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Lazarus Adua

lazarus.adua@soc.utah.edu

University of Utah

Brett Clark

University of Utah

Daniel Auerbach

University of Wyoming

Karen Xuan Zhang

University of Utah

Jared Sanborm

University of Utah

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Income Dimensions, Political Ideology, and Environmental Concern

Lazarus Adua (lazarus.adua@soc.utah.edu)
Department of Sociology and Criminology, University of Utah

Brett Clark (brett.clark@soc.utah.edu)
Department of Sociology and Criminology, University of Utah

Daniel Auerbach (dauerbac@uwyo.edu)
Department of Criminal Justice and Sociology, University of Wyoming

Karen Xuan Zhang (Xuan.zhang@utah.edu)
Department of Sociology and Criminology, University of Utah

Jared Sanborn (jared.w.sanborn@utah.edu)
Department of Sociology and Criminology, University of Utah

Corresponding Author: Lazarus Adua (lazarus.adua@soc.utah.edu)

Abstract
Income has received substantial attention in efforts to understand the determinants of environmental concern, a factor related to governmental and personal environmental decision-making and sustainability. However, findings related to it have been mixed, necessitating further exploration of the relationship. Is this associated with how income is operationalized? Do different dimensions of income relate to environmental concern differently? We investigate, as a novel approach, how different dimensions of income—absolute income, the Yitzhaki index, and proportion income—are related to environmental concern. Additionally, we assess whether political ideology moderates these relationships. Based on data from the U.S. General Social Survey, we find evidence that the pattern of relationship between income and environmental concern depends on the dimension of income considered. We find evidence of each dimension relating to one or more of the measures of environmental concern, but these relationships are moderated by political ideology. In terms of absolute income, people identifying as liberals express greater environmental concern, whereas the opposite seem to be the case when relative income is considered. Relating to the Yitzhaki index, we find that it is the least and most deprived individuals who express greater environmental concern. This study provides two important take-aways. First, how income is measured affects its relationship with environmental concern. Second, the relationship between income and environmental concern is moderated by political ideology. The study shows, overall, that income and political ideology influence environmental concern, which in turn, has consequences for sustainability.

1.0 Introduction

This study focuses on how several dimensions of income are related to environmental concern in the United States. Scholarship on environmental perceptions, opinions, and concerns has been an important and longstanding research staple among environmental social scientists around the world (Antonio and Brulle 2011; Dunlap and McCright 2008; Ehret, Sparks, and Sherman 2017; Fairbrother 2013; Feinberg and Willer 2013; Gamba and Oskamp 1994; Liere and Dunlap 1980; Nawrotzki and Pampel 2013; Rivera-Kientz and Stewart 2025; Sharp and Adua 2009; Summers and VanHeuvelen 2017). Much of this work has focused on identifying and characterizing factors related to public views, concerns, and attitudes about the environment.

Interest in this research area is justified for two reasons. First, public views and concerns about an issue often influence policymaking and outcomes related to it (Agnone 2007; Burstein 2003; Burstein and Freudenburg 1978; Kelly 2009; Page and Shapiro 1983; Walsh 2015). As an example, Kelly (2009) observes that a public opinion shift to the left in the United States results in the election of Democrats, which in turn leads to policy changes that reduce inequality. Second, individuals' views about a subject have been shown to affect their behaviors related to it. Research shows, for instance, that individuals expressing pro-environmental views (or environmental concern) are more likely to recycle (Barr 2007; Corrado, Fazio, and Pelloni 2022; Mukherji, Mukherji, and Evans 2011). They are also more likely to use public transit (Bouscasse, Joly, and Bonnel 2018; Garvill 1999). In essence, environment concern has consequences for governmental and personal environment-related decision and sustainability. We contribute to this vital area of research by examining how different dimensions of income may be related to environmental concern.

Income (along with its derivative, affluence) has received substantial attention in environmental concern research. Overall, findings have been mixed. Many studies report positive relationships between measures of income and environmental concern (Buttel and Flinn 1974; Franzen and Meyer 2010; Grandin et al. 2022; Marquart-Pyatt 2008; Roberts and Mangold 2023). Others report negative or null relationships between these variables (Constantini and Hanf 1972; Driscoll 2019; Fairbrother 2013; Jones and Dunlap 1992; Qadri et al. 2025; Summers and VanHeuvelen 2017). The conflicting nature of these findings necessitates continuing efforts to understand them. We contribute to this effort, first, by examining how different dimensions of income—absolute income, the Yitzhaki index, and proportion income received—are related to environmental concern. In what ways will different dimensions of income be related to environmental concern? Do these distinct dimensions follow the same pattern of relationship? It is rare, overall, to research simultaneously examining multiple dimensions.

It is particularly interesting to bring the Yitzhaki index into sociological research on environmental concern. The index is a measure of relative deprivation. It is computed as the cumulative average difference between the income of an individual and that of everyone else with higher income within a given reference group. The index was developed by Shlomo Yitzhaki (1979), who drew on Runciman's work on relative deprivation.[1] While the index practically and conceptually measures relative deprivation, it can be employed as a measure of income inequality at the individual level (Li and Xiao 2021). It has been used widely in research examining social determinants of health outcomes among individuals (see Adjaye-Gbewonyo and Kawachi 2012; Kuo et al. 2024). The question is whether the index can, in like manner, be employed in research examining environmental concern. While there exist other measures of relative deprivation, such

[1] Runciman (1972) addressed the notion of relative deprivation in *Relative Deprivation and Social Justice: A Study of Attitudes to Social Inequality in the Twentieth-Century England.*

as the Kakwani and Esposito indices, we opted for the Yitzhaki index because it is a widely used and easily understood longstanding measure.

For our second contribution, we further explore whether political ideology, a variable identified by numerous researchers as a stable predictor of environmental concern, moderates the relationships between these income dimensions and environmental concern. Conservatives in the United States differ from their liberal counterparts on views related to the environment (Ehret et al. 2017; McCright et al. 2016) and income and economic inequality (Kelly 2009; Pew Research Center 2020). Conservatives and liberals in other countries similarly differ on views related to the environment (Crawley 2023; McCright et al. 2016; Nawrotzki 2012) and views related to economic inequality (Crawley 2023). Thus, we ask whether political ideology moderates the relationship between income and environmental concern.

In what follows, we review theoretical perspectives on the relationship between income and environmental concern. Despite this review of the theories, we note, upfront, that our goal is to conduct an exploratory study of the impacts of income dimensions and political ideology on environmental concern, rather than theory testing a-priori. We then consider the role of political ideology and how it may help explain the relationship between income and environmental concern. Following this, we discuss the data and estimation, results, and conclusions in that order.

