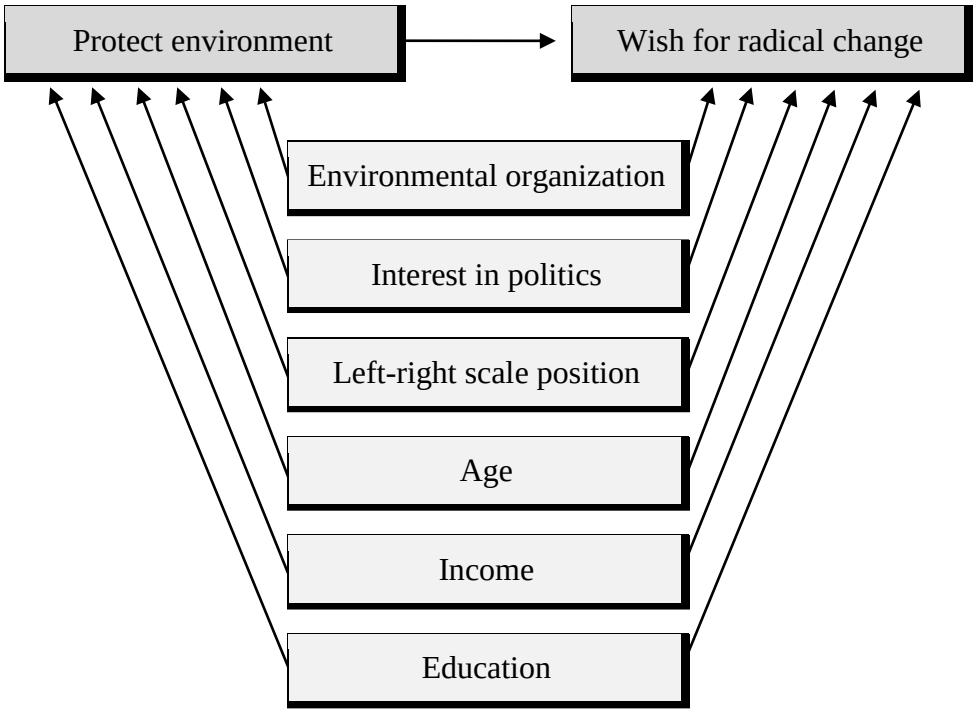


Figure 5.2 Elaboration model of research question 3



5.6 Multiple Imputation

The wave availabilities of the two variables "wish for radical change" and "environmental organization" are limited and this led to the idea of using multiple imputation, since they miss values in some waves – seen in Table 5.4.

Table 5.4 Availability throughout the WVS waves for "wish for radical change" and "environmental organization"

Variable name in this paper	Name in the WVS dataset	Research question	WVS Wave						
			7	6	5	4	3	2	1
Wish for radical change	E034	3	7	-	-	4	3	2	1
Environmental organization	A103	2, 3	7	6	5	-	3	-	c

Notes:
* - = This variable is not included in this particular WVS wave.
* c = Confusing information. According to the WVSA (2022f), the "member of environmental organization" variable "X003" of the time-series dataset is called "V33" in wave 1, which exists in wave 1 codebook (WVSA 2014d), but in the wave 1 questionnaire (WVSA 2014c), this variable does not exist.

Surveying the complete population on a parameter is often difficult, if not impossible, and thus, it is common to have some missing data (Mehmetoglu & Jakobsen 2017: 338; Rubin 1976: 581), and often the case in the fields of medical science and social science (Rubin 1996: 473). In fact, the problem of missing data is especially acute in studies investigating several waves of a survey (Graham 2009: 550), which is the case for this study. Limitations due to missing data not covering some countries or several time-points have been expressed by others (Wolf et al. 2022: 161; Bakaki & Bernauer 2018: 72).

Multiple imputation is a technique for dealing with missing data, where every missed value gets a certain amount of imputed values – and the amount of imputed values is connected to the uncertainty of the imputed values (Rubin 1987: vii). The idea is that multiple imputation uses available information in the dataset and guesses what values the missing data could have, to fill in the blanks (Mehmetoglu & Jakobsen 2017: 342). Or, as Rubin, the inventor of the technique, puts it: multiple imputation means that "the values we do see tell us something about the values we do not see" (Rubin 1978: 21).

The decision was to use multiple imputation to use information from all waves and impute values for the waves that miss values, needed for the variables "wish for radical change" and "environmental organization". Since the main variable "protect environment" is available in all waves except wave 2 and 1, it made sense to decide that the final analysis would exclude wave 2 and 1, to not use too much imputed data, but still use all the waves' information for the imputation procedure. This way, the information from all waves were used when the computer guessed imputed values for variables with missing data, and afterwards, wave 2 and 1 got excluded in the analysis.

Multiple imputation might appear as statistical magic making up data previously non-existing, but this is not correct (Schafer 1999: 8; Graham 2009: 559), since the starting point is not

"nothing"; the data is not created from "nothing" to "something" (Schafer 1999: 8). It is, however, justified to be critical against single imputation, which would be to impute a specific, decided value, incorrectly treating it as observed data, without taking the uncertainty of the imputation into consideration (ibid.; Rubin 1978: 21). The process of multiple imputation does not create new data – it calculates several guesses based on response patterns in available data (Schafer 1999: 8). One could argue that this is to use the full potential of the data. By imputing more than one value for every missing value the uncertainty of "guessing right" is considered, and encapsulated in various guesses, making the estimation closer to accuracy than a single value could be (Rubin 1978: 21). Since the upcoming analysis then combines all the guesses of the values, the imputation procedure could be said to preserve some humility in its application by building in this uncertainty into the model (ibid.: 21). Meanwhile, it is important to acknowledge that absolute certainty about model assumptions is not possible (Rubin 1996: 447) – which is unrealistic for any research; to capture absolute certainty (King et al. 1994: 9).

With the flexible approach of multiple imputation to handle missing data, some disadvantages exist. The decision to perform multiple imputation has significantly prolonged the time for this project's finalization, and it has been the most time consuming part, since it is demanding for the user (Rubin 1978: 23; 2004: 299) – both when choosing the best practice, navigating in the many resources' sometimes different advice on how to perform it, and testing what technique would fit the data best. The technique is demanding on both the analyst and the system (Rubin 2004: 299). The fact that multiple imputation is time-consuming and requires a lot of work has been highlighted many times (see e.g. Rubin 1978: 23; 2004: 299; 1996: 480; 1987: 17-18; Stuart et al. 2009: 1138). Despite challenges, the process of multiple imputation yields useful results which makes it worthwile (Rubin 2004: 302). Inclusion of more variables' information ultimately gives more accurate results and enables greater generalizability (Stuart et al. 2009: 1138), so its implementation was valuable.

Studies using multiple imputation are often not revealing much about the process, only giving a few details (UCLA n.d.). However, it is important to communicate decisions and model specifications so the reader is able to evaluate if the imputation seems adequately performed (Rubin 1978: 20). Creating the imputation model is a non-automatic, scientific act and it would not be responsible to omit a discussion on its assumptions and choices (van Buuren 2007: 237). Hence, the decisions guiding the imputation procedure are presented in Appendix H, including more theoretical specifics of the method.

5.7 Descriptive Statistics

Table 5.5 shows the brilliance of using multiple imputation; what is happening behind the scenes. The "N" columns with number of observations before and after imputation can be compared to see whether the imputation yielded more observations for a particular variable or not. Descriptive statistics for all variables included in the analysis are also given, showing the variables' distributions which is the first step before doing more advanced statistical calculations (Mehmetoglu & Jakobsen 2017: 3, 31). The variables' mean, standard deviations,

minimum and maximum value are approximately the same before and after imputation, showing how the imputation procedure preserves the distributions, while the number of observations for the vast majority of the variables increases. Appendix H has an even more detailed table of descriptive statistics, showing all variables included in the imputation model.

Table 5.5 Descriptive statistics of the analysis variables before and after imputation

Variable	*Before imputation*	N		% missing	Mean	St.Dev.	Min	Max	
	Afterimputation		N	% missing	Mean	St.Dev.	Min	Max	In research question
Country	No imputed values	396 041		0.00	-	-	-	-	
			396 041	0.00	-	-	-	-	1, 2, 3
Year	No imputed values	396 041		0.00	2007.48	8.008	1995	2022	
			396 041	0.00	2007.48	8.008	1995	2022	-
Year_z	No imputed values	-		-	-	-	-	-	
			396 041	0.00	0	1	-1.558	1.813	1, 2, 3
Protect environment		336 466		15.04	0.552	0.497	0	1	
			396 041	0.00	0.553	0.497	0	1	1, 2, 3
Political confidence (index)		341 653		13.73	6.712	2.401	3	12	
			396 041	0.00	6.742	2.419	3	12	2
Wish for radical change		194 905		50.79	0.147	0.354	0	1	
			396 041	0.00	0.140	0.372	0	1	3
Environmental organization		324 213		18.14	0.118	0.326	0	1	
			396 041	0.00	0.118	0.323	0	1	2, 3
Interest in politics		383 819		3.09	2.339	0.966	1	4	
			396 041	0.00	2.336	0.966	1	4	2, 3
Left-right scale position		280 499		29.17	5.685	2.403	1	10	
			396 041	0.00	5.719	2.402	1	10	2, 3
Age	No imputed values	395 019		0.26	41.285	16.211	13	103	
			395 019	0.26	41.285	16.211	13	103	-
Age_z	No imputed values	-		-	-	-	-	-	
			395 019	0.26	0	1	-1.745	3.807	2, 3
Income		367 636		7.17	4.668	2.262	1	10	
			396 041	0.00	4.668	2.265	1	10	2, 3
Education		373 337		5.73	4.709	2.285	1	8	
			396 041	0.00	4.652	2.293	1	8	2, 3

Notes:

* Descriptive statistics in wave 3 up to wave 7.
* N = Number of observations. The rows with number of observations after imputation refer to the number of observations in each of the 5 imputed datasets (m = 5).
* St.Dev. = “Standard deviation”.
* ”Country” is a string variable; a clustering variable without a certain order, which is why some cells are empty.
* The z-transformations of year (“year_z”) and age (“age_z”) were done after imputation. Hence, the cells regarding “before imputation” are empty.

All the 107 countries in the dataset do not have the same amount of measurement occasions. For research question 1, only countries with more than one measurement occasion will be analyzed and for question 2 and 3, all countries will be analyzed. Table 5.6 shows the 107 countries sorted on continent. Appendix B lists them alphabetically.

Table 5.6 Countries in the analysis

Europe (35 countries)			
Albania ¤	Finland ¤	Latvia	Russia ¤
Andorra ¤	France	Lithuania	Serbia ¤
Belarus ¤	Georgia ¤	North Macedonia ¤	Slovakia
Bosnia and Herzegovina ¤	German Federal Republic	Moldova ¤	Slovenia ¤
Bulgaria ¤	Germany ¤	Montenegro ¤	Spain ¤
Croatia	Great Britain ¤	Netherlands ¤	Sweden ¤
Cyprus ¤	Greece	Norway ¤	Switzerland ¤
Czech Republic	Hungary ¤	Poland ¤	Ukraine ¤
Estonia ¤	Italy	Romania ¤	
Asia (34 countries)			
Armenia ¤	Israel	Mongolia	South Korea ¤
Azerbaijan ¤	Japan ¤	Myanmar	Taiwan ROC ¤
Bangladesh ¤	Jordan ¤	Pakistan ¤	Tajikistan
China ¤	Kazakhstan ¤	Palestine	Thailand ¤
Hong Kong SAR ¤	Kuwait	Philippines ¤	Turkey ¤
India ¤	Kyrgyzstan ¤	Qatar	Uzbekistan
Indonesia ¤	Lebanon ¤	Saudi Arabia	Vietnam ¤
Iran ¤	Macau SAR	Singapore ¤	Yemen
Iraq ¤	Malaysia ¤		
Africa (17 countries)			
Algeria ¤	Kenya	Nigeria ¤	Tunisia ¤
Burkina Faso	Libya ¤	Rwanda ¤	Uganda
Egypt ¤	Mali	South Africa ¤	Zambia
Ethiopia ¤	Morocco ¤	Tanzania	Zimbabwe ¤
Ghana ¤			
South America (10 countries)			
Argentina ¤	Chile ¤	Peru ¤	Uruguay ¤
Bolivia	Colombia ¤	Trinidad and Tobago ¤	Venezuela ¤
Brazil ¤	Ecuador ¤		
North and Central America (9 countries)			
Canada ¤	Guatemala ¤	Mexico ¤	Puerto Rico ¤
Dominican Republic	Haiti	Nicaragua	United States of America ¤
El Salvador			
Oceania (2 countries)			
Australia ¤	New Zealand ¤		

Note: The 107 countries included in the analysis of research question 2 and 3. The 76 countries included in the analysis of research question 1 are marked with a "¤".

Table 5.7 shows the number of countries having 1 up to 5 measurement occasions (years). The specific years a certain country is included in WVS is shown in Appendix C. Although WVS has seven waves, each observation has a value on the variable "survey year" ("S020"), which is the year the interview took place (WVSA 2014a: 30; 2014b: 33; 2014k: 51; 2014l: 51; 2022a: 2).

Table 5.7 Availability over the years of the countries in the WVS dataset

Number of countries with ...				
	... 5 years	=	10 countries	(9 %)
	... 4 years	=	19 countries	(18 %)
	... 3 years	=	21 countries	(20 %)
	... 2 years	=	26 countries	(24 %)
	... 1 year	=	31 countries	(29 %)
	In total	**=**	**107 countries**	**(100 %)**

5.8 Analytical Approach

5.8.1 Regression Analysis

This study uses regression analysis to draw conclusions, which is a statistical technique investigating the relationship between two or more variables, yielding results showing if the relationship is statistically significant or not (Mehmetoglu & Jakobsen 2017: 46). The type of variable used in the analysis determines what kind of regression analysis is appropriate. Research question 1 has the dependent variable "protect environment" (0-1) and research question 3 has the dependent variable: "wish for radical change" (0-1). For dichotomous dependent variables, logistic regression should be used (ibid.: 162). Research question 2 involves the dependent variable "political confidence" which is a continuous variable (3-12) and the appropriate regression model is then a linear regression model (ibid.: 68).

Apart from the focal relationship, research question 2 and 3 have six control variables. If the inclusion of control variables makes a significant focal relationship decrease to the point where it is not statistically significant anymore, then there is no relevant association left (Aneshensel 2013: 74, 12, 98). On the other hand, if the added control variables are not changing the size and significance of the focal relationship to a relevant extent, then the theoretical model of the focal relationship can be said to be corroborated (ibid.: 75). Thus, this measured association would not be seen as spurious, so this result would strengthen the inference concluding that the association is likely to represent an actual causal relationship (ibid.: 100). Again, it is important to keep in mind that an imagined causality cannot be established as an absolute truth through statistical procedures (Djurfeldt et al. 2018: 139-140). The ideas of causality are given from theory, guiding the researcher, giving suggestions of how to explain a social phenomenon, and theory guides the researcher to interpret findings in data (Aneshensel 2013: 3). Thus, theory and data can be seen as mutual creators of new knowledge, with a call for constant critical evaluation, collectively building up an argument of how a certain phenomenon is likely to behave.

5.8.2 Multilevel Analysis

Making a proper cross-country comparison involves the use of a multilevel analysis, which is when observations are nested within a certain group factor – such as a country (Mehmetoglu & Jakobsen 2017: 194-195). This data is hierarchical and takes the context of the individuals into consideration. To determine if the idea of the clustering of the individuals into a certain group is relevant for the particular data, the intra-class correlation (ICC) is calculated. This is done on the null model not containing any explanatory variables – only the response variable and an intercept (Kreft & de Leeuw 1998). The ICC calculation shows the proportion of variation in the outcome variable that is explained at the second-level – the country level (Mehmetoglu & Jakobsen 2017: 203) – and it can be called a measure of group homogeneity (Kreft & de Leeuw 1998). If the value is 5 percent or more, then it is appropriate to use a multilevel model, meaning that this clustering of the individuals makes sense for the particular data in use (Mehmetoglu & Jakobsen 2017: 203).

Multilevel models are called mixed-effects models since both types of effects are involved: fixed effects and random effects (ibid.: 199). The relationship between fixed and random effects exists on a spectrum with complete pooling, and no pooling at all (ibid.), which, put simpler, regards the decision of to what extent something is considered individual or contextual, and finding the specific point where one individual characteristic becomes a contextual one is difficult (Iversen 1991: "Introduction", para. 1-6). Working with a contextual analysis, these ideas of determining concept's individual and/or contextual role are central, since the goal is to strive for knowledge about how individuals are affected by the surrounding context. Fixed effects can be defined as absolute effects affecting each group in the same way, meaning that the effect is linear (ibid.: "Contextual Analysis With Relative Effects", para. 4-5). A random effect, or a relative effect, is relative to each individual of the group, and the estimated model then will allow variance at both the intercept and the slope, if an illustration of how the effect hits the individuals differently were plotted in a graph (ibid.; Mehmetoglu & Jakobsen 2017: 210).

Time will be included in the analysis and the variable "year" as in "survey year" is used. The variable "year" will be included both as a fixed effect and a random effect in the most advanced models, to elaborate on whether the effect of time could be seen as affecting the respondents in the same way (fixed effect), or if each individual is affected by the effect of time in different ways (random effect). The reason for having "year" added two times is because it takes different roles. When time is included as a fixed effect, the time data is sorted linerarly for each year's impact on each country, and when time is included as random effect, making the model a random slope model, the analysis can catch differences if each time point affects countries in different ways, allowing different slopes. More on this in Section 6.

5.8.3 Evaluation

To evaluate regression analyses, diagnostic checks are required to determine if some important assumptions about regression analysis are met (Mehmetoglu & Jakobsen 2017:

134). The assumptions made by regression analysis are about the structure of the data and regression diagnostics are testing if and to what extent the performed analysis makes compromises of these, and whether those are reasonable (Fox 1991: “Introduction”, para. 1). A test of multicollinearity was performed on all variables, shown in Appendix I. In sum, no variables have a VIF-value higher than the threshold value of 5, meaning that no problem with multicollinearity exists (Mehmetoglu & Jakobsen 2017: 147). Unfortunately, the usual tests of regression diagnostics are not applicable to multiply imputed data in Stata.

6. Results

Three analysing procedures took place to address each one of the research questions, presented below.

6.1 Research Question 1

Has the public opinion of the prioritization between the environment and economic growth changed over time and across countries?

An analysis of all countries was performed for research question 1 – see Appendix J. Out of the 107 countries in data, 31 countries (39 percent) only have one measurement occasion (see Table 5.7). Including countries with only one year of measurement is affecting the ability to determine whether the outcome is due to specifics of that particular point in time (year) or that particular cluster (country), and if not considered, this could result in an overestimation of between-country differences. To have a better possibility of finding an eventual time trend, the analysis of research question 1 only includes countries with data for more than one year, shown in Table 6.1. The results for these two analyses were similar but since the question specifically asks about the existence of a time trend for one variable – “protect environment” – the following result is a better answer to research question 1.

Table 6.1 Research question 1 – mixed-effects logistic regression

	M1.1	M1.2	M1.3
	Protect environment	Protect environment	Protect environment
Year		0.033***	0.035
		(0.004)	(0.034)
Intercept	0.228***	0.229***	0.240***
	(0.049)	(0.049)	(0.057)
Country-level variance	0.183***	0.184***	0.241***
	(0.030)	(0.030)	(0.040)
Year-level variance			0.081***
			(0.014)
ICC	0.05	-	-
LR-test	L1	¤L1, L2	¤L2
Imputations	5	5	5
Observations	356 589	356 589	356 589
Countries	76	76	76

Notes:
***** Source: World Values Survey time-series dataset, version 3.0.0, released on March 1, 2022 (Inglehart et al. 2022; WVSA 2022c). The analysis includes countries with more than one measurement point, included in wave 3 (1995-1999) up until wave 7 (2017-2022).
* Standard errors in parentheses.
* The coefficients are log-odds.
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
* Dependent variable = "Protect environment".
* Both year variables (the fixed and the random term) are standardized.
* ICC = Intra-class correlation.
* LR-test = likelihood-ratio test. Likelihood-ratio tests were performed on mi-dataset 3, described in Appendix D. The symbol "¤" next to "L1", for instance, indicates that this model was the preferred model in the "L1"-LR-test.

Three models were estimated for research question 1, each containing 356 589 observations and 76 countries, and the dichotomous variable "protect environment" is the dependent variable in all models. Due to the use of logistic regression, all coefficients in Table 6.1 are log-odds, or logits, which are not directly interpretable since they refer to "how the natural logarithm of the odds for Y = 1 changes for each one-step increase in X" (Mehmetoglu & Jakobsen 2017: 170). However, something interpretable is the statistical significance and the direction of the coefficients (ibid.), which will be addressed.

The starting point was to estimate a null model – Model 1.1 (M1.1) – not containing any explanatory variables, only including the response variable and an intercept (Kreft & de Leeuw 1998). To enable a calculation of the intra-class correlation (ICC), the null model also has to contain a random intercept of the class (ibid.) – here, "country" – which is seen in the row "Country-level variance". The ICC is 0.05, which is just like the threshold of 0.05 where the advice is that a larger value than that "should not be ignored" (Mehmetoglu & Jakobsen

2017: 203), meaning that it then would be inappropriate to discard a multilevel analysis. Thus, it makes sense to continue with a multilevel model to explore the differences between countries and what knowledge that can bring.

Model 1.2 is like the null model, but also including "year" as a fixed effect, meaning that its estimation assumes "year" as having a linear trend affecting each country similarly. This effect is significant ($p < 0.001$), meaning that there is a significant linear effect of year on "protect environment". To test whether Model 1.2 was a significant improvement of Model 1.1, a likelihood-ratio test was performed (L1), and this test is significant, meaning that Model 1.2 is a better model than Model 1.1.

The last model was Model 1.3 where "year" was added as a random effect, making the model a random slope. This model is more advanced since more variation is allowed to be analyzed. "Year" as random effect is significant ($p < 0.001$) – seen in the row "Country-level variance" – meaning that there are variations across both countries and years, where the random effect of "year" is a better description of the data than letting "year" only be a fixed effect, as in Model 1.2.

Table 6.1 also shows fixed effects for "year" (for M1.2 and M1.3), intercepts (all models), and, lastly, two types of variances are presented: country-level variance (all models) and a variance for when "year" is added as a random slope (M1.3). "Year" as fixed effect is significant in Model 1.2 ($p < 0.001$) but not in Model 1.3 ($p > 0.05$), which is interesting. The direction of the variable is positive in both models, meaning that one step more of "year", on the log-odds scale, yields an increase of the attitude of "protect environment", meaning that when the model assumes "year" to be a linear trend, on the log-odds scale, this is significant for Model 1.2 but not for 1.3. However, in Model 1.3, the "year" as a random slope is significant ($p < 0.001$), and when this happens, the power of the fixed effect gets reduced to the point where it is not significant anymore and thus, when countries are allowed to vary with individual time trends, this individual time trend is the only significant one.

When doing a new likelihood-ratio test (L2), this time between Model 1.2 and 1.3, it was significant showing that the model describing the data best, for research question 1, is the most advanced model: 1.3. Details of the tests are found in Table 6.2.