2.0 Income and Environmental Concern

Environmental concern has received substantial and longstanding attention in environmental sociology and related social science disciplines (Driscoll 2019; Gifford and Nilsson 2014; Pampel 2014; Stern and Dietz 1994; Van Liere and Dunlap 1980). Over the years, researchers have considered how income, an important dimension of stratification in modern society, is related to this outcome (Brechin and Kempton 1994; Driscoll 2019; Franzen and Meyer

2010; Grandin et al. 2022; Marquart-Pyatt 2008; Summers and VanHeuvelen 2017). Theoretical perspectives explaining this relationship include both the social class and ecological modernization perspectives. Both theories emphasize the primacy of material or economic circumstances.

The social class perspective is a micro-level theory that anticipates a positive relationship between income and environmental concern (Buttel and Flinn 1978; Van Liere and Dunlap 1980). Three reasons are given to explain this anticipated relationship. First, environmental quality is a luxury good, and people only begin to worry about such goods when their basic needs and necessities have been met. People therefore become concerned about the quality and health of the environment only when their basic material needs have been sufficiently met (Albrecht and Mauss 1975). This explanation is rooted in Maslow's hierarchy of needs theory (Maslow 1970). Second, building on the prior point, relative deprivation prevents the poor from being distressed about the bad physical living conditions in which poverty-stricken people live, resulting in less concern about environmental issues (Morrison, Hornback, and Warner 1972). Third, greater concern for the environment among the upper class (including higher-income groups) is part of their generalized awareness and concern for the myriad social problems in society (Althoff and Greig 1977).

Ecological modernization, a comprehensive macro-level theory related to environmental reform, emphasizes the role that economic development plays in fostering greater environmental concern and protection over the long term (Glynn, Cadman, and Maraseni 2017; Hajer 1997; Mol 1995; Murphy and Gouldson 2009). Ecological modernization scholars argue that once a society reaches an adequately high level of economic development (or affluence), it will become more reflexive, which will, in turn, lead to ecological transformations in the society's economic, social, political, and cultural spheres (Hajer 1997; Mol 1995; Mol, Sonnenfeld, and Spaargaren 2009).

This process, in the long run, fosters an expanding ecological consciousness or awareness among the citizenry. According to this perspective, at a higher level of economic development where material needs are met, ecological rationality emerges and takes root (Mol 1995; Mol et al. 2009). As a result, affluence (economic development), over time, is expected to drive greater environmental concern (or ecological consciousness as phrased by ecological modernization scholars). When applied to individual (micro) level analysis, ecological modernization theory suggests a positive relationship between income, which helps improve material well-being, and environmental concern (see Adua, York, and Schuelke-Leech 2016).

To sum, both the social class and ecological modernization perspectives anticipate a positive relationship between income and concern for the environment, although this view has been disputed by other scholars (see below). They propose that higher incomes (and its derivative, affluence) free people from the drudgery of daily survival, allowing them to appreciate and develop concern for the quality and health of the environment. In the next subsection, we offer a brief review of the extant literature on this relationship.

Over the years, other scholars have questioned and offered additional research that has challenged this view of the relationship between income and environmental concern (Brechin and Kempton 1994; Driscoll 2019; Dunlap and York 2008; Fairbrother 2013; Summers and VanHeuvelen 2017). In part, they propose that environmentalism has become a global phenomenon observable across income groups, flattening differences based on sociodemographic characteristics. This view is consistent with arguments from the world society literature (Frank, Hironaka, and Schoter 2000; Schofer and Hironaka 2005). What these studies indicate, overall, is that income or level of affluence is not a significant driver of environmental concern.

Additionally, environmental justice scholars argue that environmental concern among economically disadvantaged communities often emerges as a response to threats to their well-being that stem from unequal exposure to harms and hazards (Adeola 2004; Brechin 1999; Brechin and Kempton 1994). The environmental justice literature has long documented the tendency for racial and economically disadvantaged communities to be targeted with polluting and environmentally damaging human activities and industries (Bevc, Marshall, and Picou 2007; Brulle and Pellow 2006; Bullard 1994; Mohai, Pellow, and Roberts 2009; Taylor 2014). Race- and class-based disproportionalities in environmental harms occur in exposure to harmful pollutants (Ard 2015; Boing et al. 2022; Elliott and Smiley 2019); residential location in close proximity to polluting industries (Carpenter and Wagner 2019; Elliott and Smiley 2019; Mohai and Saha 2015); and exposure to environmental and natural disasters (Cutter and Finch 2008; Hallegatte et al. 2020). Another reason offered to explain why low-income peoples, especially in poorer countries, may exhibit environmental concern is that they are more likely to be directly dependent on the environment for sustenance (see Nawrotzki and Pampel 2013). It is clear from the literatures reviewed here that the living conditions of the poor or lower-income populations make it likely that they will be more concerned about the environment or, at minimum, they will not differ from individuals in the upper class on this outcome. What drives environmental concern among lower-income individuals is their not-so-great objective living conditions (Buttel and Flinn 1978).

Thus, while the rich may desire a clean environment, viewing it as a luxury good to be grasped, the poor may exhibit environmental concern due to a desire to reside in healthy environments and unpolluted neighborhoods. Consistent with these counterarguments, research shows that individuals in wealthier countries are not necessarily more concerned about the environment than those in poorer countries (Fairbrother 2013; Summers and VanHeuvelen 2017).

Fairbrother (2013) notes further that growth in affluence over time has no relationship with environmental concern. Driscoll (2019) also reports that sociodemographic variables, including income, are ineffective in explaining environmental concern.

2.1 Empirical Research on Income and Environmental Concern

As noted above, studies have reported generally mixed relationships between income and environmental concern. Several studies find a positive relationship between income and environmental concern (Buttel and Flinn 1974; Franzen and Meyer 2010; Grandin et al. 2022; Li and Chen 2018; Marquart-Pyatt 2008; McEvoy 1972; Meyer and Liebe 2010; Pampel 2014; Roberts and Mangold 2023). Based on a multilevel analysis, Franzen and Meyer (2010), for instance, report that individuals with higher incomes (within countries) express higher environmental concern than their counterparts with lower incomes, and, across countries, concern is higher in wealthier than poorer countries. Marquart-Pyatt (2008) also finds a positive relationship between income and environmental concern in 10 out of 19 industrialized countries analyzed. Roberts and Mangold (2023), in a nuanced study, suggest that income inequality moderates this relationship, limiting the positive effects of income on environmental concern. This is an important observation, given that studies examining how income relates to environmental concern often fail to consider the role other factors likely play in shaping the relationship. Recognizing this potential complexity, we consider whether political ideology, a leading predictor of environmental concern, moderates this relationship.

Overall, this set of studies suggests that people with higher incomes may be more concerned about the environment than lower-income people. In relation to the social class and ecological modernization literature, they suggest a positive relationship between income and environmental concern. As demonstrated below, the literatures covered here are contradicted by

numerous others, raising questions about whether study design influences these divergent findings.

In contrast, several other studies report a negative or null relationship between income and environmental concern (Constantini and Hanf 1972; Driscoll 2019; Fairbrother 2013; Jones and Dunlap 1992; Lo 2014; Qadri et al. 2025; Samdahl and Robertson 1989; Van Liere and Dunlap 1980; Xiao, Dunlap, and Hong 2013). In relation to findings of a null relationship, Driscoll (2019) reports that over the past few decades, income, along with other sociodemographic variables, have not been effective in explaining environmental concern. Years earlier, Samdahl and Robertson (1989), similarly, report from a study of Illinois residents that income does not effectively explain environmental concern. Contrary to the expectations of the social class and ecological modernization theories, Qadri and colleagues (2025), in an analysis of the world values survey, report that higher-income individuals in wealthier countries exhibited less environmental concern than their low-income counterparts. What is particularly interesting is that the studies reviewed here are both older and more recent ones, suggesting that inconsistency in the documented relationship between income and environmental concern is *not* the function of recent changes in environmental attitudes and social contexts. In sum, these findings represent a longstanding rejection of the notion that lower-income people (or the poor) are less concerned about environmental quality than higher-income individuals.

Here it is necessary to comment briefly on the dimensions of income. When researchers investigate and discuss the relationship between income and environmental concern, they tend to focus on absolute income (see Buttel and Flinn 1974; Constantini and Hanf 1972; Driscoll 2019; Franzen and Meyer 2010; Grandin et al. 2022; Lo 2014; Xiao et al. 2013). We had trouble finding sociological studies examining the relationship between the Yitzhaki index, which measures

income-related relative deprivation, and environmental concern. As noted earlier, this index has been employed quite copiously as a predictor of health-related outcomes among individuals (Adjaye-Gbewonyo and Kawachi 2012; Elgar et al. 2016; Kondo et al. 2008; Subramanyam et al. 2009). The lone relevant study we found was conducted in China and focused on how the index is related to subjective views on pollution (Li and Xiao 2021). We did not find literature directly examining the relationship between income proportion and environmental concern.

The literature, overall, provides mixed and unsettled evidence on the relationship between income, almost exclusively absolute income, and environmental concern. Based on the conflicting findings noted above, it seems plausible that the relationship between income and environmental concern is likely more complex than generally perceived. We consider this potential complexity by exploring whether different dimensions (measures) of income exhibit different patterns of connection to environmental concern. We analyze how absolute income, the Yitzhaki index, and proportion aggregate income received are related to environmental concern. While numerous studies have considered this relationship, those examining multiple dimensions of income are rare.[2]

2.2 Political Ideology and Environmental Concern

Part of our objective in this study is to examine how including political ideology, a stable predictor of environmental views, will influence the relationship between income and environmental concern. As noted earlier, conservatives and liberals tend to differ in views related to income and economic inequality (Crawley 2023; Kelly 2009; Pew Research Center 2020). This

[2] Li and Chen (2018) examined how different dimensions of income relate to environmental concern. Their study was based on Chinese respondents. It did not take into consideration how political ideology may influence the relationship between income and environmental concerns. This decision probably makes sense, given that political ideology as it is conceptualized in the West may not be applicable in the Chinese context.

ideological divide prompted us to consider the possibility that political ideology may shape how income is related to environmental concern.

Following Campbell and colleagues (1960), we conceptualize political ideology as the set of stable beliefs that characterize a person's general political worldview or orientation. This conceptualization is grounded in preferences regarding change and stability (Carmines and D'Amico 2015). Empirically, political ideology is often indicated by individuals' political orientation along the liberal-conservative continuum.

Studies show that political ideology is an important predictor of environmental views (Crawley 2023; Driscoll 2019; Dunlap and McCright 2008; Ehret et al. 2017; Elsasser and Dunlap 2013; Judge et al. 2023; McCright et al. 2016; Smith and Mayer 2019). There is near-unanimous consensus among scholars across academic disciplines that conservatives, in contemporary times, are less likely to hold pro-environmental views or support environmental protection measures than liberals (Dunlap and McCright 2008; McCright and Dunlap 2011).

In an extensive review article, McCright and colleagues (2016) identified political orientation, encompassing political ideology and party identification, as the most consistent and longstanding predictor of environmental views. They add that the effects of political ideology (left-right ideological orientation) on environmental views are stronger in the United States than other countries. In a study integrating the ideological-consistency and information-deficit models of environmental concern, Ehret and colleagues (2017) report that while higher levels of education are associated with stronger environmental support among liberals, it is associated with weaker environmental support among conservatives.

Theories offered to explain the influence of political ideology on environmental concern include political partisanship and the elite cues perspectives. The political partisanship

perspective offers three related arguments to explain this important phenomenon: 1) business opposition to environmental reform and protection; 2) environmental reform and protection tending to involve expansion of the regulatory state; and 3) environmental reform generally requiring changes to core social institutions (Dunlap and Gale 1974). On all three explanations, conservatives and liberals generally hold differing views. For instance, conservatives are more likely to side with business opposition to environmental reform and protection, arguing that such policies undermine business operations and profitability. There is evidence that businesses worked with conservative climate change counter-movements and think-tanks to muddle public views on climate change in the United States (Brulle 2014; Dunlap and Jacques 2013; Farrell 2019). The actions of these movements help explain why the U.S. response to climate change has been weak and inconsistent. While the partisanship explanation remains largely plausible, it is also important to note that conservatives have been willing to employ the apparatus of government (i.e., expand government) to regulate or legislate on social issues they have interest in, such as abortion rights, what is taught in K-12 schools and colleges, and gun rights.

The elite cue perspective also addresses the conservatives-liberals divergence on issues pertaining to the environment (Carmichael and Brulle 2017; Guisinger and Saunders 2017; Zaller 1992). It proposes that the divergence is undergirded by messaging from social, political, and economic elites. In a study using data from 74 separate surveys, Carmichael and Brulle (2017) identify messaging and cues from elites as one of the factors influencing the level of public concern about climate change in the United States. They write that "the most important factor influencing public opinion on climate change, however, is the elite partisan battle over the issue" (Carmichael and Brulle 2017:247). Although our study focuses solely on political ideology, we note evidence suggesting that the influence of political identity, a corollary of political ideology

in the United States, is similarly shaped by elite cueing (Coma, Johnson, and Schwadel 2024). However, John Bullock (2011), in an experimental study, raised questions about the elite cues explanation, observing that party elite cues do not often extinguish independent thinking by individuals.

It is clear that political ideology plays an important role in shaping environmental views in the United States, even if explanations about this relationship differ. Seeking to understand why research so far has turned up mixed findings on the relationship between income and environmental concern, we explore whether political ideology (i.e., liberal—conservative political orientation) plays any role.