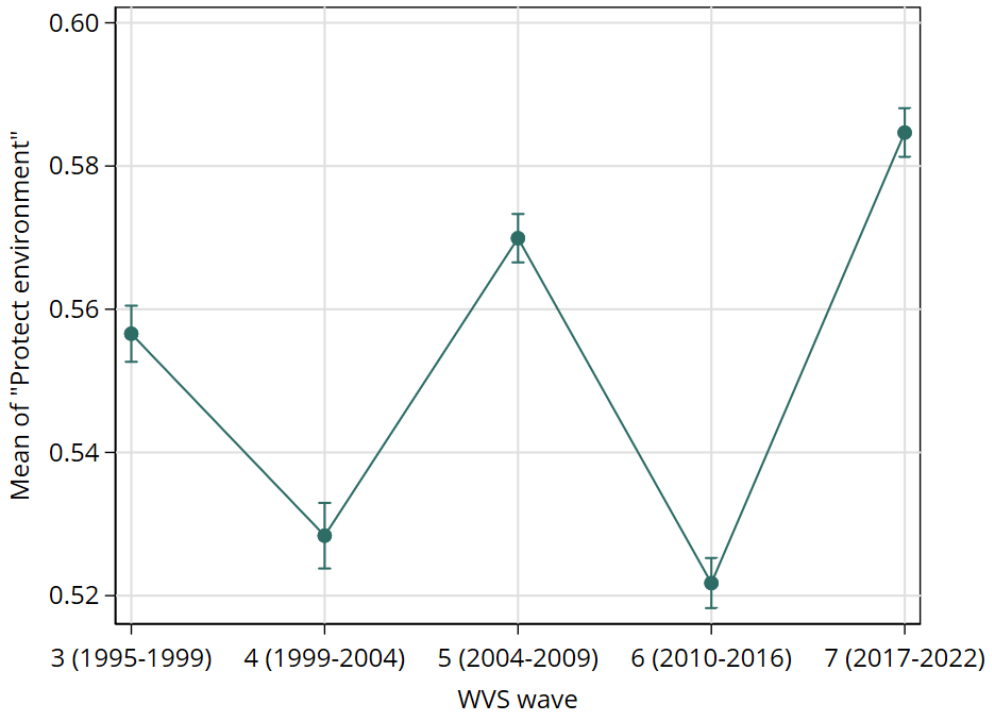
Table 6.2 Likelihood-ratio tests for research question 1

LR-test	Models compared	#df	Chisq	Pr(>Chisq)	Best model
L1	M1.2 vs M1.1	1	72.06	0.0000	M1.2
L2	M1.3 vs M1.2	1	2644.41	0.0000	M1.3

The following investigates how the variable "protect environment" varies over time and across countries, for all 107 countries in the dataset. To present how the average value varies over time, a graph with one point for each year could be shown (seen in Appendix K), but since the countries' availability over the years differ (see Table 5.7), each point would seem to have the same influence over the trend, when in fact, all "year"-points have different amounts

of countries. A better overview of the time trend is to group the countries into each WVS wave, shown in Figure 6.1.

Figure 6.1 Mean of "protect environment" over WVS waves for all 107 countries with 95 percent confidence intervals



With five measurement occasions it could be difficult to spot a trend but, overall, the trend of the mean of "protect environment" has a slight increase comparing from wave 3 (1995-1999) where it was 0.557, and wave 7 (2017-2022) where it was 0.585. However, for wave 4 (1999-2004) and wave 6 (2010-2016) there is a downward trend instead. It is very likely that the Great Recession starting in 2008, resulting in long-lasting decline of employment statistics (Bisello et al. 2022: 586), has had an effect on people's prioritization between the environment and economic growth, and especially so when the option of economic growth-prioritization in WVS's variable also involves the aspect of job opportunities.

Table 6.3 shows the mean of "protect environment" over all 107 countries and it is common to have an average above the middle point of 0.50. Thus, among the 107 countries, the trend is to prioritize the environment more than the economy. Haiti is considered an "outlier" – a very unusual value (Mehmetoglu & Jakobsen 2017: 153) – since its mean of "protect environment" is 0.04.

Table 6.3 Mean of "protect environment" over all 107 countries, in descending order

Andorra	0.86	Trinidad and Tobago	0.60	Jordan	0.50	
El Salvador	0.86	Eduador	0.60	Rwanda	0.50	
Dominican Republic	0.78	Turkey	0.60	Ghana	0.49	¤
Bolivia	0.74	Greece	0.60	Singapore	0.48	
Puerto Rico	0.73	Burkina Faso	0.59	Albania	0.47	
Norway	0.72	Argentina	0.59	Bulgaria	0.47	
Vietnam	0.70	Czech Republic	0.59	Netherlands	0.47	
Sweden	0.69	New Zealand	0.59	Kenya	0.47	
Colombia	0.69	India	0.59	Bosnia and Herzegovina	0.47	
China	0.69	Mongolia	0.58	Armenia	0.46	
Uzbekistan	0.68	South Korea	0.58	Romania	0.46	
Indonesia	0.68	Cyprus	0.57	Azerbaijan	0.46	
Guatemala	0.67	France	0.57	German Federal Republic	0.46	
Croatia	0.67	Finland	0.56	Iraq	0.46	
Philippines	0.67	Russia	0.56	Hungary	0.45	
Nicaragua	0.66	Libya	0.56	Poland	0.45	
Switzerland	0.66	Iran	0.56	Egypt	0.45	
Italy	0.66	Ukraine	0.56	Algeria	0.45	
Canada	0.66	Serbia	0.54	Tajikistan	0.45	
Malaysia	0.66	Spain	0.54	Zimbabwe	0.43	
Australia	0.65	Venezuela	0.54	Montenegro	0.41	
Tanzania	0.65	Germany	0.54	Lebanon	0.41	
Qatar	0.64	Japan	0.54	Nigeria	0.39	
Brazil	0.64	Kazakhstan	0.54	Saudi Arabia	0.39	
Uruguay	0.64	Thailand	0.53	Yemen	0.39	
Chile	0.63	Hong Kong SAR	0.53	Uganda	0.39	
Macau SAR	0.63	Latvia	0.53	Zambia	0.38	
Morocco	0.62	United States of America	0.53	Lithuania	0.37	
Peru	0.62	North Macedonia	0.53	Tunisia	0.36	
Georgia	0.62	Slovenia	0.52	Ethiopia	0.34	
Mexico	0.62	Slovakia	0.51	South Africa	0.34	
Taiwan ROC	0.62	Mali	0.51	Kuwait	0.34	
Belarus	0.61	Myanmar	0.51	Pakistan	0.33	
Moldova	0.61	Estonia	0.51	Israel	0.33	
Kyrgyzstan	0.61	Palestine	0.50	Haiti	0.04	
Great Britain	0.61	Bangladesh	0.50			

Notes:

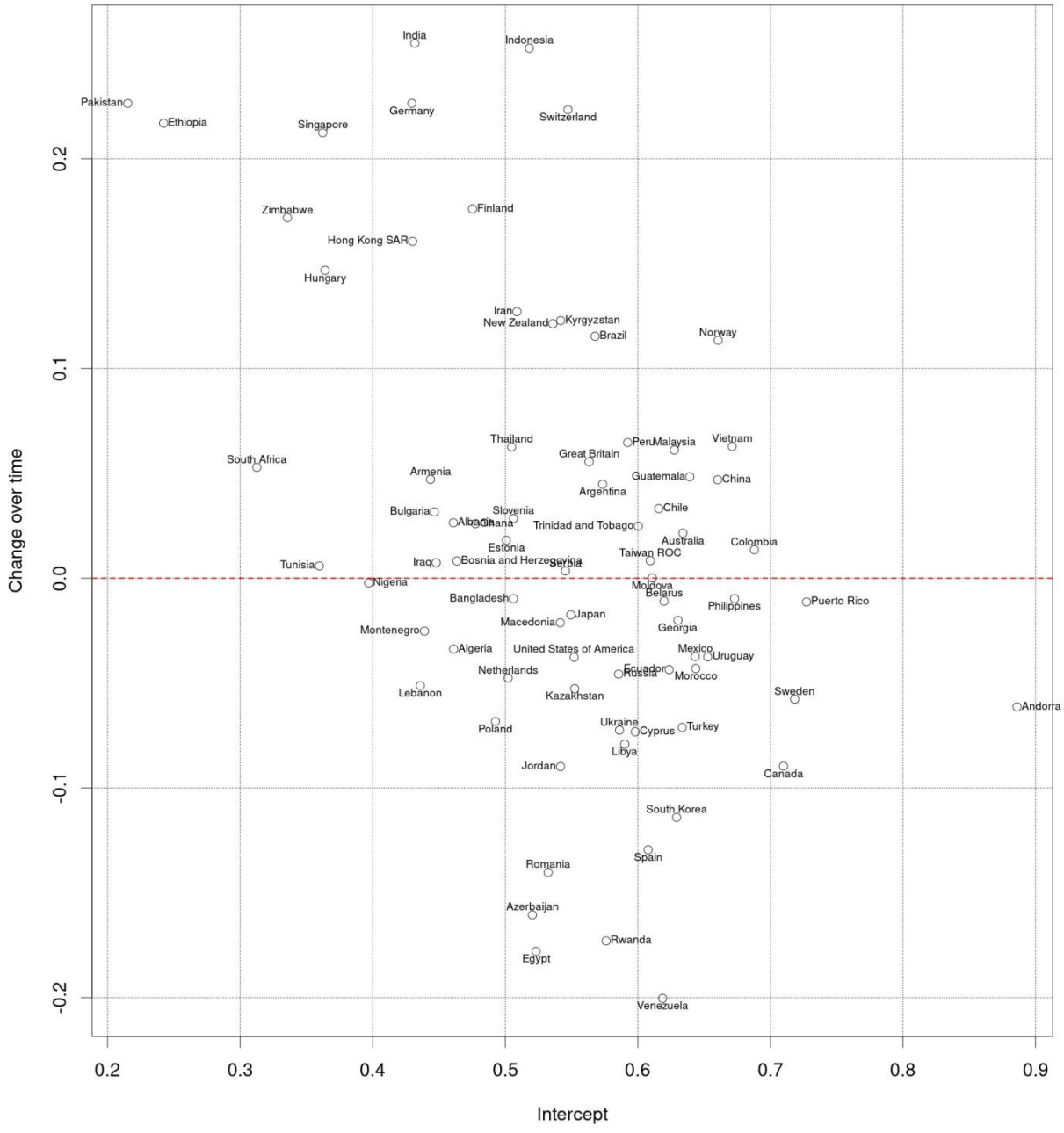
* "Protect environment" varies with values between 0 to 1, where 1 represents a choice where the environment is prioritized, and 0 a choice where economic growth is prioritized.

* The countries from Ghana and down have a mean under 0.50 – the middle value – and this point is marked with "¤".

Average marginal effects of the fixed effect of "year" on "protect environment" was calculated for Model 1.3 and the prediction is 0.03 with a confidence interval between -0.03 and 0.10. Since the value of 0 is included in the confidence interval – referring to the situation where no measured difference exists – it is impossible to rule out coincidence (Djurfeldt et al. 2018: 235). In other words, a linear effect of time on "protect environment" does not exist, globally, for the 76 countries in the analysis.

Figure 6.2 shows random effects of Model 1.3 where it is possible to track the 76 countries' intercepts as well as their slopes, i.e. their change over time.

Figure 6.2 Random effects of Model 1.3 showing the countries' intercepts and change over time in "protect environment"



Special thanks to Hans Ekbrand for producing this graph.

If all countries would have the same mean of "protect environment" for the first measurement occasion and this would not change over time – for any of the countries – then all of the countries would be placed on the same dot on the x-axis and on the red, dashed line at y = 0.0. Instead, differences between countries and over time are shown. The change over time consists of predicted probabilities since the log-odds have been transformed to probabilities, and the predictions for each country are based on its particular measurement points. If a country has data from two years, then the illustrated change over time reflects the change between those two time points, and same logic applies for a country with more time points.

Thus, the predictions only cover a period for which there is data for the particular country the prediction concerns, and this period differs between countries.

Taking India as an example, placed at the top of the graph, participating in WVS in year 1995, 2001, 2006 and 2012 (as shown in Appendix C). Their intercept is about 0.4 for their first year, meaning that their mean value of "protect environment" in 1995 was 0.4, and their change over time is about 0.3, meaning that their mean value of "protect environment" in 2012 was 0.7. India's distance to the red, dashed line at y = 0.0 is the longest for all the analysed countries, showing that throughout their four years of WVS participation, they have increased their value of "protect environment" more than any other country in the survey. Another example would be Venezuela, at the bottom of the graph, surveyed three times – in 1996, 2000 and 2021 (see Appendix C) – and their intercept is about 0.6, which means that in 1996 their mean value of "protect environment" was 0.6. Venezuela's change over time is -0.2, showing that from 1996 to 2021 their mean of "protect environment" has decreased from 0.6 to 0.4, and since they have the longest distance to the red, dashed line at y = 0.0 – below the line – it is the country with the largest decrease in their value, of all the analyzed 76 countries.

Regarding overall tendencies, Figure 6.2 shows that the 76 analyzed countries have a large spread throughout the graph, and it is possible to read the names of almost all of them. If all countries were at the same spot it would be difficult to read their names. The result means that quite individual trajectories are seen in the 76 countries, since they have unique coordinates. The result also demonstrates that 52 countries are placed within the y-axis range of -0.1 and 0.1, and 16 countries are above that, and 7 below. This means that the overall trend is that for 52 out of 76 analyzed countries, their mean of "protect environment" only changes between -0.1 and 0.1 for their particular amount of participation years in WVS. Moldova is the only country placed on the line at y = 0.0, being the most stable throughout their measurement occasions, with Nigeria closest to them, just below the line. Regarding overall tendencies for the intercepts, these are less interesting since they only refer to the countries' starting points, but 64 out of 76 countries have a mean value on "protect environment" between 0.4 and 0.7 for their first year of participation, and only 8 countries are below this span, and 4 above.

6.2 Research Question 2

Is the level of confidence in current political system explained by the attitude that the environment needs to be prioritized over economic growth? Does the level of confidence vary over time and across countries?

Research question 2 involves a focal relationship, making it interesting to include all the 107 countries, in comparison to research question 1 only investigating "protect environment". Table 6.4 shows the analysis for research question 2, which has the dependent variable "political confidence" and the independent variable "protect environment". Seven models are presented – all containing 395 019 observations and 107 countries. Since linear regression is used, the coefficients are easier to interpret, compared to research question 1, since these coefficients display a linear function where a one step change in the independent variable resembles a one step change in the dependent variable (Mehmetoglu & Jakobsen 2017: 47).

Table 6.4 Research question 2 – mixed-effects linear regression

	M2.1	M2.2	M2.3	M2.4	M2.5	M2.6	M2.7
	Political confidence	Political confidence	Political confidence	Political confidence	Political confidence	Political confidence	Political confidence
Protect environment		0.048*** (0.009)	0.056*** (0.008)		0.040*** (0.008)	0.056*** (0.008)	0.040*** (0.008)
Year		-0.129*** (0.004)	-0.122*** (0.004)	-0.122*** (0.004)	-0.194** (0.073)	-0.121*** (0.006)	-0.177* (0.073)
Environmental organization			0.241*** (0.012)	0.243*** (0.012)	0.251*** (0.012)	0.241*** (0.012)	0.251*** (0.012)
Interest in politics			0.373*** (0.004)	0.374*** (0.004)	0.370*** (0.004)	0.373*** (0.004)	0.370*** (0.004)
Left-right scale position			0.064*** (0.002)	0.063*** (0.002)	0.062*** (0.002)	0.064*** (0.002)	0.062*** (0.002)
Age			0.046*** (0.004)	0.045*** (0.004)	0.048*** (0.004)	0.046*** (0.004)	0.048*** (0.004)
Income			0.010*** (0.002)	0.011*** (0.002)	0.014*** (0.002)	0.010*** (0.002)	0.013*** (0.002)
Education			-0.066*** (0.002)	-0.065*** (0.002)	-0.066*** (0.002)	-0.066*** (0.002)	-0.066*** (0.002)
Interaction (Protect env. * Year)						-0.002 (0.007)	-0.030*** (0.007)
Intercept	6.736*** (0.115)	6.709*** (0.116)	5.692*** (0.112)	5.719*** (0.112)	5.664*** (0.122)	5.692*** (0.112)	5.665*** (0.122)

Individual-level variance	4.609*** (0.011)	4.597*** (0.011)	4.427*** (0.010)	4.428*** (0.010)	4.310*** (0.010)	4.427*** (0.010)	4.310*** (0.010)
Country-level variance	1.413* (0.194)	1.438** (0.197)	1.308 (0.179)	1.309* (0.179)	1.459** (0.212)	1.308 (0.179)	1.459** (0.213)
Year-level variance					0.437*** (0.074)		0.438*** (0.074)
ICC	0.24	-	-	-	-	-	-
LR-test	L3	¤L3, L5	¤L4, ¤L5, L6	L4	¤L6, L8	L7	¤L7, ¤L8
Imputations	5	5	5	5	5	5	5
Observations	395 019	395 019	395 019	395 019	395 019	395 019	395 019
Countries	107	107	107	107	107	107	107
	M2.1	**M2.2**	**M2.3**	**M2.4**	**M2.5**	**M2.6**	**M2.7**

Notes:
***** Source: World Values Survey time-series dataset, version 3.0.0, released on March 1, 2022 (Inglehart et al. 2022; WVSA 2022c). The analysis includes wave 3 (1995-1999) up until wave 7 (2017-2022).
* Standard errors in parentheses.
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
* Dependent variable = "Political confidence".
* The age and year variables (both the fixed and the random term) are standardized.

The first model – Model 2.1 – is a null model, where the ICC was 0.24, well passing the threshold value of 0.05 (Mehmetoglu & Jakobsen 2017: 203), meaning that it is worthwhile to continue with a multilevel analysis to account for the variation on country-level for research question 2. Thus, it makes sense to cluster the individuals into countries and continue with more advanced, multilevel models.

Next model, 2.2, contains the focal relationship between "political confidence" and "protect environment" including a fixed effect of "year". Model 2.2 shows a positive and significant relationship between "political confidence" and "protect environment" ($p < 0.001$), meaning that "protect environment" has a statistically significant positive effect on "political confidence". One step more likely to want to prioritize the environment coincides with a slight increase of the respondents' political confidence. Furthermore, Model 2.2 involves the fixed effect of "year", and this is also significant ($p < 0.001$) but has a negative direction, meaning that one more year is associated with a slight decrease in political confidence. This model was estimated to be able to run a likelihood-ratio test afterwards (L3), to determine if the focal model is better than the null model, and this test was significant, meaning that Model 2.2 is a better fit for the data than 2.1.

Model 2.3 involves the addition of the control variables "environmental organization", "interest in politics", "left-right scale position", "age", "income" and "education", to determine if their addition changes the focal relationship between "political confidence" and "protect environment". When these are added, the coefficient for "political confidence" and "protect environment" increases slightly, and it is still significant ($p < 0.001$), indicating that holding the control variables constant results in a stronger focal relationship. All of the control variables are significant ($p < 0.001$) and each has a positive relationship to "political confidence", except for "education" that has a negative relationship where one step more education coincides with a slight decrease of political confidence, in a situation where all the other control variables are held constant.

The purpose of Model 2.4 is to be able to run a likelihood-ratio test between Model 2.4 and 2.3 to see if the focal independent variable – "protect environment" – is warranted to include. Thus, Model 2.4 is the same model as 2.3 with the only exception that "protect environment" is excluded. Model 2.4 shows that all the control variables have very similar estimates, the same directions, and are still significant ($p < 0.001$) even without "protect environment". The likelihood-ratio test was significant (L4), meaning that it is motivated to include the focal independent variable, making Model 2.3 better. Another likelihood-ratio test (L5) was run to determine if the inclusion of the control variables makes the model better, and this was significant, showing that the best model thus far is the model including both the focal relationship and the control variables.

The next model, 2.5, adds "year" as a random effect and this makes the strength of the focal relationship decrease a little but is still significant ($p < 0.001$). The control variables stay roughly the same and the fixed effect of "year" is larger in size, still negative and a little less significant ($p < 0.01$). The year-level variance is significant ($p < 0.001$) meaning that the

random effect of year is relevant to include for this model. Running a likelihood-ratio test (L6) showed significance, meaning that Model 2.5 is better than Model 2.3.

Model 2.6 brings an interaction between "protect environment" and "year", meaning that the evaluation of this term's inclusion strives to test the idea that the influence of "protect environment" perhaps could be interacting with "year". Instead of a regular, additive, model where every control variable's effect on "political confidence" is the same type of additive effect, including an interaction term assumes that another variable's effect is impacting the relationship between the two variables (Mehmetoglu & Jakobsen 2017: 110). The idea for Model 2.6 is then to test if the relationship between "protect environment" and "political confidence" is different depending on what value "year" has. In other words, Model 2.6 tests whether the effect of the interaction term affects the effect that "protect environment" has on "political confidence".

The result from Model 2.6 shows that when the interaction is included, "protect environment" becomes larger and still significant ($p < 0.001$). Not much happens with the control variables, year as fixed effect decreases a little and the interaction term's coefficient is -0.002 and not significant ($p > 0.05$). Thus, the inclusion of the interaction did not make the model better, since the interaction term is not significant.

To determine whether it could be a better fit for the data to add a random effect of "year", Model 2.7 was estimated. Interestingly, the interaction term becomes significant ($p < 0.001$) but is still negative. The coefficient for "protect environment" decreases slightly but is still significant ($p < 0.001$). Since the interaction is significant, the inclusion is more truthful than the opposite case. Hence, the effect of "protect environment" on "political confidence" does differ depending on what value "year" has. For every year, the effect of "protect environment" on "political confidence" is decreasing slightly, but is significant ($p < 0.001$). Put simpler, the opinion to prioritize the environment over economic growth has a connection to the level of political confidence the person has, but this depends on the time trend. Specifically, as years pass, for the countries involved in the analysis and their particular time points added, the result shows that the opinion to prioritize the environment has a smaller connection to the person's level of political confidence over time. The control variables are roughly the same and the fixed effect of "year" has gone bigger and lost some significance ($p < 0.05$). The random effect of "year" is significant ($p < 0.001$).

A new likelihood-ratio test was done (L7) which showed significance, showing that the data is better fitted with Model 2.7 than 2.6. Lastly, Model 2.7 and 2.5 were compared in another likelihood-ratio test (L8), and this was significant as well, which means that Model 2.7 is better than 2.5, and both of these models are random slope models. This is an additional indicator that the interaction between "protect environment" and "year" is relevant to describe what trends can be found in the data. All likelihood-ratio tests are summarized in Table 6.5.

Table 6.5 Likelihood-ratio tests for research question 2

LR-test	Models compared	#df	Chisq	Pr(>Chisq)	Best model
L3	M2.2 vs M2.1	2	1033.45	0.0000	M2.2
L4	M2.3 vs M2.4	1	53.62	0.0000	M2.3
L5	M2.3 vs M2.2	6	14837.31	0.0000	M2.3
L6	M2.5 vs M2.3	1	10250.89	0.0000	M2.5
L7	M2.7 vs M2.6	1	10269.04	0.0000	M2.7
L8	M2.7 vs M2.5	1	18.18	0.0000	M2.7

Since Model 2.7 is the best model for research question 2, this model gets further examined. Figure 6.3 shows the effect of "protect environment" on "political confidence" for a given year, and this linear trend of year as a fixed effect is a slight decrease, as previously explained. Another find is that between 1995 and 2012 "protect environment" had a significant, positive effect on "political confidence", since the probabilities shown on the y-axis are positive. Thus, for these years a higher value on "protect environment" was connected to a higher value on "political confidence". What is interesting is that after 2013, where the confidence interval includes zero, the previous trend is the opposite instead: not significant and negative, meaning that no significant association exists after 2013.

Figure 6.3 Predicted probabilities of the effect of "protect environment" on "political confidence" for a given year with 95 percent confidence intervals

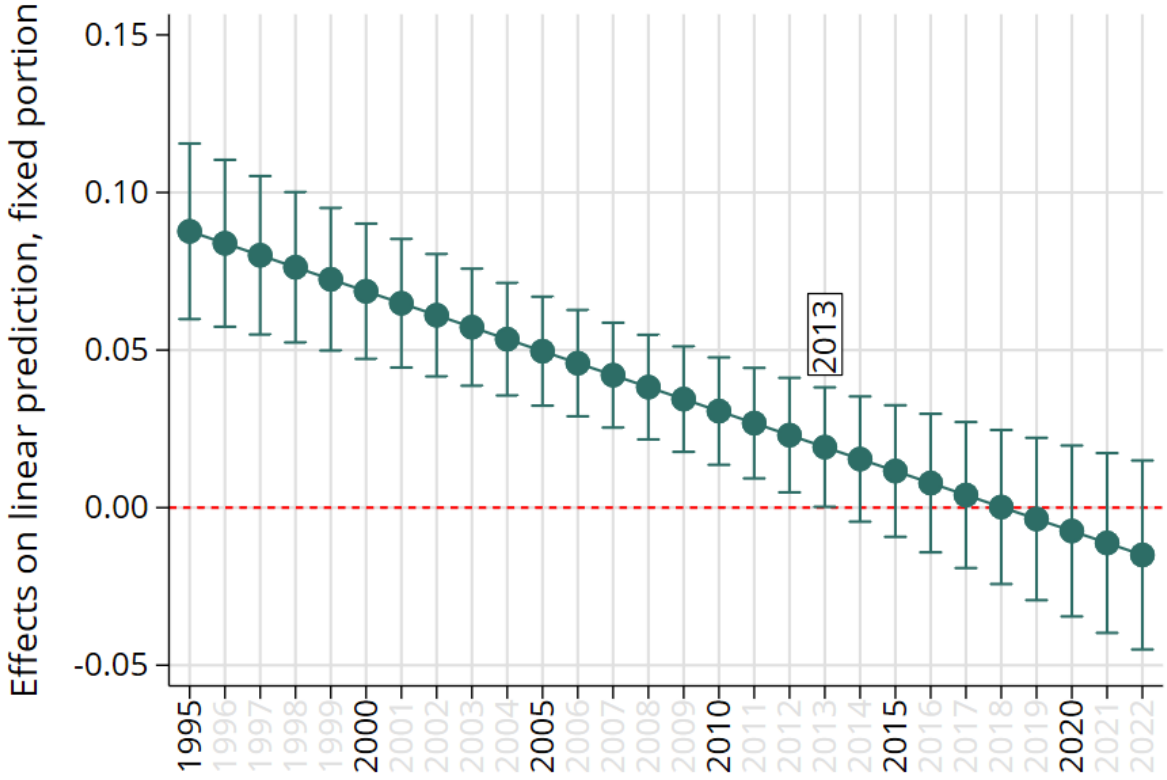
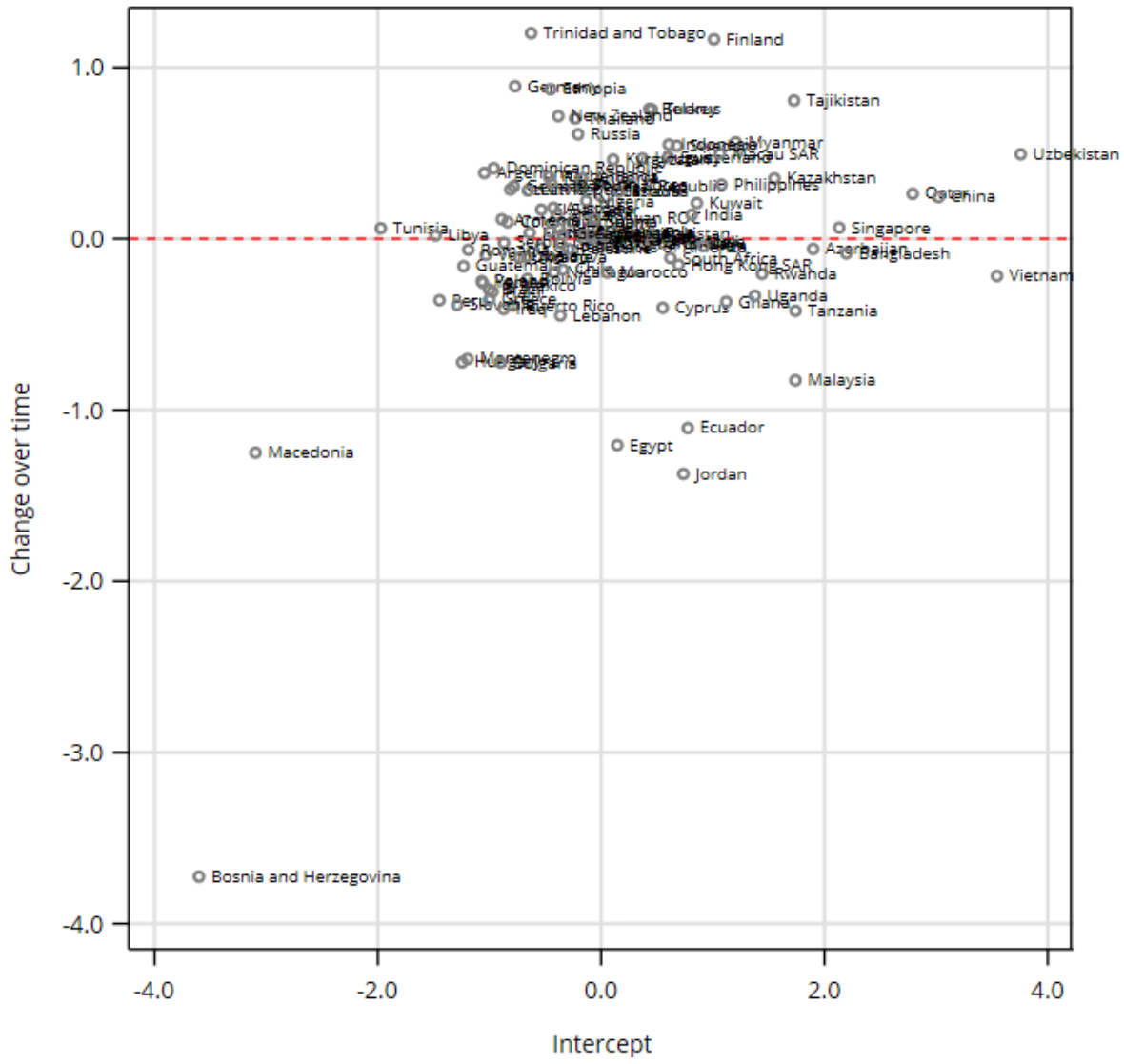


Figure 6.4 shows random effects of Model 2.7, illustrating how "political confidence" changes between countries over time, calculated in probabilities. Since Model 2.7 is analyzed with linear regression, the random effects only show predicted probabilities for the "political

confidence" variable. The x-value 0.0 refers to the overall mean of "political confidence", which is 6.7.

Figure 6.4 Random effects of Model 2.7 showing countries' intercepts and change over time in "political confidence"



Overall, 94 of the 107 countries are placed within the four grey boxes closest to the coordinate (0,0). Only 13 countries are placed outside of this area, making it difficult to read many of the countries' names since they are so closely together, demonstrating that the majority of the countries is similar in their level of political confidence. Compared to the similar graph for research question 1 – Figure 6.2 – the graph above has a more cluttered presentation of the countries, indicating that countries are more similar to each other regarding their level of political confidence, compared to the analysis of "protect environment" over time with greater spread on both axes.

Bosnia and Herzegovina, surveyed in 1998 and 2001 (as shown in Appendix C), has an unusual result, with about -4.0 in intercept and the largest change over time: -4.0. This means that in 1998 they have the lowest political confidence level (2.7) compared to the other

countries, and the change between their two time points goes from 2.7 to -1.3, showing that their level of political confidence has decreased even more three years later. Another example is Trinidad and Tobago, placed at the top of the graph, surveyed in 2006 and 2010 (seen in Appendix C), which has the largest increase of political confidence with an intercept about 0.1 and a change over time of 1.0, meaning that in 2006 they had a mean value of "political confidence" of 6.8 and in 2010 this had increased to 7.8.

6.3 Research Question 3

Is having the attitude that society needs a radical change of its organization explained by the attitude that the environment needs to be prioritized over economic growth? Does the level of wanting a radical reorganization vary over time and across countries?

Similar to question 2, research question 3 also includes a focal relationship making it meaningful to include all the 107 countries no matter the amount of participation years, because the eventual relationship between "protect environment" and "wish for radical change" would be valuable to study for all the countries in the dataset. The difference is that research question 1 only captures a trend of one variable, and the task for the other questions is to investigate countries' and years' eventual impact on the focal relationship.

Research question 3 has been analysed through five models comprising 395 019 observations and 107 countries, and the results are shown in Table 6.6. The dependent variable is "wish for radical change" and the independent "protect environment", and logistic regression was used. Similar to research question 1, the table then contains log-odds for the coefficients, not easily interpretable, but several aspects will be highlighted below.

Unlike the other research questions, there is one model – Model 3.4 – which does not converge in the first imputed dataset, and this is due to a case of "perfect prediction" for the variables "year" and "environmental organization" which gets infinite estimates. This can happen in logistic regression and refers to the situation when a coefficient becomes infinite and has to do with the fact that logistic regression deals with dichotomous variables (Rindskopf 2002: 147). This can be said to be a good thing because the prediction was then perfect (ibid.: 147, 160), but the statistical program can not handle inifite numbers. Luckily, the model converges in the four other imputed datasets, making the analysis useful anyway.

Table 6.6 Research question 3 – mixed-effects logistic regression

	M3.1	M3.2	M3.3	M3.4	M3.5
	Wish for radical change	Wish for radical change	Wish for radical change	Wish for radical change	Wish for radical change
Protect environment		0.162*** (0.015)	0.141*** (0.016)		0.145*** (0.016)
Year		0.226*** (0.007)	0.245*** (0.007)	0.247*** (0.007)	0.264*** (0.027)
Environmental organization			0.196*** (0.016)	0.201*** (0.016)	0.182*** (0.016)
Interest in politics			0.096*** (0.006)	0.096*** (0.006)	0.095*** (0.006)
Left-right scale position			-0.062*** (0.003)	-0.062*** (0.003)	-0.062*** (0.003)
Age			-0.179*** (0.008)	-0.180*** (0.009)	-0.182*** (0.008)
Income			-0.011* (0.004)	-0.011 (0.005)	-0.013* (0.004)
Education			-0.019*** (0.004)	-0.017** (0.004)	-0.020*** (0.004)
Intercept	-1.975*** (0.063)	-2.075*** (0.060)	-1.849*** (0.068)	-1.777*** (0.068)	-1.836*** (0.069)
Country-level variance	0.412*** (0.058)	0.358*** (0.050)	0.344*** (0.048)	0.340*** (0.048)	0.341*** (0.050)
Year-level variance					0.048*** (0.009)
ICC	0.11	-	-	-	-
LR-test	L9	¤L9, L11	¤L10, ¤L11, L12	L10	¤L12
Imputations	5	5	5	4	5
Observations	395 019	395 019	395 019	395 019	395 019
Countries	107	107	107	107	107

Notes:
***** Source: World Values Survey time-series dataset, version 3.0.0, released on March 1, 2022 (Inglehart et al. 2022; WVSA 2022c). The analysis includes wave 3 (1995-1999) up until wave 7 (2017-2022).
* Standard errors in parentheses.
* The coefficients are log-odds.
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
* Dependent variable = "Wish for radical change".
* The age and year variables (both the fixed and the random term) are standardized.

The first model, 3.1, is a null model, and the ICC is 0.11 – above the threshold of 0.05 (Mehmetoglu & Jakobsen 2017: 203), signalling, again, that the idea to perform a multilevel

analysis is worth to explore. Model 3.2, then, involves the addition of "protect environment" and a fixed effect of "year". In this model, "protect environment" is positive and significant ($p < 0.001$), showing that the attitude of wanting to prioritize the environment has a significant association to a person's extent of answering that they want a radical change of society. Furthermore, the fixed effect of "year" is positive and significant ($p < 0.001$), conveying that as years pass, the wish for radical change increases. A likelihood-ratio test (L9) showed significance, explaining that Model 3.2 is better than 3.1.

Model 3.3 adds the control variables "environmental organization", "interest in politics", "left-right scale position", "age", "income" and "education". This addition makes the focal relationship a bit smaller but still significant ($p < 0.001$), revealing that some of the effect of "protect environment" on "wish for radical change", as seen in Model 3.2, is explained by the control variables. All of the control variables are significant where income has a lesser significance ($p < 0.01$) and all the others are highly significant ($p < 0.001$).

Next, Model 3.4 was estimated, excluding "protect environment" but containing all control variables, and this exclusion does not change the control variables' effects considerably. When running a likelihood-ratio test (L10) the result showed significance, which warrants the addition of the focal independent variable "protect environment" in the model, confirming that Model 3.3 fits the data better than 3.4. Furthermore, the likelihood-ratio test of Model 3.3 and 3.2 (L11) determines whether the inclusion of the control variables improves the model, and this test was significant, showing that Model 3.3 is better than Model 3.2.

Lastly, Model 3.5 was performed, which is a random slope model, encompassing "year" as a random effect. This addition makes the relationship between "protect environment" and "wish for radical change" a bit stronger than in Model 3.3, and it is still significant ($p < 0.001$). Examining the control variables, all of them are similar to the previous models and the fixed effect of "year" has gone stronger, still keeping its significance level ($p < 0.001$). This indicates that letting the model allowing variation of the countries' slopes, i.e. their individual trends of year, makes the estimation of the linear trend of "year" as a fixed effect better to capture the data's variations. The final likelihood-ratio test between Model 3.5 and 3.3 (L12) showed significance, establishing that Model 3.5 is the best model for research question 3. Table 6.7 summarizes the results from the likelihood-ratio tests.

Table 6.7 Likelihood-ratio tests for research question 3

LR-test	Models compared	#df	Chisq	Pr(>Chisq)	Best model
L9	M3.2 vs M3.1	2	1953.52	0.0000	M3.2
L10	M3.3 vs M3.4	1	200.39	0.0000	M3.3
L11	M3.3 vs M3.2	6	2680.46	0.0000	M3.3
L12	M3.5 vs M3.3	1	1514.54	0.0000	M3.5

Figure 6.5 shows average marginal effects for Model 3.5, illustrating predictions of "wish for radical change" when all independent variables are held at their mean values. Thus, the graph reveals what span of how "wish for radical change" is predicted to vary, given aforementioned means for the independent variables. Since the confidence interval does not include 0, the predictions are significant, and about 0.14 with a confidence interval between about 0.12 and 0.16. Consequently, people are probable to stay within this span in their value of "wish for radical change", overall.

Figure 6.5 Predictions of "wish for radical change" with 95 percent confidence intervals

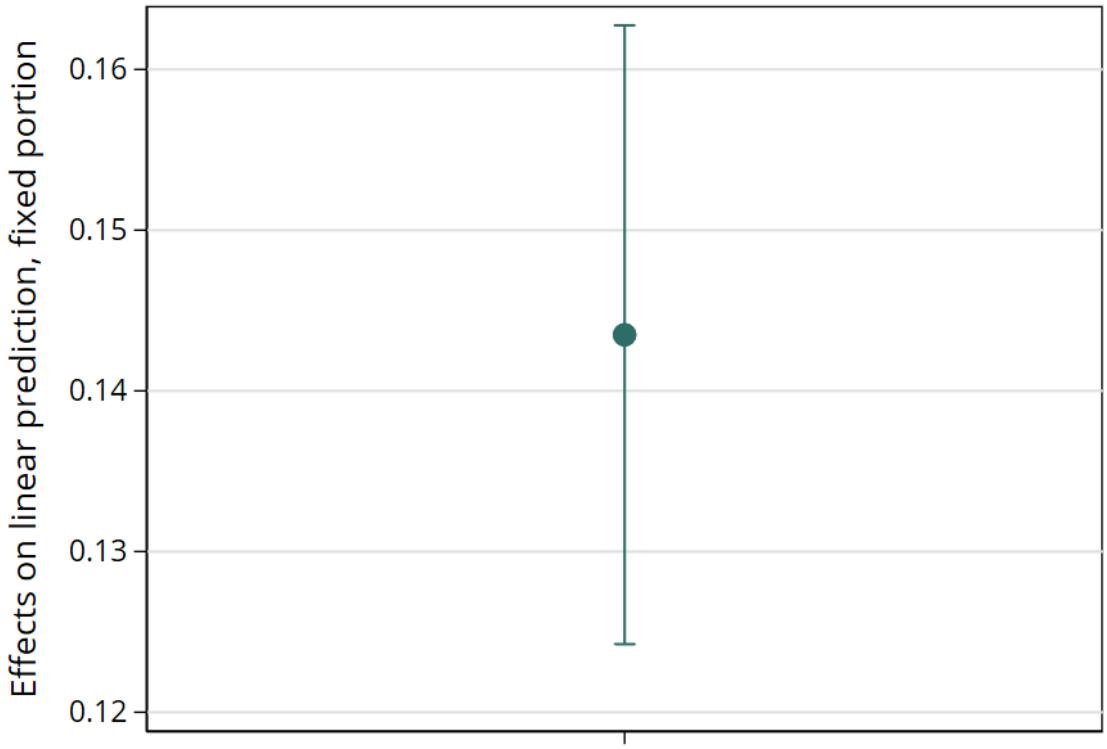
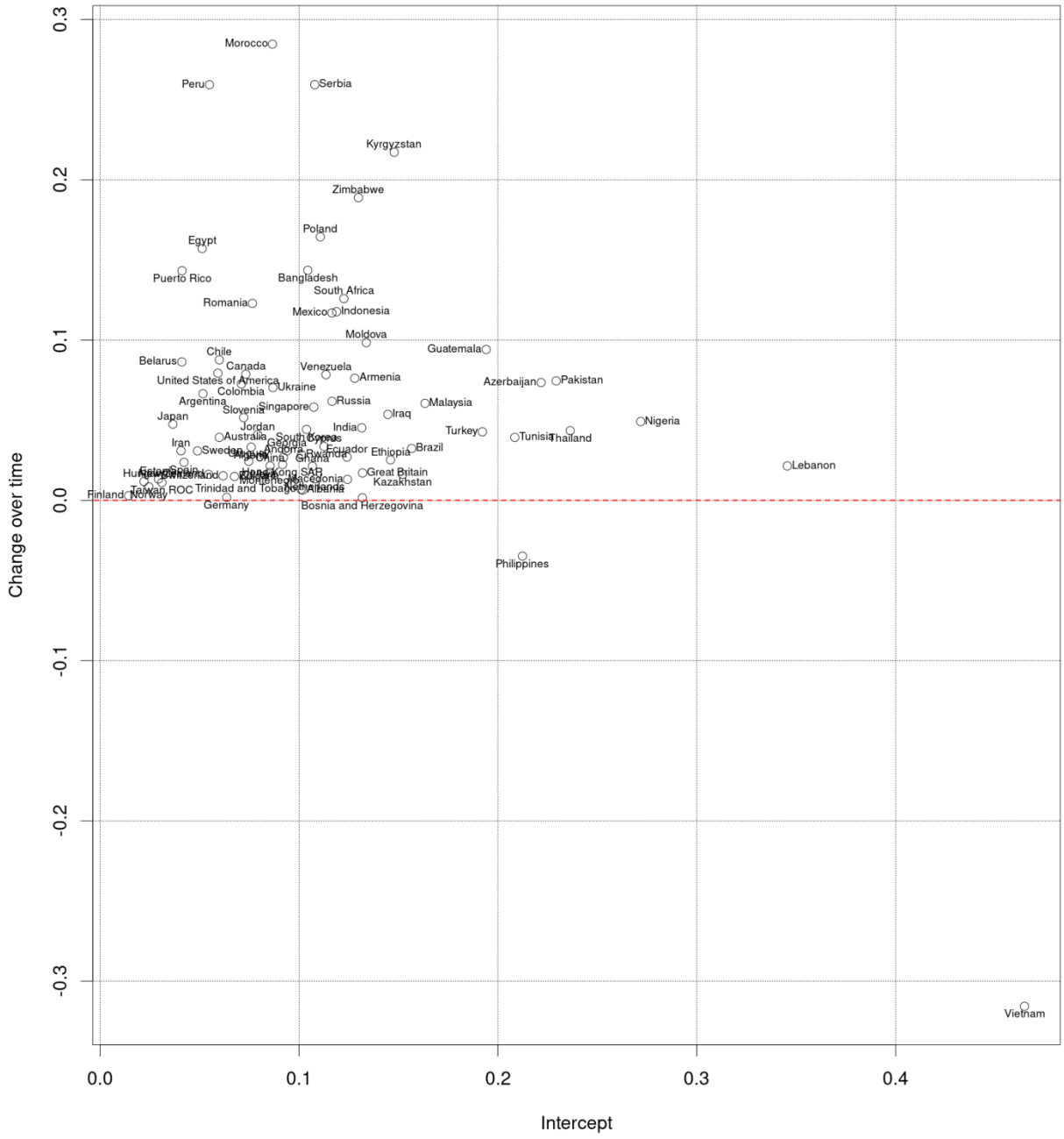


Figure 6.6 shows random effects of Model 3.5. The log-odds have been transformed to probabilities and the probabilities are calculated when the focal independent variable "protect environment" and the control variables are held at their mean. The x-value 0.0 refers to the overall mean of "wish for radical change", which is 0.1.

Figure 6.6 Random effects of Model 3.5 showing countries' intercepts and change over time in "wish for radical change"



Special thanks to Hans Ekbrand for producing this graph.

Many countries are plotted closely together, making it difficult to read many names, meaning that the analysed countries and their years of survey participation have similar trends.

Morocco is predicted at the top of Figure 6.6, being the country with the largest distance to the point of y = 0.0 – above the line – meaning that it has the largest increase over time when compared to all the other 106 countries' individual time trends. Morocco has been surveyed four times – in 2001, 2007, 2011 and 2021, and their starting point in 2001 has an intercept of about 0.1, referring to the mean value of 0.2 on "wish for radical change", and their change over time is about 0.3, meaning that in 2021 their mean value on "wish for radical change" is 0.4.

Vietnam has a very unusual value and their placement is at the bottom left corner of the graph. They have the highest intercept of all countries, on about 0.5, meaning that it has the highest starting value of "wish for radical change" in their first year of participation in 2001, which refers to the value of 0.6. Vietnam has also been included for the years 2006 and 2020, and the specific time trend for Vietnam for these years is -0.3, referring to a decrease – the largest decrease for all countries – where their mean value of "wish for radical change" in 2020 is 0.3.

Another find from the graph is that among the 107 countries, only two countries – the Philippines and Vietnam – are placed below the line on y = 0.0, demonstrating that more countries have a country-specific time trend of an increase in the probability to choose the option "wish for radical change" than the opposite case.

7. Discussion

Three research questions were asked in this study. The results from the first research question show that the analyzed 76 countries do differ in their choice of whether they prioritize the environment. When comparing averages on countries' level of "protect environment", a large majority of the countries has a value over the middle point 0.5, showing that, for all the 107 countries, it is more common to want to prioritize the environment than economic growth. The effect of time for the 76 countries is not significantly different from zero, meaning there is no significant difference over time in the prioritization of the environment over economic growth – which is true for the analysis with 107 countries as well (shown in Appendix J). However, individual time trends for the countries do exist, since the best model has year as a random slope. In fact, when plotting random effects, the 76 countries have a large spread in its distribution, showing unique coordinates for the majority of the countries. The answer to the first research question – if the prioritization between the environment and economic growth has changed over time and across countries – is that this has changed across countries over time when allowing the data to capture country-specific time trends, but across all 76 countries, no significant time change has happened. Thus, the political landscape on the prioritization question is stable throughout the analyzed years of 1995 to 2022.

The analysis of the second research question showed that the best model includes an interaction term for the analyzed 107 countries. A significant, positive association exists between the attitude of wanting to prioritize the environment and the perceived political confidence, but this association depends on the year. Namely, between 1995 and 2012 the

relationship is positive and significant, but after 2013 and onwards this relationship is not significant anymore. Overall, the significant interaction effect decreases slightly over time, during the span when it is significant – 1995 to 2012, when assuming the same linear effect of time for all countries. Comparing country differences, the results describe a clear trend where the large majority of the countries has similar starting points as well as time changes in political confidence. Addressing the second research question, the level of confidence in current political system can be explained by the attitude that the environment needs to prioritized over economic growth, but only during the years of 1995 to 2012. Regarding the change in the level of political confidence, the results show that the countries' distribution is small, where the majority is not changing so much in their individual trajectories as well as the overall linear effect of time.

When analysing the 107 countries a positive, significant relationship between people's tendency to prioritize the environment and if they want a radical reorganization of society is revealed. The predicted probabilities show that overall, individuals are probable to have about 0.14 in their level of wanting a radical change of society, which is small but significant. When investigating countries' differences a similar trend can be found between countries, since they are similar in their individual level of change as well as their starting points for the first year of survey participation. The Philippines and Vietnam are the only countries with a decrease in their mean value of "wish for radical change". The answer to the third research question, then, is that the attitude that society needs a radical change of its organization is, in fact, explained by the attitude that the environment needs to be prioritized over economic growth. Regarding the level of wanting a radical reorganization of society, some analyzed countries show trajectories where they increase their level, but overall, most countries have a stable opinion.