3.0 Data and Methods

Data for this project come from the U.S. General Social Survey (GSS). The GSS is a nationally representative social survey of non-institutionalized U.S. adults. It is a full-probability survey that involves personal interviews with respondents. Although the survey often includes questions on contemporary or topical issues proposed by researchers across the United States, its primary design entails repeated biennial collection of data on a wide variety of variables. The GSS has collected several cross-sectional waves of data since its inception in 1972, but we only use waves that gathered data on the dependent variables (measures of environmental concern) analyzed in this study. In Section 3.1, we have indicated for each measure of environmental concern which waves of the GSS we used. For each of these measures (described below), we pooled data covering the years they were captured in the GSS to create longitudinal datasets. More

information on the GSS and the data used in this study are available on a website maintained by the National Opinion Research Center, which manages the survey.[3]

3.1 Dependent Variable

The main dependent variable of interest is environmental concern, defined by Dunlap and Jones (2002: 485) as "the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution." In this study, we operationalize environmental concern in three different ways, relying on measures available in the GSS. The first measure, identified as *current spending on the environment*, is based on an item in the survey that asked respondents to indicate whether they think society is spending too much money, too little money, or about the right amount in improving and protecting the environment. Prefacing this item, respondents were made aware that improving and protecting the environment is one of the many problems the country faces. The response options for this measure are: too little (1); about right (2); and too much (3). Reporting that we spend *too little* in improving and protecting the environment will be indicative of greater environmental concern, while selecting that we spend *too much* will indicate less concern for the environment. For this variable, we used data spanning 1993-2021.[4]

The second measure, which we refer to as *future government spending on the environment*, is similar to the first one, except that it focuses on future government spending. Respondents were offered various areas of government spending, including the environment, and asked to "indicate whether you would like to see more or less government spending in each area." Response options of the measure are: spend much more (1); spend more (2); spend same (3); spend less (4); and

[3] https://gss.norc.org/About-The-GSS.
[4] Although this measure has been part of the GSS since 1973, not all the independent variables date back this far. Starting from 1993 offers the best opportunity to utilize all the independent variables.

spend much less (5). As part of this question, respondents were advised that selecting "much more" might mean a tax increase to pay for it. For our analysis, we recoded this measure to: more/much more (1); the same (2); and less/much less (3). Maintaining all five options resulted in insufficient cell cases in the multivariate (ordered logit) models estimated. Preferring more government spending on the environment is indicative of greater environmental concern, while preferring less spending indicates less concern for the environment. Data on this measure are available in the 1996, 2006, and 2016 iteration of the GSS. The third measure, which we refer to as *interest in environmental pollution*, simply asked respondents to indicate whether they had interest in a number of issues, including "environmental pollution." The response options for this measure are: very interested (1); moderately interested (2); and not at all interested (3). Data for this measure are obtained from the 2008 to 2016 biennial waves of the survey.

While environmental concern has been measured in different ways, we offer the caveat that the way the concept is measured may resonate differently with people across time, space, and other contexts. Nevertheless, our measures are consistent with Dunlap and Jones' (2002) definition of environmental concern (see above). For our analysis, we treated each of these measures as ordinal variables (and used ordered logit regression). Given that the availability of these measures does not coincide across survey waves, they are analyzed in separate regression models. We have provided summary statistics for these measures and all other variables (described below) considered in this study in Table 1.

---Table 1 about here---

3.2 Main Independent Variables

As explained earlier, our goal in this study is to examine how several dimensions of income are related to environmental concern, as well as the role that political ideology may play in shaping

these relationships. The income dimensions we consider are: absolute income, the Yitzhaki index, and proportion of income received. *Absolute income* is measured by respondents' inflation-adjusted family income for the prior year. This measure does not consider income received by others in the sample.

The *Yitzhaki index*, the second dimension of income, is characterized "as a function of the cumulative difference between the income of an individual and that of all those with greater incomes within a reference group" (Adjaye-Gbewonyo and Kawachi 2012:132). The index, which taps income inequality or relative deprivation, is rendered mathematically as follows:

$$Yitzhaki\ Index = \frac{1}{N}\sum_i (y_j - y_i)\, I_{ij}\ ; \quad I_{ij}\ is\ given\ as\ 1\ if\ y_i < y_j\ and\ 0\ if\ y_i \geq y_j.$$

Where:

i. $y_i\ is\ respondent\ i's\ income$
ii. $y_j\ is\ the\ income\ of\ respondent\ j\ with\ income\ higher\ than\ respondent\ i's$
iii. N it the number of respondents in respondent i's reference group.

As suggested above, computing the Yitzhaki index requires a reference group to which a respondent may be compared. While there is no agreement on what constitutes the most appropriate reference group, Deaton (2001) argues in favor of relying on geographic proximity (local) or national region in the U.S. context. Other options for reference include grouping based on education, race, and age (Adjaye-Gbewonyo and Kawachi 2012; Kondo et al. 2008; Singer 1990; Subramanyam et al. 2009). For this study, we used generational cohort, a derivative of age, as the reference. The generational cohorts included in the reference are: Generation Z (1997-2012), Millennials (1981-1996), Generation X (1965-1980), and Baby Boomers and Older (1964 and earlier). In evaluating themselves, individuals often consider their generational birth mates as a reference. Scoring high on the index is indicative of higher relative deprivation (relative to others in one's reference group). Recognizing that no reference is perfect, we checked the robustness of

our choice by also estimating and assessing models in which race, region, education, and age grouped differently were used as reference for creating the Yitzhaki index. Across these models, results for the index were similar; the relationship between the index as undergirded by these different reference indicators (race, region, education, and age) follow a similar pattern.

We operationalize *proportion income received*, the third measure, in terms of each respondent's family income share (adjusted for inflation) relative to the sum total of the national income (i.e., sum total of income accruing to all the respondents surveyed in a given year).

Due to very wide ranges in the values of the Yitzhaki index and absolute income, we log-transformed them for the regression analysis. We also log-transformed proportion income for consistency.

The other key independent variable is *political ideology.* It is measured with an item in the GSS that requested respondents to indicate their political views on a 7-point scale that ranges from 1 (extremely liberal) to 7 (extremely conservative). McCright and Dunlap (2011) measured it in the same way (placement on the liberal to conservative continuum), but they used a 5-point scale.

3.3 Statistical Control Variables

We included several sociodemographic variables in our regression models as statistical controls—home ownership, gender, age, race, household size, education, occupational prestige, and size of place (community) where interview took place. This set of variables have long been analyzed as covariates of environmental concern. *Home ownership* is measured with a question that asked respondents to indicate whether they or their family "own your (home/apartment), pay rent, or what," with the response options: own or are buying, pay rent, and other. *Gender* is measured by whether the respondent identifies as female or male (male=1). *Age* is constructed via recoding of each respondent's reported date of birth, and ranges in value from 18 to 89+ years.