The economic growth paradigm describes how the current practice of striving for constant economic growth is the prevailing path, but it also opens up the question and denotes the current era as a paradigm – which relates to something with a beginning and an end due to a successive transition (Kuhn 1970: 12). The mere fact of asking people to prioritize between the environment or economic growth is to steer the attention to another possibility; that things could be different. In fact, Kuhn's idea of paradigm involves the assumption that when people are starting to ask about the legitimacy and accuracy of dominant consensus, a new phase has started and is the first sign that hegemonic practices are shaking in its foundation (ibid.: 76-77).

To understand how people can have such different views on what role economic growth should have in society, the distinction between the perspectives of ecological modernization and the degrowth movement sheds a light on what the matter is about. Namely, the conflict regards different worldviews – different ontologies – of whether it is possible to combine environmental concern with economic growth or not. In this puzzle, political confidence is another key spurring ideas investigating if current path is satisfactory, further motivating incentives for change. All in all, the theoretical framework brings the pieces together to better understand how public opinion can be so different around the world.

8. Conclusions

The three endeavours of this study are intertwined under the theme of asking what future people want and what the current opinions are, inspiring thoughts on possibilities to create the society that the vast public asks for and could live well in. One strength with this study is that it answers something useful not investigated before: namely, mapping the current political standpoint, from 1995 to 2022, on the topics under investigation, for 76 respectively 107 countries worldwide. The findings go in line with previous research where the majority is found to prioritize the environment (Gugushvili 2021; Drews & van den Bergh 2016; Hand & Macheski 2003; Nguyen & Malesky 2021; Kenward & Brick 2021; Drews et al. 2018; Drews et al. 2019). A contribution is that this study establishes a relationship between the level of political confidence and the choice of wanting to prioritize the environment – for the years 1995 to 2012, but not after 2013. This connection was not found in the review of previous research, even though researchers point to the relevance of political confidence for having stable democracies (Citrin & Stoker 2018: 50) and its association to the extent of public support for climate policies (Davidovic & Harring 2020; Gao et al. 2022; Fairbrother et al. 2019; Kulin & Johansson Sevä 2020). Another strength is the successful use of multiple imputation which made the analysis possible despite having some missing data. Multiple imputation helped make the most of the available data, solved the problem with missingness and strengthened the analysis due to its inclusion of five guesses on each variable.

Limitations go back to the starting assumptions of quantitative research, which means that focusing on counting something does not reveal how people resonate when they give their survey response on the investigated questions (Barmark & Djurfeldt 2015: 32). Although several significant relationships have been identified, it is not possible to establish the order of causality. The opinion of prioritizing the environment could be strengthened for a person if they experience less political confidence – conceptually related to political satisfaction. It is also reasonable to assume that a person asking for a radical change of society could start this interest by motivation from another political issue – for instance, caring about social justice – and that interest could affect the person's opinion on environmental matters.

The finished study opens up new questions. It would be interesting to further investigate the relationship between the environment-economy-prioritization and political confidence, and bring the related concept of political satisfaction into the picture. A study investigating what sacrifices people are willing to make in the name of the environment, or what a "radical change" of society could be interpreted as between individuals, or perhaps asking what aspects people are considering when estimating their perceived level of political confidence, are other ideas valuable to examine. This study fits into the chorus of wanting more research on multiple imputation, in general, and imputation diagnostics, in particular (Abayomi et al. 2008; Azur et al. 2011; He et al. 2010; Nguyen et al. 2013; Stuart et al. 2009; Zhao 2022). Expanding current data availability on environmental aspects are vital in the age where the climate crisis needs urgent action and to enable a democratic collaboration, public opinion is an essential part to make the transition possible and just.

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Appendices

Appendix A. List of Abbreviations

FCS	Fully Conditional Specification
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
L1	Likelihood-ratio test number 1
LR-test	Likelihood-ratio test
M1.1	Model 1.1
MICE	Multivariate Imputation by Chained Equations
OECD	Organisation for Economic Co-operation and Development
SRMI	Sequential Regression Multiple Imputation
ISSP	The International Social Survey Program
ICC	Intra-class correlation
UNFCCC	United Nations Framework Convention on Climate Change
WVS	World Values Survey
WVSA	World Values Survey Association
WWF	World Wildlife Fund

Appendix B. Countries in the Analysis

Table B.1 and B.2 show alphabetical lists of the countries included in the analysis.

Table B.1 The 76 countries in the analysis of research question 1

Albania	Estonia	Libya	Serbia
Algeria	Ethiopia	North Macedonia	Singapore
Andorra	Finland	Malaysia	Slovenia
Argentina	Georgia	Mexico	South Africa
Armenia	Germany	Moldova	South Korea
Australia	Ghana	Montenegro	Spain
Azerbaijan	Great Britain	Morocco	Sweden
Bangladesh	Guatemala	Netherlands	Switzerland
Belarus	Hong Kong SAR	New Zealand	Taiwan ROC
Bosnia and Herzegovina	Hungary	Nigeria	Thailand
Brazil	India	Norway	Trinidad and Tobago
Bulgaria	Indonesia	Pakistan	Tunisia
Canada	Iran	Peru	Turkey
Chile	Iraq	Philippines	Ukraine
China	Japan	Poland	United States of America
Colombia	Jordan	Puerto Rico	Uruguay
Cyprus	Kazakhstan	Romania	
Ecuador	Kyrgyzstan	Russia	
Egypt	Lebanon	Rwanda	

Table B.2 The 107 countries in the analysis of research question 2 and 3

Albania	Finland	Lithuania	Serbia
Algeria	France	Macau SAR	Singapore
Andorra	Georgia	North Macedonia	Slovakia
Argentina	German Federal Republic	Malaysia	Slovenia
Armenia	Germany	Mali	South Africa
Australia	Ghana	Mexico	South Korea
Azerbaijan	Great Britain	Moldova	Spain
Bangladesh	Greece	Mongolia	Sweden
Belarus	Guatemala	Montenegro	Switzerland
Bolivia	Haiti	Morocco	Taiwan ROC
Bosnia and Herzegovina	Hong Kong SAR	Myanmar	Tajikistan
Brazil	Hungary	Netherlands	Tanzania
Bulgaria	India	New Zealand	Thailand
Burkina Faso	Indonesia	Nicaragua	Trinidad and Tobago
Canada	Iran	Nigeria	Tunisia
Chile	Iraq	Norway	Turkey
China	Israel	Pakistan	Uganda
Colombia	Italy	Palestine	Ukraine
Croatia	Japan	Peru	United States of America
Cyprus	Jordan	Philippines	Uruguay
Czech Republic	Kazakhstan	Poland	Uzbekistan
Dominican Republic	Kenya	Puerto Rico	Venezuela
Ecuador	Kuwait	Qatar	Vietnam
Egypt	Kyrgyzstan	Romania	Yemen
El Salvador	Latvia	Russia	Zambia
Estonia	Lebanon	Rwanda	Zimbabwe
Ethiopia	Libya	Saudi Arabia	

Appendix C. Number of Years for Each Country in World Values Survey

Table C.1 shows the waves of WVS. Each observation has a value on the "survey year" variable – named "S020" in the time-series dataset (Inglehart et al. 2022), which is filled in by the interviewer when the interview is taken place (WVSA 2014a: 30; 2014b: 33; 2014k: 51; 2014l: 51; 2022a: 2).

Table C.1 Waves of World Values Survey

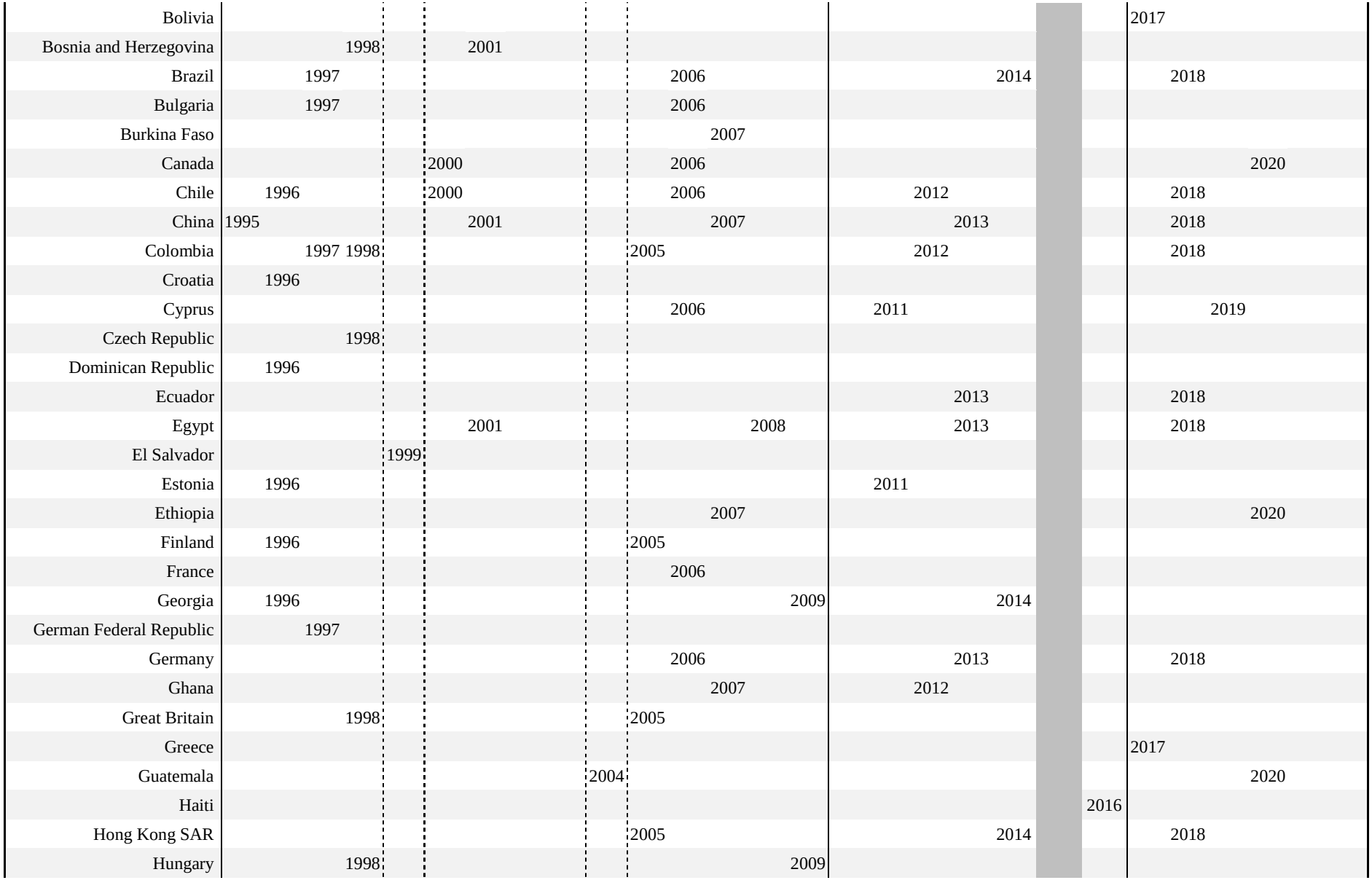
WVS Wave	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7
Year	(1981-1984)	(1989-1991)	(1995-1999)	(1999-2004)	(2004-2009)	(2010-2016)	(2017-2022)

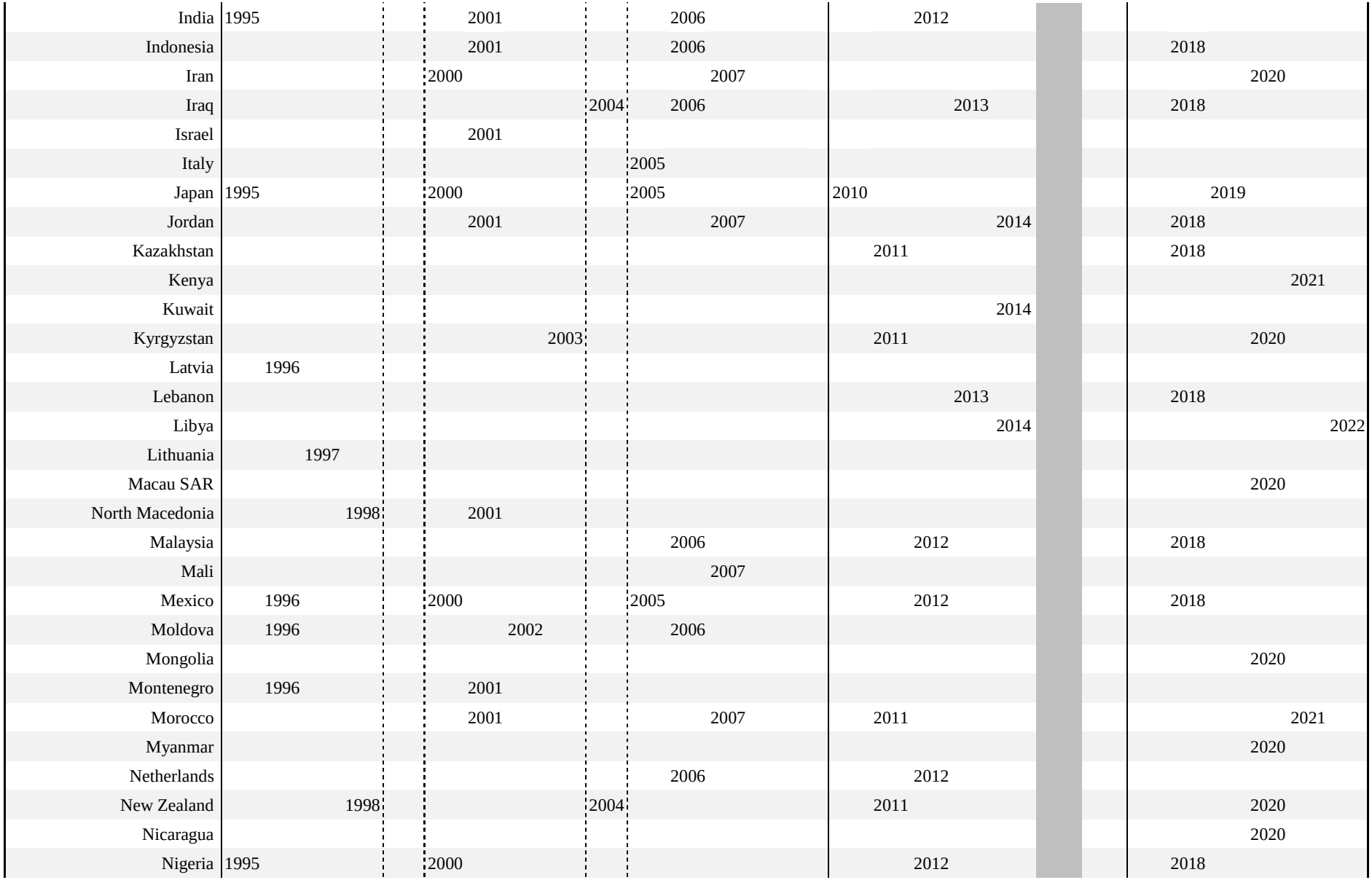
Note: Wave 1 and 2 are not included in the analysis.

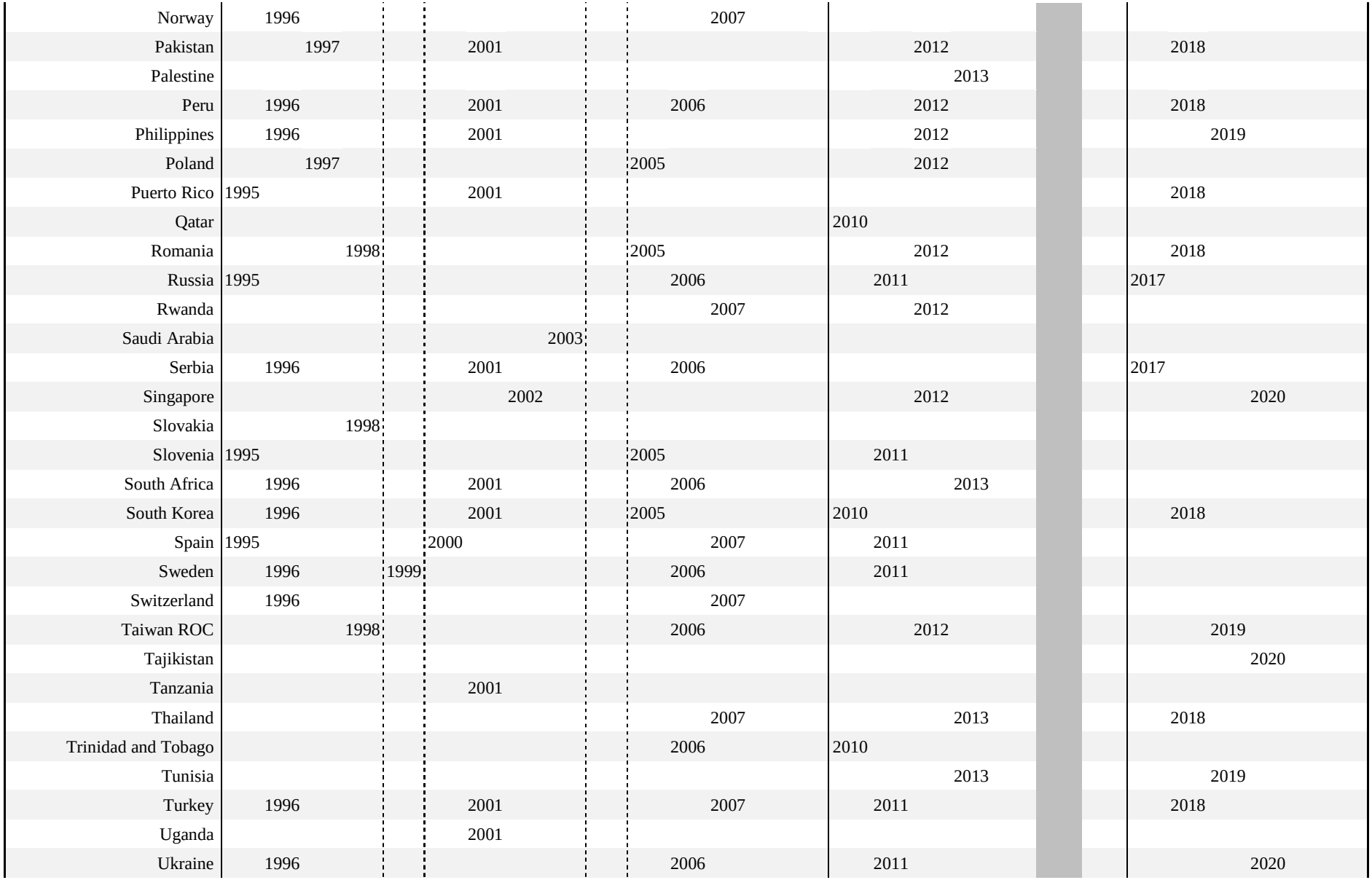
Table C.2 shows what years every country participates in WVS, for wave 3 up to wave 7; the waves used in the analysis. The dashed lines illustrate some overlap between years in the waves. The years span from 1995 to 2022 but no data exists from the year 2015.

Table C.2 Each country's year of participation in the analyzed waves of WVS – sorted alpabetically

WVS Wave	**Wave 3**				**3 / 4**	**Wave 4**				**4 / 5**	**Wave 5**					**Wave 6**							**Wave 7**					
Country	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**-**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Albania				1998				2002																				
Algeria								2002												2014								
Andorra											2005													2018				
Argentina	1995				1999							2006							2013				2017					
Armenia			1997														2011										2021	
Australia	1995										2005							2012						2018				
Azerbaijan			1997														2011											
Bangladesh		1996						2002																2018				
Belarus		1996															2011											


Bolivia 2017
Bosnia and Herzegovina 1998 2001
Brazil 1997 2006 2014 2018
Bulgaria 1997 2006
Burkina Faso 2007
Canada 2000 2006 2020
Chile 1996 2000 2006 2012 2018
China 1995 2001 2007 2013 2018
Colombia 1997 1998 2005 2012 2018
Croatia 1996
Cyprus 2006 2011 2019
Czech Republic 1998
Dominican Republic 1996
Ecuador 2013 2018
Egypt 2001 2008 2013 2018
El Salvador 1999
Estonia 1996 2011
Ethiopia 2007 2020
Finland 1996 2005
France 2006
Georgia 1996 2009 2014
German Federal Republic 1997
Germany 2006 2013 2018
Ghana 2007 2012
Great Britain 1998 2005
Greece 2017
Guatemala 2004 2020
Haiti 2016
Hong Kong SAR 2005 2014 2018
Hungary 1998 2009


India 1995 2001 2006 2012
Indonesia 2001 2006 2018
Iran 2000 2007 2020
Iraq 2004 2006 2013 2018
Israel 2001
Italy 2005
Japan 1995 2000 2005 2010 2019
Jordan 2001 2007 2014 2018
Kazakhstan 2011 2018
Kenya 2021
Kuwait 2014
Kyrgyzstan 2003 2011 2020
Latvia 1996
Lebanon 2013 2018
Libya 2014 2022
Lithuania 1997
Macau SAR 2020
North Macedonia 1998 2001
Malaysia 2006 2012 2018
Mali 2007
Mexico 1996 2000 2005 2012 2018
Moldova 1996 2002 2006
Mongolia 2020
Montenegro 1996 2001
Morocco 2001 2007 2011 2021
Myanmar 2020
Netherlands 2006 2012
New Zealand 1998 2004 2011 2020
Nicaragua 2020
Nigeria 1995 2000 2012 2018


Norway 1996 2007
Pakistan 1997 2001 2012 2018
Palestine 2013
Peru 1996 2001 2006 2012 2018
Philippines 1996 2001 2012 2019
Poland 1997 2005 2012
Puerto Rico 1995 2001 2018
Qatar 2010
Romania 1998 2005 2012 2018
Russia 1995 2006 2011 2017
Rwanda 2007 2012
Saudi Arabia 2003
Serbia 1996 2001 2006 2017
Singapore 2002 2012 2020
Slovakia 1998
Slovenia 1995 2005 2011
South Africa 1996 2001 2006 2013
South Korea 1996 2001 2005 2010 2018
Spain 1995 2000 2007 2011
Sweden 1996 1999 2006 2011
Switzerland 1996 2007
Taiwan ROC 1998 2006 2012 2019
Tajikistan 2020
Tanzania 2001
Thailand 2007 2013 2018
Trinidad and Tobago 2006 2010
Tunisia 2013 2019
Turkey 1996 2001 2007 2011 2018
Uganda 2001
Ukraine 1996 2006 2011 2020

United States of America	1995				1999							2006					2011						2017					
Uruguay		1996										2006					2011											
Uzbekistan																	2011											
Venezuela		1996				2000																					2021	
Vietnam							2001					2006														2020		
Yemen																				2014								
Zambia													2007															
Zimbabwe							2001											2012								2020		

Table C.3 shows the frequence of measurement points for the countries in the analyzed waves of WVS. Table C.4 shows each country’s years of participation, sorted on number of years.