Race is measured by a survey item that asked respondents to indicate their race, with several response options offered. For our analysis, we recoded race as a three-category variable: White, Black/African American, and other. *Household size* is a measure of the number of people (adults and children) in a respondent's household. *Education* is constructed from a series of questions in the GSS questionnaire, and ranges in value from 0 (no formal education) to 20 (8 years of college). Occupational prestige is measured by a simple mean value of ratings for each occupation category, which is converted into a scale ranging from 16-80 for the cases used in this study. The occupational categories used are based on the 2010 Census occupation classification. *Size of place* is a measure of the actual population size of the location where the respondent was interviewed to the nearest 1,000 people. It taps the urban (metro) or rural (nonmetro) character of the place.

3.4 Model Estimation

As described above, each of our outcome (dependent) variables is operationalized at the ordinal level, which prompted us to initially consider ordered logit regression. However, diagnostic tests of the resulting models indicated substantial violations of the proportional odds (parallel lines) assumption of ordered logit: to use this method, there is the requirement that the effect of an independent variable on the dependent variable (log-odds) must be the same for all categories of the latter (dependent) variable. The Stata *oparallel* command returned strong statistically significant test results ($p<0.001$) for each of the models we fitted for all five reported tests (Brant, Wolfe-Gould, Score, likelihood-ratio, and Wald). Thus, we opted for generalized ordered logit models (GOLOGIT). Although GOLOGIT provided a better fit by relaxing the proportional odds assumption, it is slightly less parsimonious. A major issue to check before proceeding with GOLOGIT modeling is that the procedure sometimes produces negative predicted probabilities (Williams 2016). We verified that our final models do not return negative predicted probabilities.

Prior to estimating the final models, we also conducted other diagnostic tests, including checks for homoscedasticity, multicollinearity, and linearity of relationships. Each of the models fails to meet the homoscedasticity assumptions, compelling us to estimate them with robust standard errors with probability weighting.[5] As part of our goal is to investigate why the relationship between income and environmental concern has been inconsistent, we examined potential nonlinearity in the relationship. We found that the relationships between the Yitzhaki index and two of our measures of environmental concern are nonlinear, prompting us to include quadratic terms for the index in those models. Finally, given that respondents answering the surveys used are nested in multiple years, we estimated our model with year-fixed effect (i.e., year dummy variables included in the models). Coefficients for these dummy variables are excluded from the results reported to keep them short. All the models presented in this article are based on weighted analyses, which returned robust standard errors. We used the person-level post-stratification weight variable available in the GSS data. This weight variable addresses the complex design of the GSS.

4. Results

Results of the set of models estimated are reported in Tables 2-4. In the first three models (Models 1-3) of each table, we show the relationship between one dimension of income and the measures of environmental concern when holding constant the influences of the control variables only. In the fourth model of each table, all three dimensions of income, along with the control variables, are modeled together (instead of separately). We note that inclusion of all our measures of income in the model has not generated disturbing variance inflation (collinearity). In the fifth model reported in each table, all the regressors (independent variables) are modeled. The fifth

[5] For the homoscedasticity assumption, we relied on the Breusch–Pagan/Cook–Weisberg test for heteroskedasticity.

models also include statistical interactions between political ideology and our measures of income to assess the extent to which the former variable moderates the relationships between the latter set of variables and environmental concern. We now present the results, starting with the first outcome variable.

4.1 Current Spending to Improve and Protect the Environment

In terms of the first three models where each income dimension is modeled separately, along with the statistical control variables, we find no significant relationship between any of the dimensions of income and views about the adequacy of current level of spending to improve and protect the environment (Models 1-3, Table 2). These initial findings are consistent with studies suggesting that income has no effects on environmental views (Driscoll 2019; Van Liere and Dunlap 1980). What happens when we model all the income dimensions together (instead of separately) and subsequently include the political ideology measure?

---Table 2 about here---

The results change in some interesting ways. We find significant relationships between two of the income dimensions—absolute income and the Yitzhaki index—and views on the adequacy of current spending on the environment. The data show that respondents with higher absolute incomes are more likely to express that we are spending too little to improve and protect the environment (Table 2, Model 4). Such respondents are less likely to say that we are spending about right amount or too much. In relation to absolute income, this finding suggests greater concern for the environment among higher-income individuals, which provides some support for the social class and ecological modernization theories. Will this pattern of relationship hold once we introduce and consider the potential impacts of political ideology? As shown below, the pattern changes quite markedly.

The results show a U-shaped relationship between the Yitzhaki index and the likelihood of selecting that we are spending too little to improve and protect the environment: predicted probabilities of saying that we are spending *too little* start quite high but gradually drop as values of the Yitzhaki index increase until a threshold is reached when they start to rise again (Figure 1, blue curve). These results suggest that respondents at both the higher and lower ends of the Yitzhaki index (i.e., more or less relatively deprived) are more likely to express greater environmental concern. As we explained in the methods section, expressing that we are not spending enough to improve and protect the environment is indicative of environmental concern. In terms of whether we are spending *about right* or *too much*, the pattern flips somewhat: predicted probabilities of selecting either of these options start quite low, but gradually increase as values of the Yitzhaki index increase until a threshold is reached when the trajectory turns downward (Figure 1, red and green curves). More and less deprived respondents are less likely to hold the view that we are spending about the right amount or too much to improve and protect the environment. The pattern described here remains unchanged even after political ideology is added to the model. These results offer mixed support for the contrasting theories highlighted earlier in the study (Model 5).

---Figure 1---

In Model 5 (Table 2), we find evidence that political ideology moderates the relationship between each dimension of income and environmental concern, and in really interesting ways (Figures 2A, 2B, and 2C). In terms of absolute income, the analysis shows that people identifying as liberals are more likely to say that we are spending *too little* to improve and protect the environment than those identifying as conservatives (Figure 2A, blue curve). On the flip side, people identifying as liberals are less likely to say that we are spending *about the right* amount or

too much to improve and protect the environment than those identifying as conservatives (Figure 2A, red and green curves). Overall, the data show that higher-income liberals, in terms of absolute income, are more environmentally concerned than their conservative counterparts.

---Figure 2 about here---

The story changes quite markedly once we switch to the Yitzhaki and the proportion income measures. In terms of the Yitzhaki index, the data show that relatively more deprived liberals are less likely to say that we are spending *too little* to improve and protect the environment than relatively more deprived conservatives (Figure 2B, blue curve). Relatively deprived liberals are also slightly more likely to say that we are spending too much (Figure 2B, green curve). Very liberal and conservative respondents seem to agree at about the same level that we are spending about the right amount (Figure 2B, red curve). The pattern for proportion income is similar to the Yitzhaki index (Figure 2C). Liberals receiving higher proportions of aggregate income are, for instance, less likely to say that we are spending too little to improve and protect the environment (Figure 2C, blue curve) and slightly more likely to say that we are spending too much (Figure 2C, green curve). In terms of this outcome variable, the evidence suggests the way political ideology moderates the relationship between income and environmental concern depends on whether we are considering absolute or relative income. The Yitzhaki index and proportion income are relative measures of income.

4.2 Future Government Spending on the Environment

In the first three models of this outcome variable where each income dimension is modeled separately, along with the statistical control variables, only absolute income is found to be significantly related to environmental concern (Table 3, Models 1-3). Higher absolute income is associated with a higher likelihood of a respondent opting for us to maintain the current level of

spending (spend the same) on the environment than spending less/much less (b=0.17). In Model 4, where all the income dimensions are included, along with the statistical controls, none of the income measures is significantly related to environmental concern. However, once we introduce political ideology into the model, along with its statistical interactions with each of the income measures, the results, once again, change. We now find that absolute income is significantly related to environmental concern, but the relationship is moderated by political ideology (Table 3, Model 5; Figure 3). As shown in Figure 3, individuals identifying as liberals are slightly less likely to say that we should spend less/much less to improve and protect the environment (Figure 3, blue curve) and substantially more likely to say that we should spend more/much more (Figure 3, green curve) than those identifying as conservative. Liberals are also substantially less likely to say that we should spend the same (Figure 3, red curve). In a nutshell, the results here suggest higher-income individuals (in absolute terms) who identify as liberals express greater environmental concern than their conservative counterparts.

---Table 3 about here---

---Figure 3 about here---

4.3 Interest in Environmental Pollution

The final set of models focus on respondents' interest in environmental pollution. In the first three models of this outcome variable (Table 4, Models 1-3), only absolute income is significantly related to environmental concern. Higher-income respondents (in absolute terms) are less likely to say that they are very interested in environmental pollution. Absolute income remains negatively related to interest in environmental pollution in Model 4 where all the income dimensions, along with the statistical controls, are included. This clearly contradict the expectation of positive relationship between income and environmental concern from the social class and

ecological modernization perspectives. The question is whether this trend will persist once political ideology, along with its statistical interactions with the income dimensions, are included in the model.

---Table 4 about here---

Once political ideology is introduced into the model, the influence of absolute income switches from being significant to non-significant. However, the relationship between the Yitzhaki index and the outcome variable becomes significant in two important ways (Table 4, Figures 4 and 5). First, the results show a U-shaped relationship between the Yitzhaki index and the likelihood of a respondent expressing strong interest in environmental pollution (Figure 4, green curve). This curve shows greater interest in environmental pollution among the most and least relatively deprived respondents. As shown in Figure 4, the least and most relatively deprived respondents are also less likely to say they are *not at all* or are only *moderately* interested in environmental pollution. Overall, the results here suggest individuals who are the least or most deprived relative to others in their generational reference groups are more likely to express environmental concern (as measured by interest in environmental pollution).

Second, we find further that the relationship between the Yitzhaki index and interest in environmental pollution is moderated by political ideology. In terms of the highest level of interest—very interested—the marginal effects of the index remain nearly stable across the liberal through conservative political ideological continuum (Figure 5, green curve). Respondents identifying as liberals are, however, slightly less likely to say that they are *moderately interested* in environmental pollution than those identifying as conservatives (red curve) and more likely to say they are *not at all interested* in environmental pollution (blue curve). In essence, the results

here suggest that relatively deprived liberals are less likely to be environmentally concerned (as measured by interest in environmental pollution) than relatively deprived conservatives.

---Figure 4 about here---

---Figure 5 about here---

5. Conclusions

Income is one of the sociodemographic variables that has received substantial attention in efforts to understand the determinants of environmental views. These efforts have, over the years, produced mixed findings, which necessitates continuing efforts to understand them. We contribute to this endeavor by examining whether different dimensions of income—absolute income, the Yitzhaki index, and proportion of aggregate income received— will result in distinct patterns of association with environmental concern. In further efforts to understand the documented inconsistent findings, we explored the extent to which political ideology moderates this relationship.

We find evidence that different dimensions of income relate to environmental concern in distinct patterns. In relation to two of our outcome variables for instance (i.e., the current spending and interest in environmental pollution models), the Yitzhaki index is found to maintain a curvilinear relationship in both models when all independent variables are included, while absolute income is significant in only one of these models, and only when its interaction with political ideology is included. Also, proportion income received is significant in only one model (i.e., the current spending on the environment model), and this relationship emerges only when its interaction with political ideology is included.

A key take-away from this study is that political ideology moderates the relationships between the dimensions of income we analyzed and environmental concern. These relationships

follow two patterns. In terms of absolute income, our first dimension, we find that people identifying as liberals are more likely to express greater environmental concern, as measured by their views on whether we are spending enough to improve and protect the environment, than those identifying as conservatives. They are more likely to say that we are spending too little on the environment and less likely to say we are spending too much. Higher-income individuals (measured in absolute terms) who identify as liberals are more likely to support much more spending to improve and protect the environment than their conservative counterparts. In terms of the Yitzhaki index, the influence of political ideology switches somewhat. Relatively more deprived liberals are found to express less environmental concern as measured by their views on whether we spend too little, about right, or too much on the environment than deprived conservatives. They are also less likely to express greater interest in environmental pollution. Further, we find that liberals receiving higher proportions of aggregate income express less concern for the environment as measured by views on whether we are spending too much, about right, or too little on the environment. In sum, when we consider absolute income, higher-income liberals express greater environmental concern, whereas when we think about income in relative terms, conservatives express greater environmental concern. To make this point clear, we note that both the Yitzhaki index and proportion income are relative measures of income.

There is ample evidence in this study that political ideology shapes the relationship between income (measured in different ways) and environmental concern (measured in different ways). Income difference, by itself, does not appear to be a very important and consistent predictor of environmental concern. Several literatures, including studies in environmental justice, raise objections about exclusively class-based explanations of environmental concern.

Another important take-away from this study is that relative deprivation does not automatically lead to less concern for the environment. Our study shows that individuals who are the most and least deprived relative to others within their respective reference groups show greater concern for the environment as measured by their views on whether we are spending enough to improve and protect the environment and level of interest in environmental pollution. Respondents sitting toward the left and right ends of the Yitzhaki index think we are not spending enough to improve and protect environments. Such respondents are also more likely to say that they are very interested in environmental pollution. These findings provide mixed and partial support for the social class and ecological modernization perspectives on environmental concern. These perspectives expect higher-income or materially less deprived people to show greater environmental concern (Albrecht and Mauss 1975; Hajer 1997; Mol 1995). But our findings also partially contradict these perspectives, which also suggest that deprived people are less likely to be concerned about environmental issues (Albrecht and Mauss 1975; Althoff and Greig 1977; Morrison et al. 1972). Our findings show clearly that materially deprived people relative to others remain environmentally concerned, which is consistent with views from another large corpus of studies, including the environmental justice literatures (Adeola 2004; Brechin 1999; Brechin and Kempton 1994; Dunlap and York 2008; Nawrotzki 2012). Environmental justice scholars argue that environmental concern among economically disadvantaged communities often emerges as a response to threats to their well-being that stem from unequal exposure to environmental harms and hazards (Adeola 2004; Brechin 1999; Brechin and Kempton 1994).