Table C.3 Availability over the years of the countries in the WVS dataset

Number of countries with ...			
... 5 years	=	10 countries	(9 %)
... 4 years	=	19 countries	(18 %)
... 3 years	=	21 countries	(20 %)
... 2 years	=	26 countries	(24 %)
... 1 year	=	31 countries	(29 %)
In total	**=**	**107 countries**	**(100 %)**

Table C.4 Each country's years of participation in the analyzed waves of WVS – sorted on number of years

WVS Wave		Wave 3				3 / 4	Wave 4				4 / 5	Wave 5					Wave 6					Wave 7					
Country	Years	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 - 2016	2017	2018	2019	2020	2021	2022
Argentina	5	1995				1999							2006							2013		2017					
Chile	5		1996				2000						2006						2012				2018				
China	5	1995						2001						2007						2013			2018				
Colombia	5			1997	1998							2005							2012				2018				
Japan	5	1995					2000					2005					2010							2019			
Mexico	5		1996				2000					2005							2012				2018				
Peru	5		1996					2001					2006						2012				2018				
South Korea	5		1996					2001				2005					2010						2018				
Turkey	5		1996					2001						2007				2011					2018				
United States of America	5	1995				1999							2006					2011				2017					
Australia	4	1995										2005							2012				2018				
Brazil	4			1997									2006								2014		2018				
Egypt	4							2001							2008					2013			2018				
India	4	1995						2001					2006						2012								
Iraq	4										2004		2006							2013			2018				
Jordan	4							2001						2007							2014		2018				
Morocco	4							2001						2007				2011								2021	
New Zealand	4				1998						2004							2011						2020			
Nigeria	4	1995					2000												2012				2018				
Pakistan	4			1997				2001											2012				2018				
Philippines	4		1996					2001											2012					2019			
Romania	4				1998							2005							2012				2018				
Russia	4	1995											2006					2011				2017					
Serbia	4		1996					2001					2006									2017					

South Africa	4	1996		2001		2006	2013	
Spain	4	1995		2000		2007	2011	
Sweden	4	1996	1999			2006	2011	
Taiwan ROC	4	1998				2006	2012	2019
Ukraine	4	1996				2006	2011	2020
Armenia	3	1997					2011	2021
Bangladesh	3	1996		2002				2018
Canada	3			2000		2006		2020
Cyprus	3					2006	2011	2019
Georgia	3	1996				2009	2014	
Germany	3					2006	2013	2018
Hong Kong SAR	3					2005	2014	2018
Indonesia	3			2001		2006		2018
Iran	3			2000		2007		2020
Kyrgyzstan	3			2003			2011	2020
Malaysia	3					2006	2012	2018
Moldova	3	1996		2002		2006		
Poland	3	1997				2005	2012	
Puerto Rico	3	1995		2001				2018
Singapore	3			2002			2012	2020
Slovenia	3	1995				2005	2011	
Thailand	3					2007	2013	2018
Uruguay	3	1996				2006	2011	
Venezuela	3	1996		2000				2021
Vietnam	3			2001		2006		2020
Zimbabwe	3			2001			2012	2020
Albania	2	1998		2002				
Algeria	2			2002			2014	

Andorra	2					2005		2018
Azerbaijan	2	1997					2011	
Belarus	2	1996					2011	
Bosnia and Herzegovina	2	1998		2001				
Bulgaria	2	1997				2006		
Ecuador	2						2013	2018
Estonia	2	1996					2011	
Ethiopia	2					2007		2020
Finland	2	1996				2005		
Ghana	2					2007	2012	
Great Britain	2	1998				2005		
Guatemala	2				2004			2020
Hungary	2	1998				2009		
Kazakhstan	2						2011	2018
Lebanon	2						2013	2018
Libya	2						2014	2022
North Macedonia	2	1998		2001				
Montenegro	2	1996		2001				
Netherlands	2					2006	2012	
Norway	2	1996				2007		
Rwanda	2					2007	2012	
Switzerland	2	1996				2007		
Trinidad and Tobago	2					2006	2010	
Tunisia	2						2013	2019
Bolivia	1							2017
Burkina Faso	1					2007		
Croatia	1	1996						
Czech Republic	1	1998						
Dominican Republic	1	1996						

El Salvador	1		1999					
France	1					2006		
German Federal Republic	1	1997						
Greece	1							2017
Haiti	1						2016	
Israel	1			2001				
Italy	1					2005		
Kenya	1							2021
Kuwait	1						2014	
Latvia	1	1996						
Lithuania	1	1997						
Macau SAR	1							2020
Mali	1					2007		
Mongolia	1							2020
Myanmar	1							2020
Nicaragua	1							2020
Palestine	1						2013	
Qatar	1						2010	
Saudi Arabia	1			2003				
Slovakia	1	1998						
Tajikistan	1							2020
Tanzania	1			2001				
Uganda	1			2001				
Uzbekistan	1						2011	
Yemen	1						2014	
Zambia	1					2007		

Appendix D. Workflow in Stata

All data preparations and statistical analyses have been performed using the software "Stata" (StataCorp 2019), as well as the creation of all graphs. A helpful user-written command for the analysis was the "*mdesc*" command, used both before and after imputation to compare the prevalence of missing data (Medeiros & Blanchette 2011).

To perform the MICE imputation in Stata, the package "*ice*" has been used, which is developed by Royston as an improvement of the previous "*mvis*" and "*uvis*" commands, also created by Royston (Royston 2004; 2005a; 2005b; 2007; 2009). After the imputation was done, the data needed to be converted from ice format to mi format, to enable use with Stata's own "mi" package for multiple imputation, and the conversion was done with the "*mi import ice*" command (Royston 2009: 466-467; StataCorp 2021c: 102-105).

Next step was to perform all the regression analyses by using the "*mi estimate*" command (StataCorp 2021c: 41-69), which first executes the chosen estimation command on every *m* imputed dataset (in this case, five datasets), and then applies Rubin's combination rules for the final estimations (StataCorp 2021c: 46). Rubin's combination rules refer to the procedure of weighting the estimates in each imputed dataset and the in-depth theoretical explanation and the calculations of how this is done can be found in Rubin's book (1987: 76-77). Basically, what "*mi estimate*", or any similar command in other software than Stata, does is to perform the requested analysis on each of the five versions of the imputed dataset separately, and then let each unit be weighted as one fifth of the final result (Rubin 2004: 299). In other words, the results given by "*mi estimate*" represent a pooled result from each analysis in the five imputed datasets, and they convey the combined result taking all five versions into account at once (StataCorp 2021c: 64).

The usual way to calculate intraclass correlations (ICC) is to run the command "*estat icc*" in Stata (StataCorp 2021b: 54). Unfortunately, "*estat*" is not supported by "*mi estimate*", making the usual procedure unusable. The solution was found in a forum thread where a user provides an example code which successfully calculates the ICC for all imputed datasets, and at the end of the procedure an average of the ICC values is given (Herrin 2016). Figure D.1 shows the example code and this was adjusted to request an ICC value for the specific models, presented in Section 6.

Figure D.1 Example code for the intraclass correlation calculation for imputed data

```
mi query
local M=r(M)
scalar icc=0
mi xeq 1/`M' : mixed item || class: ; estat icc ; scalar
icc=icc+r(icc2)
scalar icc=icc/`M'
di "ICC:" %5.3f icc
```

Source: Example code from Herrin (2016).

More on the chosen regression analyses in Section 5.8.1, but the following explains what commands where used for the analysis. The Stata command "*melogit*" (StataCorp 2021b: 157; Mehmetoglu & Jakobsen 2017: 208-209) is often used to perform logistic regression, which will be used for research question 1, but since this did not converge, the related command "*meqrlogit*" (StataCorp 2017: 401) was successfully used instead. Both commands are fitting a multilevel model when the dependent variable is binary, but with some differences in their estimation methods (ibid.: 1, 401). The Stata command "*mixed*" (StataCorp 2021b: 476) enabled a linear multilevel regression model for research question 2. For the third research question, logistic regression was chosen. Again, the models with the "*melogit*" command (StataCorp 2021b: 157) did not converge so for research question 3, the command "*meqrlogit*" (StataCorp 2017: 401) was used.

The sample sizes throughout the analysis were adjusted to keep the same sample size in memory for each research question's models to enable comparison of the models' estimations, and the Stata function "*e(sample)*" was used for this (StataCorp 2021a: 634, 645). Keeping the same sample sizes was done to be able to perceive an added or eliminated variable's eventual impact on the models' coefficients.

Likelihood-ratio tests are used to determine whether a new model is a significant improvement on a previous model, usually done through the command "*lrtest*" (Mehmetoglu & Jakobsen 2017: 212-213; StataCorp 2021a: 1378). Using likelihood-ratio tests is not possible with results from "*mi estimate*" (StataCorp 2021c: 9). Since likelihood-ratio tests still was desirable to include to use their ability of showing if a certain model is a significant improvement, the solution was to choose one of the five imputed datasets, run all models in that particular dataset, and then do likelihood-ratio tests on those models. To randomize the choice of which of the five imputed datasets should be used, a random number generator was used (Random.org 2022), and when asked to randomize a number between 1 and 5, it showed number 3. Hence, the third imputed dataset was used for all of the likelihood-ratio tests presented in Section 6. To be able to only work with the third mi-dataset, this particular mi-dataset was extracted by using the command "*mi extract*" (StataCorp 2021c: 90).

Tables of regression analyses have been created by using the command "*estout*" (Jann 2005; 2007) which immediately inserts the right numbers in the cells, before some manual layout changes of the tables were made. The helpful command "*asdoc*" (Attaullah 2018) has been used to create tables with descriptive statistics immediately, and then a manual creation of the final table was created, adding in the information from the "*asdoc*" table creation. Other tables have been created manually. Lastly, the usual "*margins*" command used for predictions does not work with multiple imputed data, and the user-written command "*mimrgns*" (Klein 2014) was used instead.

Appendix E. Variables in WVS Relevant for the Analysis but Insufficient Amount of Data

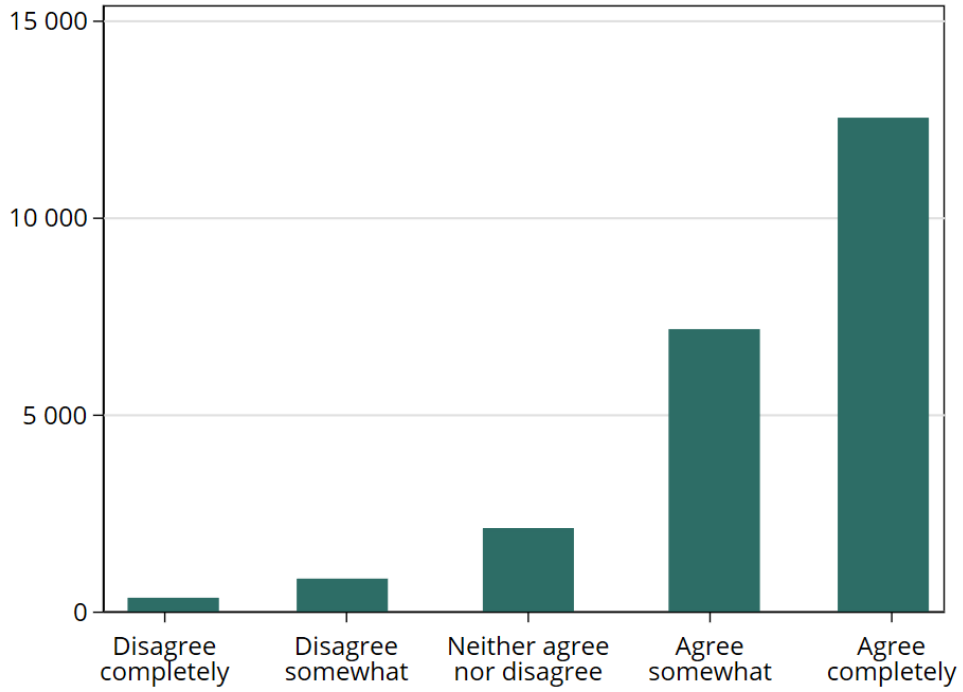
It is surprising that the variable catalogue of WVS has a shortage of variables measuring environmental phenomena. There is ample evidence of the enormous mobilization of environmental concern throughout the years.

The vast environmental movement has a very long history (Doyle et al. 2016: 1), but can be said to emerge forcefully in the 1960s-1970s for the global North and in the 1970s-1980s for the global South (Doyle 2005: 2), where Rachel Carson's book *Silent Spring* from 1962 is seen as the important wake-up call that the current trajectory is disastrous (Carson 1962: 8, 297; Doyle et al. 2016: 1; Seager 2017: 27), leading to an explosion of non-governmental organizations in the past 40 years increasingly impacting environmental politics (Doyle et al. 2016: 146), the advent of international conferences to coordinate global efforts combating environmental issues (ibid.: 1, 13) – for instance, the United Nations Conference on the Human Environment in 1972 in Stockholm (United Nations 1973) and the first Earth Summit in 1992 in Rio de Janeiro (United Nations 1992) – resulting in transnational agreements and documents (Doyle et al. 2016: 226), such as "Our common future" (often called the Brundtland report) giving the first definition of "sustainable development" (World Commission on Environment and Development 1987; Du Pisani 2006: 92-93), "Agenda 2030" with 17 "sustainable development goals" (United Nations 2015; Doyle et al. 2016: 230-231), and in 1988 the United Nations established the Intergovernmental Panel on Climate Change (IPCC) and their Fifth Assessment Report (IPCC 2014) gave the scientific background that contributed to the Paris agreement (IPCC 2022b; UNFCCC n.d.).

This rise of environmental interest around the globe led to the largest climate strike in human history in September 2019, organized by Greta Thunberg and Fridays For Future (de Moor et al. 2020: 4, 6). Clearly, environmental interest is highly important worldwide, and has been increasing for a long time. Thus, it is striking to see that this topic is not more prevalent among WVS's variables, and unfortunate for the interest of this study.

Unfortunately, a variable that is spot on for this study only exists in wave 2 (1989-1991), letting the respondent choose how much they agree with the statement: "This country's economic system needs fundamental changes" (E057). Figure E.1 shows the distribution of answers to this variable.

Figure E.1 Distribution of answers of variable E057: ”The economic system needs fundamental changes” in WVS wave 2 (1989-1991)



Interestingly, the two categories “Agree somewhat” and “Agree completely” correspond to 85 percent of the answers, clearly showing that many people wanted fundamental changes of the economic system during wave 2 (1989-1991). This would have been valuable to investigate over time, and examine associations with indicators of environmental interest, but since this variable only exists in wave 2, such a comparison is not possible.

Wave 5 (2004-2009) has three interesting variables where the respondent gets to evaluate how serious they consider three environmental problems: “Global warming or the greenhouse effect” (B021), “Loss of plant or animal species or biodiversity” (B022), and “Pollution of rivers, lakes and oceans” (B023), which together could be used to track environmental concern globally over time. Curiously, these questions are eliminated in the following waves, despite the fact that the urgeness of finding solutions to the overwhelming climate threat involving these three problem areas (IPCC 2021: 6; IPBES 2019: XIV, XV-XVI; WWF 2020: 6, 70; CDP 2019: 2, 10-11), as well as other environmental problems – for instance, that humanity is overusing the planet’s biocapacity up to at least 56 percent (WWF 2020: 9), shown by the fact that Earth Overshoot Day occurs earlier each year (Global Footprint Network 2022a; 2022b), and that recycling facilities are highly needed since electronic waste from rich parts of the world often is dumped in poorer countries, dangerous for the local human and animal population as well as nature (Robbins et al. 2014: 301; Bimir 2020: 659) – a problem that is increasing when people in the richer parts of the world engage in reckless consumerism longing for the latest gadget, while the used ones end up in landfills in poorer countries (Sullivan 2014: 108, 90-91).

All of the problems mentioned above have increased even more since wave 5 in 2004-2009, so tracking variables about how serious people perceive environmental problems, estimating

trends of people's environmental attitudes and everyday environmental practices as well as their experience of environmental damage would be valuable. These are all examples of how this research project had to be adjusted in line with the data availability – a drawback with using secondary data (Eliasson 2013: 53; Devine 2003).

Luckily, the WVSA is asking for suggestions about variables on the topics of "climate change and environmental protection" to include in their upcoming 8th wave (WVSA 2022b), something highly needed and important for future studies when dealing with the climate crisis. Knowing what the public think about environmental issues and solutions is needed to find the best practice of solving the climate crisis with a democratic procedure happening globally. In fact, public opinion matters, because it shapes if and how environmental policies are implemented (Anderson et al. 2017: 8; Schaffer et al. 2022: 158).

Appendix F. The "Income" Variable in World Values Survey

The variable "income" is a 10-point scale variable where the respondent has to place themself in one of those 10 categories. The information from WVS differs a bit and all differences are shown in below. In sum, the formulation of the question is similar in the waves – the options are always 10 steps, but the labels differ a bit, even though they do not seem to change the meaning of the variable over time. Labels can differ from either a numerical description of the step – such as "Lower step", "Second step", "Third step" up to "Tenth step" – or a letter: "C" up to "L" (WVSA 2014a; 2014b; 2014k; 2014l; 2022a).

In all waves, the respondent is shown an income card, not found on the WVS website, unfortunately, but it seems as if this card has 10 categories of incomes, mirroring 10 deciles of each participating country's income groups (ibid.), but more specifics about this have not been found. Thus, the interpretation is that the interviewer shows this card with income numbers, and the respondent has to choose which one they fall into.

Below are several tables with screenshots showing how the variable "income" in World Values Survey is described in each wave – both in the questionnaires used by the interviewers and in the codebooks used by the coders.

Figure F.1 The "income" variable in WVS wave 1 (1981-1984)

Questionnaire	
	Show income card
V570	Question 376 Here is a scale of incomes and we would like to know in what group your family is, counting all wages, salaries, pensions, and other income that comes in. Just give me the number of the group your household falls into before tax and other deductions.
File name: F00001319-WVS_1981_Questionnaire_Root.pdf (WVSA 2014c: 20)	
Codebook	
V227	Scale of incomes 1.- Lower step 2.- second step 3.- Third step 4.- Fourth step 5.- Fifth step 6.- Sixth step 7.- Seventh step 8.- Eigth step 9.- Nineth step 10.- Tenth step -2-.- No answer -4-.- Not asked
File name: F00008374-Codebook_World_Values_Survey_wave_1_1981-1984_v20200208.pdf (WVSA 2014d: 17)	

Figure F.2 The "income" variable in WVS wave 2 (1989-1991)

Questionnaire

ASK ALL
SHOW INCOME CARD
V 363 Here is a scale of incomes and we would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions. (see NATION-SPECIFIC CODES below for categories):

1	2	3	4	5	6	7	8	9	10
C	D	E	F	G	H	I	J	K	L

No answer = 98

File name: F00001318-WVS_1990_Questionnaire_Root.pdf (WVSA 2014j: 39)

Codebook

V363 Scale of incomes

1.- Lowest
2.- 2
3.- 3
4.- 4
5.- 5
6.- 6
7.- 7
8.- 8
9.- 9
10.- Highest
-5-.- Missing; Unknown; Inappropiate
-4-.- Not asked
-3-.- Not applicable
-2-.- No answer
-1-.- Don´t know

File name: F00008318-WV2_Codebook_v20180912.pdf (WVSA 2014e: 61)

Figure F.3 The "income" variable in WVS wave 3 (1995-1999)

Questionnaire

SHOW INCOME CARD AA
V227. Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.

1	2	3	4	5	6	7	8	9	10
C	D	E	F	G	H	I	J	K	L

No answer = 98

[CODE INCOME CATEGORIES BY DECILES FOR YOUR SOCIETY, 1=LOWEST DECILE, 10=HIGHEST DECILE]

File name: F00001317-WVS_1995_Questionnaire_Root.pdf (WVSA 2014a: 28-29)

Codebook

V227	Subjective scale of income 1.- Lowest decile 2.- 2 3.- 3 4.- 4 5.- 5 6.- 6 7.- 7 8.- 8 9.- 9 10.- Highest decile -2-.- NA -1-.- DK -4-.- Not asked

File name: F00008204-WV3_Codebook_v20180912-1.pdf (WVSA 2014f: 29)

Figure F.4 The "income" variable in WVS wave 4 (1999-2004)

Questionnaire

SHOW INCOME CARD AA

V236. Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.

1	2	3	4	5	6	7	8	9	10
C	D	E	F	G	H	I	J	K	L

No answer = 99

[CODE INCOME CATEGORIES BY DECILES FOR YOUR SOCIETY, 1=LOWEST DECILE, 10=HIGHEST DECILE]

File name: F00001316-WVS_2000_Questionnaire_Root.pdf (WVSA 2014b: 22)

Codebook

V236	Scale of incomes 1.- C 2.- D 3.- E 4.- F 5.- G 6.- H 7.- I 8.- J 9.- K 10.- L -4-.- Not asked -1-.- Don´t know -2-.- No answer

File name: F00008074-WV4_Codebook_v20180912.pdf (WVSA 2014g: 32)

Figure F.5 The "income" variable in WVS wave 5 (2004-2009)

Questionnaire

(*Show Card AE*)

V253. On this card is a scale of incomes on which 1 indicates the "lowest income decile" and 10 the "highest income decile" in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in. (*Code one number*):

Lowest decile									Highest decile
1	2	3	4	5	6	7	8	9	10

File name: F00001310-WV5_Questionnaire_RootVersion.pdf (WVSA 2014k: 22)

Codebook

V253 Scale of incomes

1.- Lower step
2.- second step
3.- Third step
4.- Fourth step
5.- Fifth step
6.- Sixth step
7.- Seventh step
8.- Eigth step
9.- Nineth step
10.- Upper step
-5-.- Missing; Not asked by the interviewer
-4-.- Not asked
-3-.- Not applicable
-2-.- No answer
-1-.- Don´t know

File name: F00007945-WV5_Codebook_v20180912.pdf (WVSA 2014h: 50)

Figure F.6 The "income" variable in WVS wave 6 (2010-2016)

Questionnaire

(*Show Card AE*)

V239. On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in. (*Code one number*):

Lowest group Highest group

1 2 3 4 5 6 7 8 9 10

File name: F00001101-WV6_Official_Questionnaire_v4_June2012.pdf (WVSA 2014l: 18)

Codebook

V239 Scale of incomes

1.- Lower step
2.- second step
3.- Third step
4.- Fourth step
5.- Fifth step
6.- Sixth step
7.- Seventh step
8.- Eigth step
9.- Nineth step
10.- Tenth step
-5-.- DE,SE:Inapplicable ; RU:Inappropriate response; BH: Missing; HT: Dropped out survey
-4-.- Not asked
-3-.- Not applicable
-2-.- No answer
-1-.- Don´t know

File name: F00007761-WV6_Codebook_v20180912.pdf (WVSA 2014i: 49)

Figure F.7 The "income" variable in WVS wave 7 (2017-2022)

Questionnaire

(SHOW CARD 30)

Q288. On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in. (*Code one number*):

Lowest group									Highest group
1	2	3	4	5	6	7	8	9	10

File name: F00010738-WVS-7_Master_Questionnaire_2017-2020_English.pdf (WVSA 2022a: 21)

Codebook

Q288 — **Scale of incomes**

On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in.

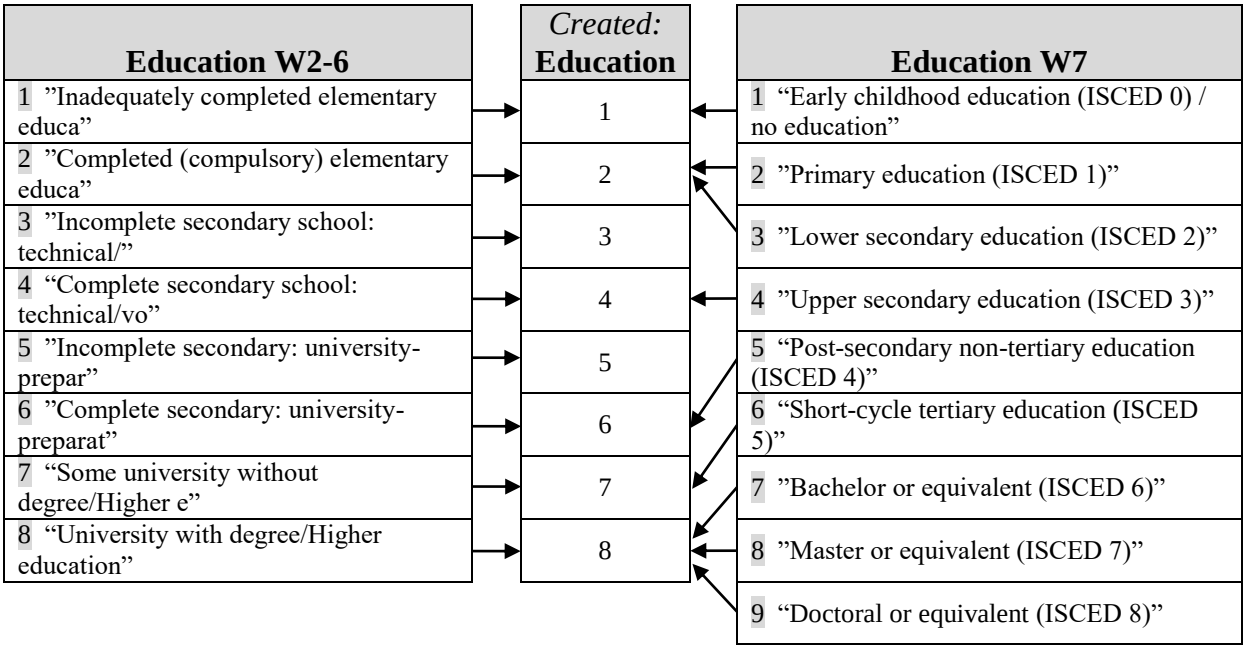
1.- Lower step
2.- second step
3.- Third step
4.- Fourth step
5.- Fifth step
6.- Sixth step
7.- Seventh step
8.- Eight step
9.- Nineth step
10.- Tenth step
-1-.- Don´t know
-2-.- No answer
-4-.- Not asked
-5-.- Missing; Not available

File name: F00011055-WVS_7_Codebook_Variables_report.pdf (WVSA 2022e: 88-89)

Appendix G. The Merging of the Education Variables

During data preparations, the two education variables in World Values Survey were merged. These are called "education W2-6", included in waves 2 to 6, and "education W7", included in wave 7. Even though their labels differ, the merging of them was reasonable due to their information and the explanation of this merger is shown in Figure G.1. In the end, an education variable was created consisting of information from all waves, having 8 categories, and this new variable – "education" – was used in the analysis.