There are some limitations to our study. First, our analysis, for practical reasons, excludes other dimensions of income, such as the Kakwani and Espisoto measures of relative deprivation. Including all these indices would render our study unwieldy. We recommend that future studies

should consider these measures. Finally, our approach may not be applicable in social contexts where political ideology is not a clear and persistent marker of social and political differentiation.

To conclude, we note several key takeaways from this study. First, different dimensions of income have distinct patterns of association with environmental concern. This probably explains why research so far has offered mixed findings on the relationship between income and environmental concern. Second, the relationship between income and environmental concern is moderated by political ideology, a stable predictor of environmental concern and other environment-related outcomes. In essence, income and political ideology are important determinants of environmental concern, a factor that is vital to public and private decisions related to sustainability.

Data Availability: The data underlying our study are publicly and freely available online at a website maintained by the National Opinion Research Center: https://gss.norc.org/About-The-GSS. We will make available the specific data files we prepared and used in this study upon request.

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Table 1. Summary Statistics of Variables Included in the Study

	Mean/ Proportion	Std. Dev.
Dependent Variable		
Current spending on the environment		
Too little	0.64	0.00
About right	0.27	0.00
Too much	0.09	0.00
Future gov. spending on the environment		
Spend much more/more	0.50	0.01
Spend the same	0.36	0.01
Spend much less/less	0.14	0.01
Interest in environmental pollution		
Very interested	0.45	0.01
Moderately interested	0.45	0.01
Not at all interested	0.10	0.01
Independent Variables		
Absolute income (U.S. dollars)	45872.47	37494.41
Yitzhaki index	19912.12	1244.71
Relative income (%)	0.05	0.04
Political ideology	4.11	1.40
Statistical control variables		
Home ownership, own		
Own	0.48	0.00
Rent	0.21	0.00
Other arrangement	0.01	0.00
Did not answer	0.40	0.00
Male	0.43	-
Age	46.43	17.35
Race: White	0.79	0.00
Race: Black/African American	0.14	0.00
Race: Other	0.06	0.00
No. of persons in household	2.51	1.41
Education, years of schooling	13.24	2.30
Occupational prestige	43.29	13.03
Size of place (community) of interview	369.83	1245.89

Note: Some proportion may not sum up to 1 due to rounding.

Table 2: Generalized Ordered Logistic Regression of Environmental Concern—Current Spending to Improve and Protect the Environment—on Income Dimensions, Political Ideology, and Other Covariates[a]

	Model 1 b (S.E.)	Model 2 b (S.E.)	Model 3 b (S.E.)	Model 4 b (S.E.)	Model 5 b (S.E.)
Cat 1: Spending too little[b]					
Log absolute income	0.01 (0.02)			-0.09 (0.04)*	-0.75 (0.10)***
Log Yitzhaki index		-0.01 (0.01)		0.86 (0.34)*	1.65 (0.42)***
Yitzhaki index^2				-0.06 (0.02)**	-0.07 (0.02)**
Log proportion income			0.63 (0.67)	-1.54 (1.52)	18.50 (3.61)***
Political Ideology					0.40 (0.54)
Pol ideol*absol. income					0.16 (0.02)***
Pol ideol*Yitzhaki ind					-0.14 (0.04)***
Pol ideol*prop income					-4.66 (0.76)***
Statistical Controls					
Rent home (own=ref.)[c]	-0.19 (0.06)**	-0.15 (0.06)**	-0.17 (0.06)**	-0.19 (0.06)**	-0.10 (0.06)
Home, other (own=ref.)[c]	-0.04 (0.17)	-0.05 (0.16)	-0.04 (0.17)	-0.04 (0.17)	-0.05 (0.18)
Education, logged	-0.45 (0.10)***	-0.40 (0.09)***	-0.45 (0.10)***	-0.47 (0.10)***	-0.34 (0.10)***
Occup. prestige, logged	0.00 (0.07)	0.00 (0.07)	-0.01 (0.07)	-0.02 (0.07)	-0.01 (0.08)
Male	0.21 (0.04)***	0.19 (0.04)***	0.21 (0.04)***	0.20 (0.04)***	0.16 (0.04)***
Age	0.92 (0.06)***	0.93 (0.06)***	0.92 (0.06)***	1.01 (0.07)***	0.96 (0.07)***
Black (ref.=White)	-0.17 (0.06)**	-0.18 (0.06)**	-0.16 (0.06)**	-0.17 (0.06)**	-0.08 (0.07)
Other (ref.=White)	0.05 (0.08)	0.08 (0.08)	0.07 (0.08)	0.04 (0.08)	0.11 (0.09)
Household size, logged	0.22 (0.06)***	0.20 (0.06)***	0.21 (0.06)***	0.21 (0.06)***	0.16 (0.07)*
Size of place, logged	-0.04 (0.01)***	-0.05 (0.01)***	-0.04 (0.01)***	-0.04 (0.01)***	-0.03 (0.01)**
Cat 2: Spending about right[b]					
Log absolute income	0.02 (0.04)			-0.10 (0.07)	-0.75 (0.19)***
Log Yitzhaki index,		-0.02 (0.01)*		1.05 (0.67)	2.17 (0.73)**
Yitzhaki index^2				-0.07 (0.04)	-0.07 (0.04)
Log relative income			1.12 (1.19)	-0.36 (2.42)	29.47 (7.09)***
Political Ideology					1.48 (0.97)
Pol ideol*absol. income					0.14 (0.04)***
Pol ideol*Yitzhaki ind					-0.21 (0.07)**
Pol ideol*prop income					-6.00 (1.32)***
Statistical Controls					
Rent home (own=ref.)[c]	-0.35 (0.11)**	-0.39 (0.10)***	-0.34 (0.11)**	-0.34 (0.11)**	-0.22 (0.12)
Home, other (own=ref.)[c]	0.12 (0.28)	0.10 (0.27)	0.12 (0.28)	0.12 (0.28)	0.23 (0.28)
Education, logged	-0.21 (0.15)	-0.27 (0.13)*	-0.22 (0.15)	-0.23 (0.15)	-0.21 (0.15)
Occup. prestige, logged	-0.04 (0.11)	-0.04 (0.11)	-0.06 (0.11)	-0.07 (0.11)	-0.06 (0.12)
Male	0.42 (0.07)***	0.45 (0.06)***	0.42 (0.07)***	0.41 (0.07)***	0.34 (0.07)***
Age	1.05 (0.10)***	1.06 (0.09)***	1.05 (0.10)***	1.13 (0.11)***	1.01 (0.12)***
Black (ref.=White)	-0.52 (0.13)***	-0.55 (0.12)***	-0.53 (0.13)***	-0.52 (0.13)***	-0.46 (0.15)**
Other (ref.=White)	-0.37 (0.14)**	-0.31 (0.13)*	-0.38 (0.13)**	-0.38 (0.14)**	-0.31 (0.15)*
Household size, logged	0.16 (0.11)	0.19 (0.09)*	0.16 (0.10)	0.16 (0.11)	0.12 (0.11)
Size of place, logged	-0.04 (0.02)*	-0.03 (0.02)	-0.04 (0.02)*	-0.04 (0.02)*	-0.03 (0.02)
N	**17546**	**19461**	**17720**	**17546**	**15927**
Number of years pooled	**15**	**15**	**15**	**15**	**15**

Standard errors (robust) in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[a] Year of survey dummy variables (year fixed effects) were included in the estimation, but are excluded from this table to keep it relatively contained and focused on the variables of interest and statistical controls.