Figure G.1 The merger of the variables "Education W2-6" and "Education W7", to create the variable "Education", used in the analysis



Notes:

***** The labels for the variable "education W2-6" differ in the WVSA information. The labels given above are the ones in the time-series dataset which was used for the analysis (Inglehart et al. 2022), which seems like the most appropriate label to give here. However, the labels miss some letters, but this is exactly their label in the dataset in Stata, and all labels consist of 39 characters, so it is probably due to character limitations on the label. Due to the confusing information, I will only display what is given there and not add my own interpretation of what they mean in the labels.

* The labels for the variable "education W7" are taken from the codebook, where the complete labels are given (WVSA 2022d).

The variable "education W7" is created by WVS following ISCED-2011 (WVSA 2022a), which is a framework for classifying education worldwide. Since educational structures vary across countries, the purpose of ISCED-2011 is to enable global comparison of education statistics (OECD/Eurostat/UNESCO Institute for Statistics 2015: 3). The following explains the logic of the coding of the new variable "education". The goal was to merge the variables so their order made sense, and take the previous variables' education order into account. In other words: the ones that seem to denote the same step are merged, and others are placed where they seem to belong. Thus, the created variable did not keep the ISCED-2011 order,

even though that is the standard nowadays, since that would have neglected the information from the previous "education W2-6" variable, which stores information from many waves (2 to 6). The order of the following presentation is not chronological – rather, it follows the order of the decisions.

Since "primary education" and "elementary education" refer to the same education level (OECD/Eurostat/UNESCO Institute for Statistics 2015: 29), it makes sense to merge 2: "Completed (compulsory) elementary educa" in "education W2-6" with 2: "Primary education (ISCED 1)" in "education W7". Next, the first steps in both of WVS's education variables seem reasonable to merge since an inadequately completed elementary education must mean that the person had early childhood education.

The third step of "education W2-6" – "Incomplete secondary school: technical/" – does not convey more information about how much of secondary school the student has completed; if they have completed lower secondary and not upper secondary, for instance. It seems reasonable to assume that "Incomplete secondary school" could mean that lower secondary is finished, but that the full secondary school is not finished (i.e. including the upper secondary). One way of referring to upper secondary education in some places is to call it just "secondary school" (OECD/Eurostat/UNESCO Institute for Statistics 2015: 47), and based on this, the decision was to let the step "Incomplete secondary school: technical/" (in "education W2-6") be the third step of the new variable, and then merge "Lower secondary education (ISCED 2)" (in "education W7") with the new variables' step 2. Again, the goal here is not to create a scale in line with ISCED-2011, or focus on how many steps the new variable get, but to try to capture the order both variables' information have collected in the survey, to not loose any information.

Next decision was to merge both of the variables' step 4 with the new variables' step 4, since "Complete secondary school: technical/vo", and "Upper secondary education (ISCED 3)" is similar – because a completed secondary school must include the upper secondary level.

"Complete secondary: university-preparat" was merged with "Post-secondary non-tertiary education (ISCED 4)" into the new variables' step 6, because both means a completion of secondary school. Programmes in ISCED 4 have the goal of preparing the student to advance vocationally or for further studies (OECD/Eurostat/UNESCO Institute for Statistics 2015: 59), so it makes sense to merge them. This makes it reasonable to let the fifth step of "education W2-6" – "Incomplete secondary: university-prepar" – go into the new variable's fifth step, since secondary school is not completed there.

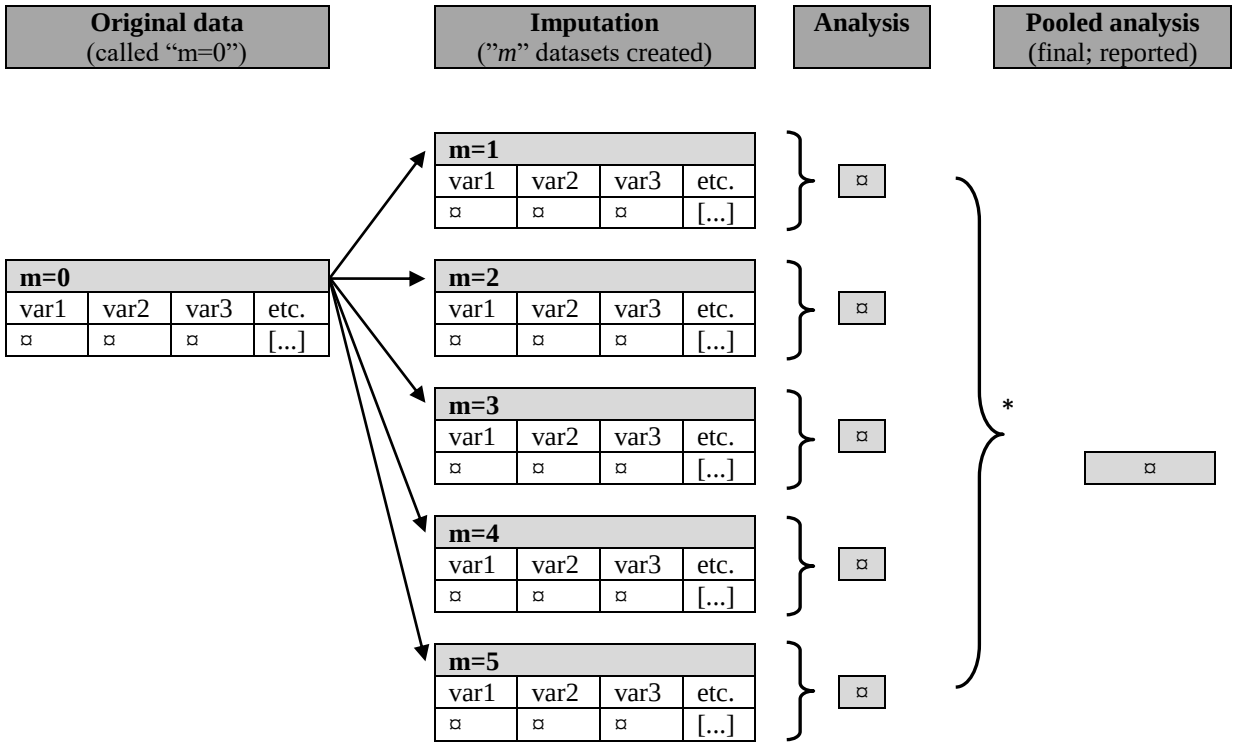
Next, ISCED 5 to 8 refers to "tertiary education" which includes academic education (OECD/Eurostat/UNESCO Institute for Statistics 2015: 68-69), making it reasonable to merge "Some university without degree/Higher e" with "Short-cycle tertiary education (ISCED 5)". Lastly, creating step 8 of the new "education" variable was an easy decision since all of the following include a degree (OECD/Eurostat/UNESCO Institute for Statistics 2015: 81, 89, 99): "University with degree/Higher education" (in "education W2-6") and "Bachelor or equivalent (ISCED 6)", "Master or equivalent (ISCED 7)" and "Doctoral or equivalent (ISCED 8)" (in "education W7"), making them reasonable to merge.

Appendix H. The Process of Multiple Imputation

H.1 How Multiple Imputation Works

Figure H.1 shows how multiple imputation works where the process of how the final analysis is created is described.

Figure H.1 How multiple imputation works and how the final analysis is created



Explanations:

var1, var2, var3 = Example variable 1, example variable 2, example variable 3.

¤ = An imagined value. Instead of making up numbers in all cells this symbol refers to several imagined values, showing the principle of the technique.

m = Multiply imputed dataset, or "mi-dataset". In this study 5 mi-datasets were created.

* = This refers to the moment where Rubin's so called combination rules are used to pool the analysis, and more specifics on this can be found in Rubin's works (Rubin 1987; Rubin 2004).

H.2 Theoretical Assumptions: Missing-Data Mechanism

The patterns of missingness in the data, or in other words: the probability that the data is missing, can be called the missing-data mechanism, and to be able to choose an appropriate method to deal with the missingness, it is important to reflect upon the data's missing data mechanism (Eddings & Marchenko 2012: 353; Little & Rubin 1987: 8). It is also important to communicate these assumptions (Little & Rubin 1987: 9).

The terminology of the types of missing-data mechanisms developed by Rubin (1976: 582) has been criticized for having confusing names making them less easy to understand (Schafer & Graham 2002: 152; Graham 2009: 553), but the most common assumption of missing data is that it belongs to the category "missing at random" (Little & Rubin 1987: 17; Stuart et al. 2009: 1134). This is the situation where the pattern of the missingness is assumed to be independent on both the independent variable and the dependent variable (Little & Rubin 1987: 14). Another way to describe it is to say that "missing at random" refers to the case where "the probability of an observation being missing may depend on observed values but not on unobserved values" (Stuart et al. 2009: 1134). Thus, if the data is seen as "missing at random", then the missingness is allowed to have correlations with observed data but not with unobserved data, which means that observed data is seen to be sufficient to predict missingness (Eddings & Marchenko 2012: 353-354).

It is often impossible to verify what missing-data mechanism is the actual case, since the missing data of course is missing, but the aforementioned assumption is often the justification for the choice of how to deal with the missing data (Stuart et al. 2009: 1134). If no information is indicating that the missingness could depend on unobserved values, assuming the data to be "missing at random" is often reasonable (ibid.). However, for this particular study, the issue of missingness is mostly due to the fact that the survey question was never asked at that point in time, and, consequently, the most common reason why the data is missing is already known for these particular time points. This is a better starting point before the imputation. A smaller part of why missing data exists in the used dataset is more unknown, but for this situation, as well as when the survey question was never asked, the observed data will be seen as sufficient predictors of the data's missingness in line with the assumption on the missing-data mechanism (Eddings & Marchenko 2012: 353-354).

Technical specifics of the process of doing multiple imputation for this study are addressed below, showing what different decisions had to be made along the way, and the justifications for these.

H.3 The Imputation Procedure

Following advice about when to construct an index when dealing with imputed data (Azur et al. 2011: 43), the choice was to let the index variables be included in the imputation process, giving them imputed values, and then perform the Cronbach's alpha test and the index creation after imputation. An index variable was created before the imputation as well, to compare the Cronbach's alpha before and after the variables had gotten imputed values, and the reliability coefficient before the imputation was similar (0.8351 before imputation, compared to 0.8387 after imputation). Both Cronbach's alpha tests were done before wave 2 and wave 1 have been dropped, to still take those waves' information into consideration.

Multiple imputation is often performed with the MVNI method that assumes a multivariate normal distribution for all variables (Lee & Carlin 2010: 624, 625; Schafer 1997: "5.1 Introduction", para. 1), which was developed by Schafer (1997). MVNI is not appropriate for

categorical or binary variables (Lee & Carlin 2010: 625), where the method "multivariate imputation by chained equations" (MICE) is recommended (Azur et al. 2011: 40; Lee & Carlin 2010: 624; van Buuren 2007: 237), since a normal distribution of all variables is not necessary – the main advantage with this method (Slade & Naylor 2019: 1157). In other words, MICE is possible "when the joint distribution of the data is not easily specified" (van Buuren 2007: 237). Thus, various types of distributions are possible with this method (He et al. 2010: 660), making it a flexible approach possible to use for both continuous and categorical variables (Azur et al. 2011: 40), which is the case for the analysis variables in this study, making MICE suitable. The MICE method also goes by the names "fully conditional specification" (FCS), "sequential regression multiple imputation" (SRMI) and "regression switching" (Azur et al. 2011: 40; Lee & Carlin 2010: 624; van Buuren et al. 1999: 68; He et al. 2010: 654-655).

Several resources about the MICE technique have been helpful to understand and perform its implementation (Raghunathan et al. 2001: 86; van Buuren 2007: 222, 227; He et al. 2010: 657ff; Slade & Naylor 2019: 1157; van Buuren et al. 1999: 686-690; Barnard & Meng 1999: 19-20; Royston 2004; 2005a; 2005b; 2007; 2009; StataCorp 2021c). The best explanation of how the sequence of the MICE method works is expressed by Slade and Naylor: "At each step, imputed values for one variable are drawn from a predictive model conditional on all other variables. This process cycles through the imputation of each variable until imputations converge." (Slade & Naylor 2019: 1157). Hence, the specification of the imputation model for each incomplete variable is done in separate steps, enabling different types of variables in the imputation (He et al. 2010: 657). Performing MICE with 10 iterations for every imputation is recommended (Royston 2004: 230; van Buuren et al. 1999: 690; van Buuren 2007: 229), based on the idea that the imputations should be stabilized by then (Stuart et al. 2009: 1135).

After 10 iterations of each variable have been finished, the imputation procedure results in a creation of a certain amount of copies of the dataset (Royston 2004: 227), which has the computer's *m* different guesses of each missed value (Rubin 1987: 2). In other words, throughout the imputation process, each missing value gets replaced with *m* values – the computer's *m* guesses – to accommodate for a variation in the responses (ibid.; Rubin 1978: 20-21; Rubin 1987: 2). The *m* value is often between 2 to 10 (Rubin 1987: 2), and the recommendation is most commonly 5 (Schafer 1999: 7; Rubin 1978: 23; Rubin 1996: 480; van Buuren et al. 1999: 686), which then is the choice for this analysis.

H.4 Deciding Predictors for the Imputation Model

It is crucial to create a sensible imputation model, defined as having three important characteristics: it should include as much information as possible from the available data, consider the researcher's knowledge on the missing-data mechanism, as well as make the model feasible to use for the dataset (Barnard & Meng 1999: 19-20). Using all available data in the dataset is increasing the predictive power and, consequently, the quality of the imputation (Meng 1994: 540). Including all waves' information in the imputation model, even though only wave 3 to 7 will be used in the analysis, is a wise decision to not loose valuable

data information for the imputation, which led to the decision to drop wave 2 and 1 *after* the imputation. The assumptions of the dataset's missing-data mechanism have been considered, as described in Section H.2. Making the imputation model feasible for the dataset is achieved when the MICE method was chosen, since it would not be reasonable to force a normal distribution on the categorical variables (Slade & Naylor 2019: 1157; van Buuren 2007: 237; Azur et al. 2011: 40) – which most of the analysis variables are (see Section 5.7).

Vastly different advice on how to choose additional predictors is given – some processes more complicated than others (see e.g. He 2010: 6; van Buuren et al. 1999: 687; UCLA n.d.; He et al. 2010: 659, 661). All variables used in the upcoming analysis are adviced to include in the imputation model according to several resources (He 2010: 6; UCLA n.d., "Imputation Model, Analytic Model and Compatibility", para. 1; van Buuren et al. 1999: 687; Schafer 1997: "4.5.5 Further comments on imputation modelling", para. 1; Azur et al. 2011: 43). One benefit with multiple imputation is that the imputation model can include additional variables than those used in the forthcoming analysis, using their strengths (Raghunathan et al. 2001: 90). Moreover, variables can be included as predictors no matter their share of missing data (Azur et al. 2011: 43). Hence, the variables' availability in WVS's waves does not determine their inclusion in the imputation model which certainly is helpful.

Weight variables should be included in the imputation model (Rubin 1996: 478-479; Royston 2005a: 189). Using weights in an analysis makes the results more appropriate and a weight refers to a mathematical tool used to consciously give some values more influence over the result than others, making the results capture a more accurate picture of the real life setting (Mehmetoglu & Jakobsen 2017: 221, 331). The WVS dataset contains a so called pweight variable, which is a probability or sampling weight (Mehmetoglu & Jakobsen 2017: 332) and will be included in the imputation model. This weight ("S017") is available for all waves and its function is to fine-tune some socio-demographics in the sample to mirror the population's distribution on variables such as age, sex, education and region (WVSA 2014f; 2014g; 2014h; 2014i; 2022d; 2022f). In other words, the weight is provided for each included country compensating for small deviations to improve reliability of the observations (WVSA n.d.-b).

Including as many predictors as possible in the imputation model, making it more general than the upcoming analysis ensuring not to miss any relevant associations, is an idea supported by many (see e.g. Rubin 1996: 479; Azur et al. 2011: 43; Stuart et al. 2009: 1135). Having too many predictors is not a problem and instead, risking exclusion of a relevant predictor is the real issue (Rubin 1996: 479). Albeit somewhat demanding, letting the process of chosing predictors be rigourous is good practice (ibid.).

It is advisable to include variables that have potential connections to the variable that needs imputed values, as well as including variables that have potential connections to that variable's missingness (Schafer 1997: "4.5.5 Further comments on imputation modelling", para. 1). Even though no general threshold exists, the inclusion of predictors will follow the idea to not include predictors with more than 50 percent missing (Royston 2004: 240).

H.5 Considered Variables for the Imputation Model

Following the advice on communicating imputation-wise decisions (Rubin 1978: 20; van Buuren 2007: 237), considered variables having connections with the research questions and the choices regarding possible predictors will be presented. The reason for including this is to show possibilities for analysis, and closely related questions that would have been interesting for the research questions, but where the percent missing is too much to be able to use the information in an imputation model.

Again, the two variables that needed imputed data for the analysis was "environmental organization" and "wish for radical change" and variables potentially relevant for their distribution were considered. Consequently, the long list of variables in WVS was investigated to find variables that have associations with the broader categories of: "environmental interest", "political interest" and "wish for political or societal change" to refer to the themes of the variables needing imputation. Table H.1 shows all the considered variables for the imputation model and the decisions made for each of them. Furthermore, the survey questions and response options for each predictor are described, as well as their wave availability, making it easy to follow the decisions.

Table H.1 Survey questions and response options for the considered variables for the imputation model

Variable name ... in this paper ... in dataset	***Percent missing*** / ***In WVS Waves:***	**7**	**6**	**5**	**4**	**3**	**2**	**1**
	Survey question in questionnaire / ***Comment***	**Response options**						
Sex X001	***Percent missing:*** *1.10* / ***In WVS Waves:***	7	6	5	4	3	2	1
	"Respondent's sex *(Code respondent's sex by observation, don't ask about it!)*"	"1 Male 2 Female"						
	Note: *This variable is problematic – see criticism below the table.* ***Reason for potential inclusion:*** *Low share of non-response; representing a more general pattern of response rate in the waves.* ***Decision:*** *Included as a predictor in the imputation model.*							
Importance of politics in life A004	***Percent missing:*** *6.53* / ***In WVS Waves:***	7	6	5	4	3	2	-
	"For each of the following, indicate how important it is in your life. Would you say it is *(read out and code one answer for each)*: > Politics"	"1 Very important 2 Rather important 3 Not very important 4 Not at all important"						
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Included as a predictor in the imputation model.*							
Political action: Signed petition E025	***Percent missing:*** *10.64* / ***In WVS Waves:***	7	6	5	4	3	2	1
	"Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Signing a petition"	"1 Have done 2 Might do 3 Would never do"						

	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Included as a predictor in the imputation model.*									
Political action: Demonstrated E027	***Percent missing:*** *10.95*	***In WVS Waves:***	7	6	5	4	3	2	1
	"Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Attending lawful/peaceful demonstrations"		"1 Have done 2 Might do 3 Would never do"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Included as a predictor in the imputation model.*									
Political action: Joined boycotts E026	***Percent missing:*** *12.87*	***In WVS Waves:***	7	6	5	4	3	2	1
	"Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Joining in boycotts"		"1 Have done 2 Might do 3 Would never do"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Included as a predictor in the imputation model.*									
Member of political party A102	***Percent missing:*** *23.46*	***In WVS Waves:***	7	6	5	-	3	-	1
	"Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization? *(Read out and code one answer for each organization)* > Political party"		"0 Don't belong/Not a member 1 Inactive member 2 Active member"							
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Included as a predictor in the imputation model.*									
Political action: Joined strikes E028	***Percent missing:*** *29.25*	***In WVS Waves:***	7	6	-	4	3	2	1
	"Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Joining strikes"		"1 Have done 2 Might do 3 Would never do"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Included as a predictor in the imputation model.*									
How often do you discuss politics? A062	***Percent missing:*** *41.03*	***In WVS Waves:***	7	-	-	4	3	2	1
	"When you get together with your friends, would you say you discuss political matters frequently, occasionally or never?"		"1 Frequently 2 Occasionally 3 Never"							
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Included as a predictor in the imputation model.*									

Tax to environment	***Percent missing:*** *55.90*	***In WVS Waves:***	-	-	5	4	3	2	-		
B002	"I am going to read out some statements about the environment. For each one, can you tell me whether you strongly agree, agree, disagree or strongly disagree? *(Read out and code one answer for each)*: > I would agree to an increase in taxes if the extra money were used to prevent environmental pollution"		"1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree"								
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*										
Voting on national level	***Percent missing:*** *62.34*	***In WVS Waves:***	7	6	-	-	-	-	-		
E264	"When elections take place, do you vote always, usually or never? Please tell me separately for each of the following levels *(Read out and code one answer for each item)* > National level"		"1 Always 2 Usually 3 Never 4 Not allowed to vote"								
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*										
Voting on local level	***Percent missing:*** *62.81*	***In WVS Waves:***	7	6	-	-	-	-	-		
E263	"When elections take place, do you vote always, usually or never? Please tell me separately for each of the following levels *(Read out and code one answer for each item)* > Local level"		"1 Always 2 Usually 3 Never 4 Not allowed to vote"								
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*										
Important to look after the environment	***Percent missing:*** *63.81*	***In WVS Waves:***	-	6	5	-	-	-	-		
A197	"Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? *(Code one answer for each description)*: > Looking after the environment is important to this person; to care for nature and save life resources"		"1 Very much like me 2 Like me 3 Somewhat like me 4 A little like me 5 Not like me 6 Not at all like me"								
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*										
Political action: Occupied buildings	***Percent missing:*** *66.07*	***In WVS Waves:***	-	-	-	4	3	2	1		
E029	"Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it. > Occupying buildings or factories"		"1 Have done 2 Might do 3 Would never do"								
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*										
Member of political party 2	***Percent missing:*** *67.49*	***In WVS Waves:***	7	-	-	4	-	2	-		
A068	"Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization? *(Read out and code one answer for each organization)*:		"0 Don't belong/Not a member 1 Inactive member 2 Active member"								

	> Political party" ***Reason for potential inclusion:*** *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).* ***Note:*** *It is unclear why WVS has two very similar variables: A068 and A102.*									
Income to environment B001	***Percent missing:*** *71.84*	***In WVS Waves:***	-	-	5	4	-	2	-	
	"I am going to read out some statements about the environment. For each one, can you tell me whether you strongly agree, agree, disagree or strongly disagree? *(Read out and code one answer for each)*: > I would give part of my income if I were certain that the money would be used to prevent environmental pollution"		"1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree"							
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Member of environmental group A071	***Percent missing:*** *71.95*	***In WVS Waves:***	7	-	-	4	-	-	-	
	"Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization? (Read out and code one answer for each organization): > Conservation, environment, animal rights groups"		"0 Don't belong/Not a member 1 Inactive member 2 Active member"							
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Rate political system E111	***Percent missing:*** *79.34*	***In WVS Waves:***	-	-	-	4	3	-	-	
	"Where on this scale would you put the political system as it is today?"		"___ (Write in score, from 1 to 10)"							
	Reason for potential inclusion: *Connections to "wish for political or societal change" (since the question can be interpreted as a way of asking the respondent how satisfied – or dissatisfied – they are with the political system today, which could be connected to a wish for political or societal change).* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Donated to ecological organization past 2 years B030	***Percent missing:*** *79.89*	***In WVS Waves:***	-	6	-	-	-	-	-	
	"During the past two years have you... > Given money to an ecological organization?"		"1 Yes 2 No"							
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Demonstrated for environmental cause B031	***Percent missing:*** *79.95*	***In WVS Waves:***	-	6	-	-	-	-	-	
	"During the past two years have you... > Participated in a demonstration for some environmental cause?"		"1 Yes 2 No"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Social activism: Donated to a group or campaign E286	***Percent missing:*** *81.24*	***In WVS Waves:***	7	-	-	-	-	-	-	
	"What about these forms of political action and social activism that people can take? Please, tell me for each of them if you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Donating to a group or campaign"		"1 Have done 2 Might do 3 Would never do"							

	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*								
Social activism: Encouraged others to vote E289	***Percent missing:*** *81.29*	***In WVS Waves:***	7	-	-	-	-	-	-
	"What about these forms of political action and social activism that people can take? Please, tell me for each of them if you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Encouraging others to vote"		"1 Have done 2 Might do 3 Would never do"						
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*								
Social activism: Contacted government official E287	***Percent missing:*** *81.33*	***In WVS Waves:***	7	-	-	-	-	-	-
	"What about these forms of political action and social activism that people can take? Please, tell me for each of them if you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Contacting a government official"		"1 Have done 2 Might do 3 Would never do"						
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*								
Social activism: Encouraged political action E288	***Percent missing:*** *82.25*	***In WVS Waves:***	7	-	-	-	-	-	-
	"What about these forms of political action and social activism that people can take? Please, tell me for each of them if you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action)*: > Encouraging others to take action about political issues"		"1 Have done 2 Might do 3 Would never do"						
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*								
Political action: Searched information about politics E282	***Percent missing:*** *82.61*	***In WVS Waves:***	7	-	-	-	-	-	-
	"Now I'd like you to look at this card. I'm going to read out some other forms of political action that people can take using Internet and social media tools like Facebook, Twitter etc., and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action; if the respondent does not use Internet and social media, please, code "-3" = not applicable)*: > Searching information about politics and political events"		"1 Have done 2 Might do 3 Would never do"						
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*								
Political action: Signed a petition past 5 years E025B	***Percent missing:*** *82.86*	***In WVS Waves:***	-	6	5	-	-	-	-
	"Have you or have you not done any of these activities in the last five years? *(Read out and code one answer for each action)*:		"1 Have done 2 Have not done"						

	> Signing a petition"									
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Political action: Encouraged political action E284	***Percent missing:*** *83.25*	***In WVS Waves:***	7	-	-	-	-	-	-	
	"Now I'd like you to look at this card. I'm going to read out some other forms of political action that people can take using Internet and social media tools like Facebook, Twitter etc., and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action; if the respondent does not use Internet and social media, please, code "-3" = not applicable)*: > Encouraging other people to take any form of political action"		"1 Have done 2 Might do 3 Would never do"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Political action: Organized E285	***Percent missing:*** *83.30*	***In WVS Waves:***	7	-	-	-	-	-	-	
	"Now I'd like you to look at this card. I'm going to read out some other forms of political action that people can take using Internet and social media tools like Facebook, Twitter etc., and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it *(read out and code one answer for each action; if the respondent does not use Internet and social media, please, code "-3" = not applicable)*: > Organizing political activities, events, protests"		"1 Have done 2 Might do 3 Would never do"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Voted in recent parliament elections E257	***Percent missing:*** *84.41*	***In WVS Waves:***	-	-	5	-	-	-	-	
	"Did you vote in your country's recent elections to the national parliament? (Code one answer)"		"1 Yes 2 No"							
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Political action: Attended demonstration E221B	***Percent missing:*** *84.66*	***In WVS Waves:***	-	6	5	-	-	-	-	
	"Have you or have you not done any of these activities in the last five years? *(Read out and code one answer for each action)*: > Attending lawful/peaceful demonstrations"		"1 Have done 2 Have not done"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
How serious is pollution of rivers, lakes and oceans? B023	***Percent missing:*** *84.86*	***In WVS Waves:***	-	-	5	-	-	-	-	
	"Now let's consider environmental problems in the world as a whole. Please, tell me how serious you consider each of the following to be for the world as a whole. Is it very serious, somewhat serious, not very serious or not serious at all? *(Read out and code one answer for each problem)*:		"1 Very serious 2 Somewhat serious 3 Not very serious 4 Not serious at all"							

	> Pollution of rivers, lakes and oceans"									
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
How serious is loss of plant or animal species or biodiversity? B022	***Percent missing:*** *85.09*	***In WVS Waves:***	-	-	5	-	-	-	-	
	"Now let's consider environmental problems in the world as a whole. Please, tell me how serious you consider each of the following to be for the world as a whole. Is it very serious, somewhat serious, not very serious or not serious at all? *(Read out and code one answer for each problem)*: > Loss of plant or animal species or biodiversity"		"1 Very serious 2 Somewhat serious 3 Not very serious 4 Not serious at all"							
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Environmental action: Signed petition B014	***Percent missing:*** *85.25*	***In WVS Waves:***	-	-	-	-	3	-	-	
	"Which, if any, of these things have you done in the last 12 months, out of concern for the environment? > Have you attended a meeting or signed a letter or petition aimed at protecting the environment?"		"1 Have done 2 Have not"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Environmental action: Organization B015	***Percent missing:*** *85.29*	***In WVS Waves:***	-	-	-	-	3	-	-	
	"Which, if any, of these things have you done in the last 12 months, out of concern for the environment? > Have you contributed to an environmental organization?"		"1 Have done 2 Have not"							
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Higher prices for the environment B004	***Percent missing:*** *85.31*	***In WVS Waves:***	-	-	-	-	3	-	-	
	"I am going to read out some statements about the environment. For each one, can you tell me whether you strongly agree, agree, disagree or strongly disagree? *(Read out and code one answer for each)*: > I would buy things at 20 % higher than usual prices if it would help protect the environment"		"1 Strongly agree 2 Agree 3 Disagree 4 Strongly disagree"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Environmental action: Reduced water consumption B013	***Percent missing:*** *85.44*	***In WVS Waves:***	-	-	-	-	3	-	-	
	"Which, if any, of these things have you done in the last 12 months, out of concern for the environment? > Have you tried to reduce water consumption for environmental reasons?"		"1 Have done 2 Have not"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
How serious is global warming? B021	***Percent missing:*** *85.52*	***In WVS Waves:***	-	-	5	-	-	-	-	
	"Now let's consider environmental problems in the world as a whole. Please, tell me how serious you consider each of the following to be for the world as a whole. Is it very serious, somewhat serious, not very serious or not serious at all? *(Read out and code one answer for each problem)*: > Global warming or the greenhouse effect"		"1 Very serious 2 Somewhat serious 3 Not very serious 4 Not serious at all"							

	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Political action recently: Joined boycotts E026B	***Percent missing:*** *85.85*	***In WVS Waves:***	-	6	5	-	-	-	-
	"Have you or have you not done any of these activities in the last five years? *(Read out and code one answer for each action)*: > Joining in boycotts"		"1 Have done 2 Have not done"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Environmental action: Reused or recycled B012	***Percent missing:*** *86.71*	***In WVS Waves:***	-	-	-	-	3	-	-
	"Which, if any, of these things have you done in the last 12 months, out of concern for the environment? > Have you decided for environmental reasons to reuse or recycle something rather than throw it away?"		"1 Have done 2 Have not"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Political action: Local community action A069	***Percent missing:*** *86.73*	***In WVS Waves:***	-	-	-	4	-	2	-
	"Please look carefully at the following list of voluntary organisations and activities and say... which, if any, do you belong to? *(Code all 'yes' answers as 1, if not mentioned code as 2)* > Local community action on issues like poverty, employment, housing, racial equality"		"1 Belong 2 Not mentioned"							
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Environmental action: Better household products B011	***Percent missing:*** *87.05*	***In WVS Waves:***	-	-	-	-	3	-	-
	"Which, if any, of these things have you done in the last 12 months, out of concern for the environment? > Have you chosen household products that you think are better for the environment?"		"1 Have done 2 Have not"							
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Voluntary work: Political parties A085	***Percent missing:*** *87.71*	***In WVS Waves:***	-	-	-	4	-	2	-
	"And for which, if any, are you currently doing unpaid voluntary work? *[Code all 'yes' answers as 1; if not mentioned code as 2]* > Political parties or groups"		"1 Do voluntary work 2 Not mentioned"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Voluntary work: Local community action A086	***Percent missing:*** *87.95*	***In WVS Waves:***	-	-	-	4	-	2	-
	"And for which, if any, are you currently doing unpaid voluntary work? [*Code all 'yes' answers as 1; if not mentioned code as 2]* > Local community action on issues like poverty, employment, housing, racial equality"		"1 Do voluntary work 2 Not mentioned"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									

How often do you follow politics in media? E150	***Percent missing:*** *91.07*	***In WVS Waves:***	-	-	-	4	-	-	-			
	"How often do you follow politics in the news on television or on the radio or in the daily papers?"		"1 Every day 2 Several times a week 3 Once or twice a week 4 Less often 5 Never"									
	Reason for potential inclusion: *Connections to "political interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											
Voluntary work: Environmental group A088	***Percent missing:*** *91.50*	***In WVS Waves:***	-	-	-	4	-	-	-			
	"And for which, if any, are you currently doing unpaid voluntary work? [Code all 'yes' answers as 1; if not mentioned code as 2] > Conservation, environmental, animal rights groups"		"1 Do voluntary work 2 Not mentioned"									
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											
Approving ecological movement E104	***Percent missing:*** *94.15*	***In WVS Waves:***	-	-	-	-	-	2	-			
	"There are a number of groups and movements looking for public support. For each of the following movements, which I read out, can you tell me whether you approve or disapprove of this movement? *(Read out and code one answer for each. Please use the responses on this card!)* > Ecology movement or nature protection"		"1 Approve strongly 2 Approve somewhat 3 Disapprove somewhat 4 Disapprove strongly"									
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											
The economic system needs fundamental changes E057	***Percent missing:*** *94.75*	***In WVS Waves:***	-	-	-	-	-	2	-			
	"I am going to read out some statements about the government and the economy. For each one, could you tell me how much you agree or disagree? Please use the responses on this card. > This country's economic system needs fundamental changes"		"1 Agree completely 2 Agree somewhat 3 Neither agree nor disagree 4 Disagree somewhat 5 Disagree completely"									
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											
Member of organization about conservation, environment and ecology A071B	***Percent missing:*** *95.55*	***In WVS Waves:***	-	-	-	-	-	2	-			
	"Please look carefully at the following list of voluntary organisations and activities and say... which, if any, do you belong to? > Conservation, the environment, ecology"		"1 Belong to 2 Not mentioned"									
	Reason for potential inclusion: *Connections to "environmental interest".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											
Voluntary work: Environmental organization A088B	***Percent missing:*** *96.21*	***In WVS Waves:***	-	-	-	-	-	2	-			
	"Please look carefully at the following list of voluntary organisations and activities and say... which, if any, are you currently doing unpaid voluntary work for? > Conservation, the environment, ecology"		"1 Do unpaid work for 2 Not mentioned"									
	Reason for potential inclusion: *Connections to "environmental interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*											

Political action recently: Joined strikes E028B	***Percent missing:*** *98.54*	***In WVS Waves:***	-	6	-	-	-	-	-	
	"Tell me for each of these activities how often you have done it in the last year! *(Read out and code one answer for each action)*: > Joining strikes"		"1 Not at all 2 Once 3 Twice 4 Three times 5 More than three times"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									
Voluntary work reason: Social or political change A117	***Percent missing:*** *98.87*	***In WVS Waves:***	-	-	-	-	-	2	-	
	"Thinking about your reasons for doing voluntary work, please use the following five-point scale to indicate how important each of the reasons below have been in your own case. (Where 1 is Unimportant and 5 is Very important) > To bring about social or political change"		"1 Unimportant 2 3 4 5 Very important"							
	Reason for potential inclusion: *Connections to "political interest" and "wish for political or societal change".* ***Decision:*** *Not included in imputation model. Too much missing (over 50 %).*									

Notes:

* The variables are sorted on their percent missing, in ascending order.

* The columns "Survey question in questionnaire" and "Response options" are quotes from the WVS questionnaire for this variable with exact formulations.

* The column "in dataset" refers to the variable name in the time-series dataset (WVSA 2022f).

* References to all the waves' codebooks used to create the table above: (WVSA 2014d; 2014e; 2014f; 2014g; 2014h; 2014i; 2022d).

* References to all the waves' questionnaires used to created the table above: (WVSA 2014c; 2014j; 2014a; 2014b; 2014k; 2014l; 2022a).

H.6 Predictors for the Imputation Model

Table H.2 shows the chosen predictor variables. The proportion of missing values for each variable is presented, which is a first step when considering using multiple imputation – since the patterns of missingness need to be examined initially (Stuart et al. 2009: 1134).

Table H.2 Predictors in the imputation model

Variable	% miss.	Reason for inclusion	Range	Variable type. Regression type ("command") for this variable's own imputation model.
Year	0.00	Analysis variable.	1995-2022	Continuous. Linear regression ("regress") to capture its distribution.
Country	0.00	---- " ----	2-994	Categorical. Categorical regression ("mlogit") to capture its distribution.
Protect environment	23.54	---- " ----	0-1	Binary. Logistic regression ("logit") to capture its distribution.
Wish for radical change	50.79	---- " ----	0-1	Binary. Logistic regression ("logit") to capture its distribution.

Environmental organization	23.57	---- " ----	0-1	Binary. Logistic regression ("logit") to capture its distribution.
Confidence in parliament	8.70	---- " ----	1-4	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Confidence in government	14.79	---- " ----	1-4	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Confidence in political parties	15.23	---- " ----	1-4	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Interest in politics	3.71	---- " ----	1-4	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Left-right scale position	28.85	---- " ----	1-10	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Age	1.05	---- " ----	13-103	Continuous. Linear regression ("regress") to capture its distribution.
Income	8.47	---- " ----	1-10	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Education	12.67	---- " ----	1-8	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Sex	1.10	Low share of non-response; representing a more general pattern of the response rate in the waves.	0-1	Binary. Logistic regression ("logit") to capture its distribution.
Political action: Signed petition	10.64	Connections to "political interest" and "wish for political or societal change".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Political action: Joined boycotts	12.87	Connections to "political interest" and "wish for political or societal change".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Political action: Demonstrated	10.95	Connections to "political interest" and "wish for political or societal change".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Political action: Joined strikes	29.25	Connections to "political interest" and "wish for political or societal change".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Member of political party	23.46	Connections to "political interest" and "wish for political or societal change".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
Importance of politics in life	6.53	Connections to "political interest".	1-4	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.
How often do you discuss politics?	41.03	Connections to "political interest".	1-3	Ordinal. Ordered logistic regression ("ologit") to capture its distribution.

Note: % miss. = "Percentage missing".

One might wonder why "wish for radical change" is included in the imputation model when it has 50.79 percent missing, which exceeds the aforementioned idea of having a 50 percent threshold (Royston 2004: 240). This is because this variable needs imputed values, so it still makes sense to include it in the imputation model, since the imputation's purpose is to impute values for variables that need it (Rubin 1987: vii).

Table H.2 above shows that the final imputation model only consisted of the 13 analysis variables and 8 predictors, and none of the predictors have connections to the "environmental interest" theme. Considering the large catalogue of variables in WVS it is surprising to find that so few environmental variables are included throughout the waves, which is addressed in Appendix E. Many variables are interesting to investigate, but cannot be included due to their high percentage of missing – over 50 percent – which for the majority of the variables is due to the variable only existing in a few waves, as shown in Table H.1 higher up.

Since several predictors in the imputation model have considerably more missing data than a variable such as age, income or education where many respondents answer, the idea was to include some variable with a low percentage of missing data to represent a more general pattern of response rate in the waves. The choice fell on the "sex" variable, a variable with a low percentage of missing data. This variable differs a bit throughout waves where interviewers are asking the respondent about their sex in waves 1, 2, 3 and 4 (WVSA 2014c: 20; 2014j: 36; 2014a: 26; 2014b: 20), but in waves 5 and 6 the descriptions to the interviewers are: "*(Code respondent's sex by observation)*" (WVSA 2014k: 19; 2014l: 19, emphasis in originals), and in the questionnaire of wave 7 it even says: "*(Code respondent's sex by observation, don't ask about it!)*" (WVSA 2022a: 18, emphasis in original). Judging a person's sex or gender without asking is problematic since it is a matter of individual identity which can be a sensitive topic, and misgendering can happen which in turn can make the person feel awkward, excluded and discriminated against (Cameron & Stinson 2019; Whitley et al. 2022: 1022-1023; Diamond 2020: 111). Giving oneself the privilege to label another person what gender they identify with, instead of asking them, is an act based on the inaccurate assumption that gender has a certain "look" (Kinney et al. 2022: 11-12).

Furthermore, the "sex" variable only has two options: "Male" or "Female", which relies on a stereotypical picture not according to gender research – going back to Judith Butler's pioneering work describing the stand where gender is seen as performative and fluid (Butler 1988: 526). Deeming this variable to be valid would be to exclude nonbinary people from existing, and neglect the phenomenon of gender dysphoria that many trans- or nonbinary people experience, or have been experiencing (Schneider et al. 2016; Garrett 2020: 29-30). Specifically, research urges quantitative sociology to come out of "the binary closet" (Sumerau et al. 2017: 648), not accept flawed metrics of gender, to assure maintaining a quality level in line with current, important research finds (ibid.; Ekins & King 1999: 599-600). The "sex" variable is included in the imputation model despite this criticism, because it is only used for its ratio of response and non-response in this matter.

In Table H.2 above, the column "Variable type. Regression type ("command") for this variable's own imputation model." explains what type of regression the imputation executed

for the variable, since the MICE method takes all variables' distributions into consideration and performs separate regressions for each variable (He et al. 2010: 660; Slade & Naylor 2019: 1157). This means that every variable has its own imputation model, and for the binary variables the logistic regression is suitable (Raghunathan et al. 2009: 87; He & Raghunathan 2009: 858). For the continuous variable "age", linear regression is appropriate (StataCorp 2021c: 115). The rest of the variables are seen as ordinal variables since they include categories possible to rank – typical for attitude variables (Djurfeldt et al. 2018: 42), and ordered logistic regression is then the relevant option (StataCorp 2021c: 115, 117).

H.7 After Imputation: Detailed Descriptive Statistics

Table H.3 shows the detailed descriptive statistics of all the variables in the imputation model, and it is possible to see what is happening before and after imputation for each variable.

Table H.3 Descriptive statistics of all the variables in the imputation model, before and after imputation

Variable	*Before* / *After*	N_{m0}	N_{all}	$(N_{all}-N_{m0}) / 5$	% miss.	Mean	S.Dev.	Min	Max	In RQ
Country	*No imp.*	396 041			0.00	-	-	-	-	
			2 376 246	396 041	0.00	-	-	-	-	All
Country num.	*No imp.*	396 041			0.00	467.19	262.91	2	994	
			2 376 246	396 041	0.00	467.19	262.91	2	994	X
Year	*No imp.*	396 041			0.00	2007.48	8.008	1995	2022	
			2 376 246	396 041	0.00	2007.48	8.008	1995	2022	X
Year_z	*No imp.*	-			-	-	-	-	-	
			2 376 246	396 041	0.00	0	1	-1.558	1.813	1, 2, 3
Protect environment		336 466			15.04	0.552	0.497	0	1	
			2 316 671	396 041	0.00	0.553	0.497	0	1	1, 2, 3
Confidence in parliament		360 377			9.01	2.265	0.933	1	4	
			2 340 582	396 041	0.00	2.271	0.935	1	4	X
Confidence in government		364 785			7.89	2.413	0.955	1	4	
			2 344 990	396 041	0.00	2.412	0.957	1	4	X
Confidence in political parties		358 006			9.60	2.048	0.874	1	4	
			2 338 211	396 041	0.00	2.059	0.880	1	4	X
Political confidence ¤		341 653			13.73	6.712	2.401	3	12	
			2 321 858	396 041	0.00	6.742	2.419	3	12	2
Wish for radical change		194 905			50.79	0.147	0.354	0	1	
			2 175 110	396 041	0.00	0.140	0.372	0	1	3
Environmental organization		324 213			18.14	0.118	0.326	0	1	
			2 304 418	396 041	0.00	0.118	0.323	0	1	2, 3
Interest in politics		383 819			3.09	2.339	0.966	1	4	
			2 364 024	396 041	0.00	2.336	0.966	1	4	2, 3
Left-right scale position		280 499			29.17	5.685	2.403	1	10	
			2 260 704	396 041	0.00	5.719	2.402	1	10	2, 3
Age	*No imp.*	395 019			0.26	41.285	16.211	13	103	
			2 370 114	395 019	0.26	41.285	16.211	13	103	X
Age_z	*No imp.*	-			-	-	-	-	-	
			2 370 114	395 019	0.26	0	1	-1.745	3.807	3
Income		367 636			7.17	4.668	2.262	1	10	
			2 347 841	396 041	0.00	4.668	2.265	1	10	2, 3
Education		373 337			5.73	4.709	2.285	1	8	
			2 353 542	396 041	0.00	4.652	2.293	1	8	2, 3
Sex		395 706			0.08	0.520	0.500	0	1	
			2 375 911	396 041	0.00	0.520	0.500	0	1	X
Political action: Signed petition		356 130			10.08	2.191	0.804	1	3	
			2 336 335	396 041	0.00	2.209	0.799	1	3	X
Political action: Joined boycotts		348 487			12.01	2.553	0.644	1	3	
			2 328 692	396 041	0.00	2.552	0.644	1	3	X
Political action: Demonstrated		353 735			10.68	2.366	0.724	1	3	
			2 333 940	396 041	0.00	2.377	0.721	1	3	X
Importance of politics in life		382 904			3.32	2.644	0.981	1	4	
			2 363 109	396 041	0.00	2.648	0.981	1	4	X
Political action: Joined strikes		276 225			30.25	2.633	0.605	1	3	
			2 256 430	396 041	0.00	2.644	0.599	1	3	X
How often do you discuss politics?		216 164			45.42	2.180	0.664	1	3	
			2 196 369	396 041	0.00	2.187	0.662	1	3	X
Member of political party		324 699			18.01	1.200	0.508	1	3	
			2 304 904	396 041	0.00	1.200	0.508	1	3	X

Notes:
* Wave 1 and 2 are not included here, so all values refer to wave 3 to 7 (both before and after imputation).
* ¤ = This variable (confindex) is an index created out of conf_parliament, conf_government and cont_polparties, and will be used in the analysis. The reason why the index has values both before and after the imputation is because it was created both before and after the imputation, to be able to compare whether Cronbach's alpha would change. More on this in Section H.3.
* No imp = These variables have not gotten imputed values, since they already had 0 percent missing.
* % miss. = "Percentage missing".
* X = These variables were among the predictors in the imputation model but are not included in the analysis.
* S.Dev. = "Standard deviation".
* In RQ = "In research question". Only variables with imputed values are included in the analysis, which is why the cell above is empty.
* The values in the cells "Mean" and "S.Dev." represent the mean value of all of these values in each mi-dataset divided by 5, to get the mean of these values for all mi-datasets.
* "Country" is a string variable, used in all the models. It is a clustering variable without a certain order, so it has no mean, standard deviation, minimum or maximum value.
* The standardizations of year ("year_z") and age ("age_z") were done after imputation. This is why the row with values regarding "before imputation" is empty.

The only variable not included in the table is the weight variable but since this is a sampling weight with the sole purpose of making the sample more representative to each country (Mehmetoglu & Jakobsen 2017: 332; WVSA n.d.-b), it does not make sense to include it here.

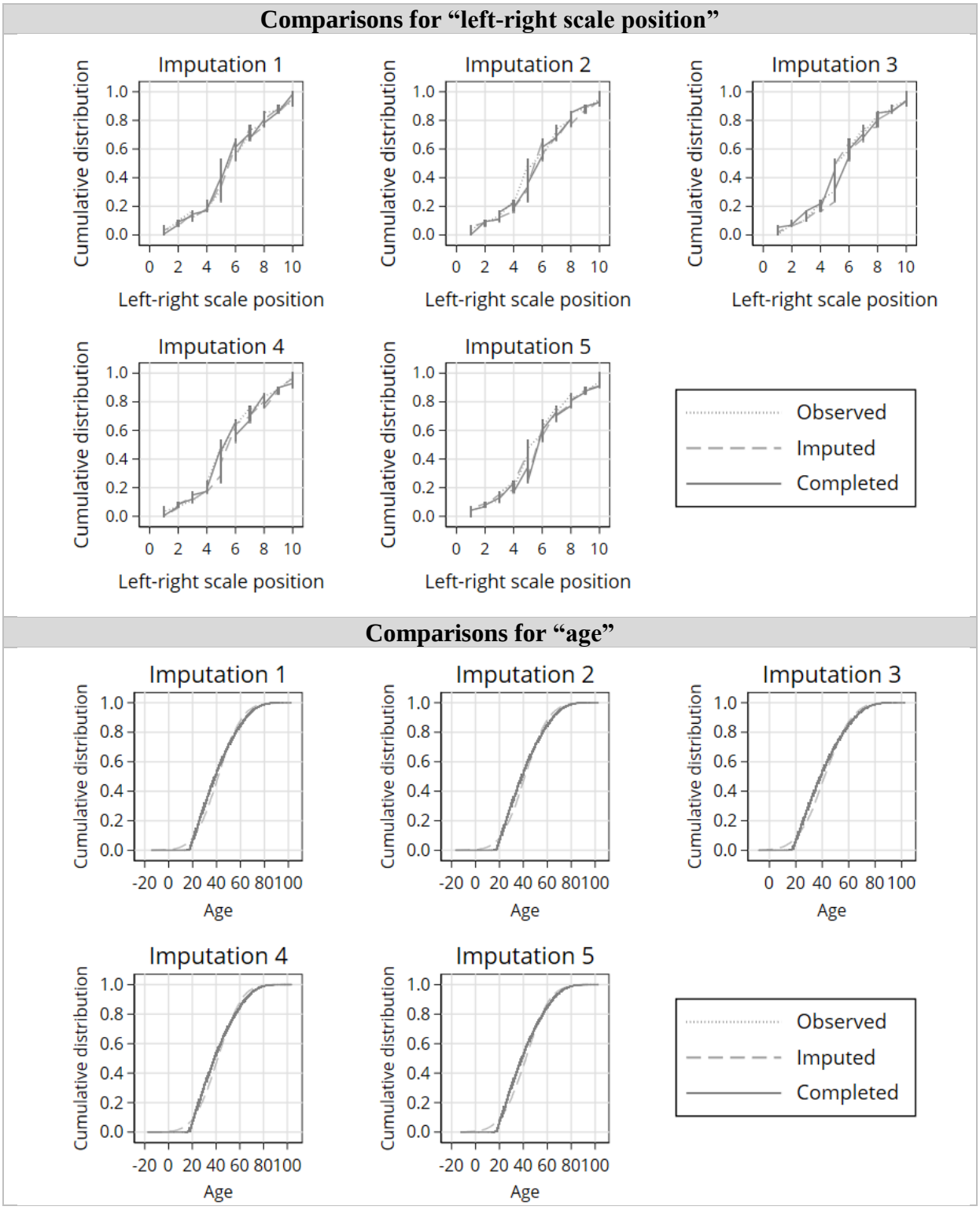
In Table H.3 the column "N_{m0}" contains number of observations for the original dataset without imputed values – called "m=0" in Stata commands and "mi dataset" in descriptions about it (StataCorp 2021c: 122, 345). The column "N_{all}" contains number of observations in the dataset after imputation, which includes m=0, m=1, m=2, m=3, m=4 and m=5, i.e. the dataset before imputation (m0) plus the 5 imputed datasets. This is how Stata handles imputed data; all of these observations exist in the dataset after imputation (StataCorp 2021c: 124, 345). The column called "$(N_{all}-N_{m0}) / 5$", then, shows the calculation that has been done in that cell. Number "5" stands for the number of mi datasets with imputed data (which is 5) and the calculation in the cell is done to exclude m=0. Thus, the results in this column show the number of observations in all of the five mi datasets. Thus, when comparing this column with "N_{m0}", it is possible to see whether the imputation yielded more observations for a particular variable, or not.

H.8 Imputation Diagnostics

The command "*midiagplots*" is a diagnostic tool created to compare imputed and observed values and check the fit of the imputation model (Eddings & Marchenko 2012: 354). The goal with the diagnostic is to compare three distributions: the observed values, the imputed values and the completed values, which represents the combination of both observed and imputed values (ibid.). These comparisons can be done in each imputed dataset, or a certain dataset, and the presentations of the distributions can be presented in frequency tables or graphs. If these distributions have great differences, the imputation model might have issues (ibid.).

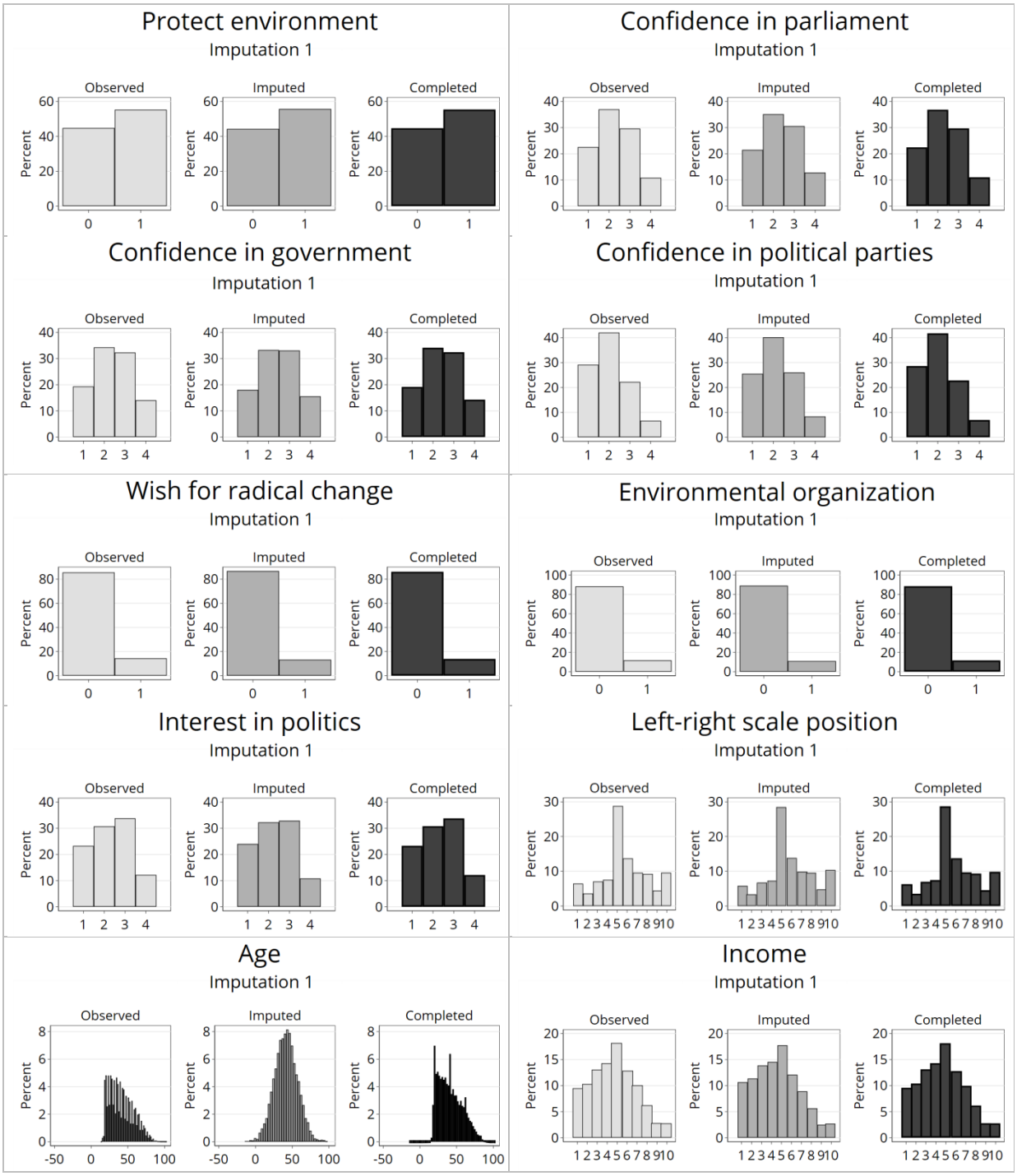
The result of the "*midiagplots*" diagnosis is presented below, and in Figure H.4 the comparisons throughout the five imputations are made for the variables "left-right scale position" (1-10) and "age" (13-103).

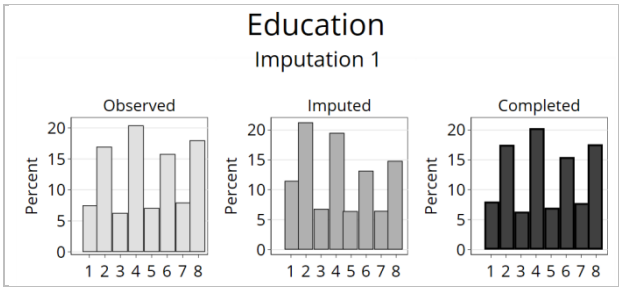
Figure H.4 Comparisons of imputation behavior throughout the five imputations for the variables "left-right scale position" and "age"



As can be seen, there are only minor differences between the distributions for the five imputations and, in fact, this is also the case for all variables in the imputation model. To avoid filling pages with graphs not showing many differences, the decision was to present a comparison only for the first imputed dataset for all the analysis variables, shown in Figure H.5. To simplify comparisons, the decision was to present this with bar charts.

Figure H.5 Imputation behavior for analysis variables getting imputed values

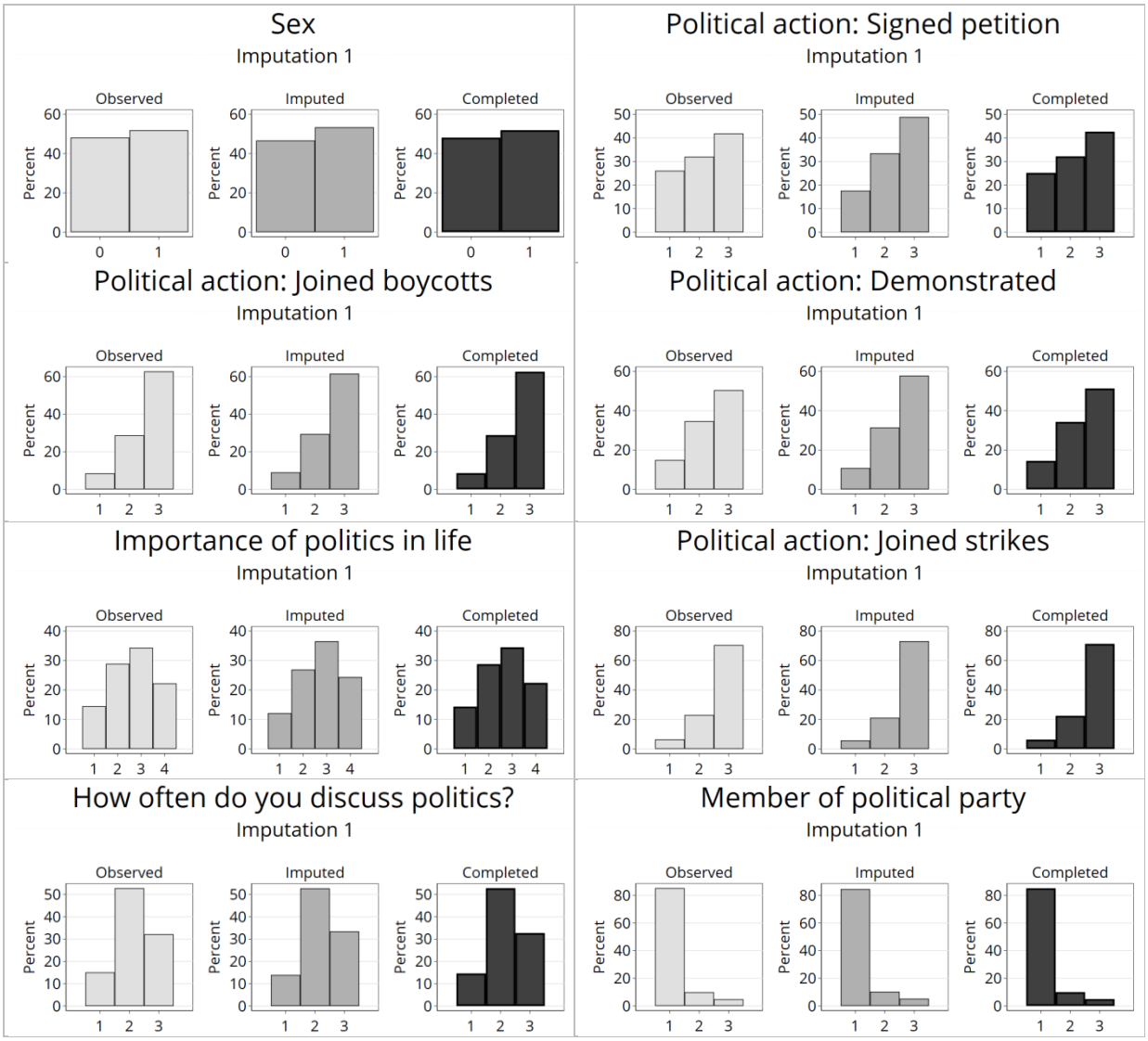




The goal with multiple imputation is to impute, as Rubin originally described it: "the 'predictive distribution' of the missing values given the observed values (having integrated – averaged) over all model parameters" (Rubin 2004: 298 [the original article from 1977 presenting multiple imputation, although officially published in 2004]). In other words, the reason why the distributions in the compared graphs are similar is because the computer takes the distribution of the observed values into consideration when imputing values. Getting similar distributions in this comparison could be seen as a receipt that the imputation is doing its job, keeping the original, observed distribution in the final, completed dataset, which refers to the dataset with both observed and imputed values.

As can be seen in Figure H.5, the distributions are very similar, with the exception of two variables: "age" and "education", but these differences are valid. The imputation process of "age" assumes a normal distribution since it is a continuous variable, but in the "Completed" graph the computer has taken the boundaries of the original variable into consideration, letting most of the distribution fall between the values of 13-103, as in the observed data. For "education", it is reasonable, and helpful, that the bars have slight differences when comparing the graphs for the distributions of "Observed", "Imputed" and "Completed". The slight differences are due to the fact that the imputation model involves WVS's sample weight variable "S017", which then helps the education variable to represent a better distribution in accordance with its countries or regions. This explains the differences between the "Observed" graph and the "Imputed" graph. In the "Completed" graph, then, it is possible to see that the computer has taken two things into consideration when this final distribution is created: the "Observed" distribution and the weight variable, and the "Completed" graph then represents a good middle-way of this, so these differences are actually helpful. The distributions for the variables included in the imputation model but not in the analysis are presented in Figure H.6 below.

Figure H.6 Comparing distributions for the first imputation in variables included in the imputation model but not used in the analysis



As can be seen, the distributions between the graphs of "Observed", "Imputed" and "Completed" are very similar, showing that the imputation did its job successfully.

Appendix I. Regression Diagnostics: Multicollinearity

Since usual commands of calculating regression diagnostics do not work with multiply imputed data in Stata, the user created command "*collin"* (Ender n.d.) was used to successfully perform multicollinearity tests. Table I.1 shows that no variables have a VIF-value higher than 5, showing that there exists no problem with multicollinearity for the variables in the analysis (Mehmetoglu & Jakobsen 2017: 147).

Table I.1 Results from the multicollinearity tests for analysis variables in all imputed datasets

Variable	$m_{(0, 1, 2, 3, 4, 5)}$		mi-dataset 1		mi-dataset 2		mi-dataset 3		mi-dataset 4		mi-dataset 5	
	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance
Protect environment	1.01	0.9902	1.01	0.9904	1.01	0.9902	1.01	0.9901	1.01	0.9904	1.01	0.9903
Year	1.03	0.9727	1.03	0.9727	1.03	0.9727	1.03	0.9726	1.03	0.9728	1.03	0.9726
Country numeric	1.09	0.9197	1.09	0.9183	1.09	0.9187	1.09	0.9186	1.09	0.9185	1.09	0.9188
Political confidence	1.12	0.8958	1.12	0.8955	1.12	0.8957	1.12	0.8964	1.12	0.8954	1.12	0.8963
Wish for radical change	1.02	0.9800	1.02	0.9802	1.02	0.9813	1.02	0.9800	1.02	0.9804	1.02	0.9808
Environmental organization	1.02	0.9836	1.02	0.9835	1.02	0.9839	1.02	0.9836	1.02	0.9836	1.02	0.9838
Interest in politics	1.09	0.9206	1.09	0.9204	1.09	0.9208	1.09	0.9205	1.09	0.9203	1.09	0.9210
Left-right scale position	1.02	0.9805	1.02	0.9804	1.02	0.9802	1.02	0.9802	1.02	0.9799	1.02	0.9811
Age	1.06	0.9463	1.06	0.9458	1.06	0.9463	1.06	0.9459	1.06	0.9456	1.06	0.9465
Income	1.11	0.8986	1.11	0.8976	1.11	0.8979	1.11	0.8983	1.11	0.8987	1.11	0.8981
Education	1.17	0.8538	1.17	0.8528	1.17	0.8533	1.17	0.8535	1.17	0.8537	1.17	0.8536

Note: The column "$\mathbf{m_{(0, 1, 2, 3, 4, 5)}}$" refers to the full dataset (m_0, m_1, m_2, m_3, m_4, m_5) where all imputations are stored, where m_0 is the original data before imputation, and m_1 up until m_5 are the 5 imputed datasets for this study. This is how Stata handles multiple imputation.

Appendix J. Analysis of Research Question 1 with All 107 Countries

As previously mentioned in Section 6.1, all countries were included in the analysis of research question 1 at first. However, of the 107 countries available in data, 31 countries (39 percent) only have one measurement occasion – see Table 5.7.

As already addressed in Section 6.1, to get a better possibility of finding an eventual time trend, the analysis of research question 1 only included countries with data available for more than one year. However, an analysis of research question 1 on all of the 107 countries were performed to determine if interesting differences would be found. Table J.1 shows this analysis.

Table J.1 Research question 1 – mixed-effects logistic regression – with all 107 countries available in the dataset

	M1b.1	**M1b.2**	**M1b.3**
	Protect environment	Protect environment	Protect environment
Year		0.033***	0.019
		(0.004)	(0.034)
Intercept	0.192***	0.192***	0.204***
	(0.055)	(0.056)	(0.056)
Country-level variance	0.327***	0.330***	0.313***
	(0.045)	(0.046)	(0.049)
Year-level variance			0.088***
			(0.017)
ICC	0.09	-	-
LR-test	L1b	¤L1b, L2b	¤L2b
Imputations	5	5	5
Observations	396 041	396 041	396 041
Countries	107	107	107

Notes:
***** Source: World Values Survey time-series dataset, version 3.0.0, released on March 1, 2022 (Inglehart et al. 2022; WVSA 2022c). The analysis includes wave 3 (1995-1999) up until wave 7 (2017-2022).
* Standard errors in parentheses.
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
* Dependent variable = "Protect environment".
* Both year-variables (both the fixed and the random term) are standardized.

Table J.2 includes a summary of what the likelihood-ratio tests showed, and Model 1b.3 was the best model fitted for the data, when all of the 107 countries were included.

Table J.2 Likelihood-ratio tests for research question 1 – all countries

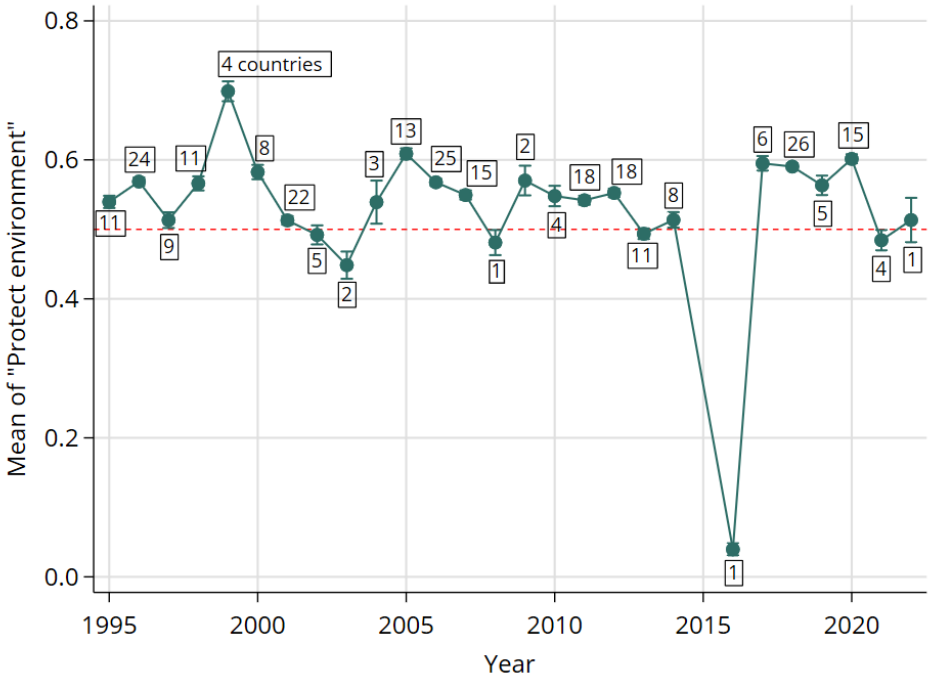
LR-test	Models compared	#df	Chisq	Pr(>Chisq)	Best model
L1b	M1b.2 vs M1b.1	1	71.16	0.0000	M1b.2
L2b	M1b.3 vs M1b.2	1	2649.83	0.0000	M1b.3

Average marginal effects of the fixed effect of "year" on "protect environment" was calculated for Model 1b.3. The prediction is about 0.03 with a confidence interval between -0.05 and 0.10. The value of 0 is included in the confidence interval which means that the result is not significant. Thus, a linear effect of time on "protect environment" does not exist, globally, for the 107 countries in this analysis.

Appendix K. Mean of "Protect Environment" Over the Years

Figure K.1 shows the mean of the "protect environment" variable for all 107 countries in the dataset over the years 1995 to 2020, with the exception of 2015 where no data exists. As illustrated, each dot in the graph represents different amounts of countries, making it difficult to interpret the time trend overall. For instance, the "outlier" value of 0.05 in 2016 only refers to Haiti's value that year, but this is not a valid representation of the countries' mean of "protect environment" during that year. For this reason, a better graph is to track the mean value over the WVS waves, making the groupings of the countries better, and this is presented in Figure 6.1.

Figure K.1 Mean of "protect environment" over the years, showing the amount of countries



Note:

***** "Protect environment" varies with values between 0 to 1, where 1 represents a choice where the environment is prioritized, and 0 a choice where economic growth is prioritized.

* The red dashed line at y = 0.5 represents the middle value of the variable.

* The small boxes next to each dot represent number of countries in the data that particular year. A large variety exists where only 1 country's data exists for the years of 2008, 2016 and 2022, and 26 countries exist in the data for the year 2018.