[b] The excluded category of the outcome variable is spending *too much*

[c] A large proportion of respondents did not answer this question. They were recoded into a fourth category and included in our regression models as dummies so as to not lose too many cases. We are, however, not reporting regression coefficients for this category.

Table 3: Generalized Ordered Logistic Regression of Environmental Concern—Future Government Spending to Fix Environmental Pollution—on Income Dimensions, Political Ideology, and Other Covariates, 1996-2016[a]

	Model 1 b (S.E.)	**Model 2 b (S.E.)**	**Model 3 b (S.E.)**	**Model 4 b (S.E.)**	**Model 5 b (S.E.)**
Cat 1: Spend less/much less[b]					
Log absolute income	0.17 (0.06)*			0.16 (0.09)	0.51 (0.22)*
Log Yitzhaki index		0.00 (0.02)		-0.04 (0.14)	-0.14 (0.15)
Log proportion income			4.88 (2.83)	-0.70 (5.78)	-2.69 (6.40)
Political Ideology					0.28 (0.45)
Pol ideol*absol. income					-0.08 (0.04)
Pol ideol*Yitzhaki ind[c]					NS, Excluded
Pol ideol*prop income[c]					NS, Excluded
Statistical Controls					
Rent home (own=ref.)[d]	0.34 (0.20)	0.24 (0.18)	0.32 (0.20)	0.34 (0.20)	0.33 (0.21)
Home, other (own=ref.)[d]	-0.15 (0.54)	-0.21 (0.52)	-0.24 (0.54)	-0.16 (0.54)	-0.42 (0.51)
Education, logged	0.37 (0.26)	0.37 (0.22)	0.40 (0.26)	0.36 (0.26)	0.27 (0.27)
Occup. prestige, logged	-0.02 (0.22)	0.11 (0.20)	-0.00 (0.22)	-0.03 (0.22)	-0.09 (0.24)
Male	-0.13 (0.12)	-0.06 (0.11)	-0.13 (0.12)	-0.13 (0.12)	-0.09 (0.12)
Age	-1.55 (0.20)***	-1.59 (0.19)***	-1.53 (0.20)***	-1.54 (0.20)***	-1.54 (0.23)***
Black (ref.=White)	-0.20 (0.18)	-0.28 (0.17)	-0.21 (0.18)	-0.19 (0.18)	-2.60 (0.63)***
Other (ref.=White)	-0.14 (0.23)	-0.14 (0.21)	-0.16 (0.23)	-0.14 (0.23)	-2.84 (0.86)***
Black*political ideology	NS, Excluded	NS, Excluded	NS, Excluded	NS, Excluded	0.52 (0.14)***
Other*political ideology	NS, Excluded	NS, Excluded	NS, Excluded	NS, Excluded	0.59 (0.20)**
Household size, logged	-0.51 (0.21)*	-0.41(0.19)*	-0.47 (0.21)*	-0.51 (0.21)*	-0.37 (0.20)
Size of place, logged	0.04 (0.03)	0.05 (0.03)	0.04 (0.04)	0.04 (0.03)	0.04 (0.04)
Cat 2: Spend same[b]					
Log absolute income	-0.05 (0.05)			-0.03 (0.08)	0.49 (0.15)***
Log Yitzhaki index,		-0.01 (0.01)		0.14 (0.09)	0.05 (0.09)
Log relative income			-1.71 (1.83)	3.30 (4.02)	1.59 (4.24)
Political Ideology					0.79 (0.32)*
Pol ideol*absol. income					-0.13 (0.03)***
Pol ideol*Yitzhaki ind[c]					NS, Excluded
Pol ideol*prop income[c]					NS, Excluded
Statistical Controls					
Rent home (own=ref.)[d]	0.30 (0.13)*	0.28 (0.12)*	0.29 (0.13)*	0.32 (0.13)*	0.26 (0.14)
Home, other (own=ref.)[d]	0.39 (0.40)	0.40 (0.38)	0.39 (0.40)	0.40 (0.40)	-0.09 (0.47)
Education, logged	0.98 (0.21)***	0.78 (0.18)***	0.99 (0.21)***	1.00 (0.21)***	0.90 (0.22)***
Occup. prestige, logged	-0.06 (0.15)	-0.06 (0.14)	-0.06 (0.15)	-0.06 (0.15)	-0.16 (0.16)
Male	0.03 (0.08)	0.08 (0.08)	0.03 (0.08)	0.04 (0.08)	0.12 (0.09)
Age	-0.61 (0.12)***	-0.73 (0.12)***	-0.61 (0.12)***	-0.6 5(0.13)***	-0.64 (0.14)***
Black (ref.=White)	0.01 (0.12)	0.07 (0.12)	0.01 (0.12)	0.01 (0.12)	-1.94 (0.39)***
Other (ref.=White)	-0.20 (0.16)	-0.15 (0.15)	-0.20 (0.16)	-0.21 (0.16)	-2.02 (0.50)***
Black*political ideology					0.47 (0.09)***
Other*political ideology					0.42 (0.12)***
Household size, logged	-0.18 (0.13)	-0.24 (0.12)*	-0.18 (0.13)	-0.18 (0.13)	-0.17 (0.13)
Size of place, logged	0.05 *	0.05 (0.02)*	0.05 (0.02)*	0.05 (0.02)*	0.03 (0.02)
N	**3513**	**3913**	**3513**	**3513**	**3398**
Number of years pooled	**3**	**3**	**3**	**3**	**3**

Standard errors (robust) in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[a] Year of survey dummy variables (year fixed effects) were included in the estimation, but are excluded from this table to keep it relatively contained and focused on the variables of interest and statistical controls.

[b] The excluded category of the outcome variable is *spend more/much more*

[c] NS=not significant

[d] A large proportion of respondents did not answer this question. They were recoded into a fourth category and included in our regression models as dummies so as to not lose too many cases. We are not reporting regression coefficients for this category.

Table 4: Generalized Ordered Logistic Regression of Environmental Concern—Level of Interest in Environmental Issues—on Income Dimensions, Political Ideology, and Other Covariates, 2010-2018[a]

	Model 1 b (S.E.)	**Model 2** b (S.E.)	**Model 3** b (S.E.)	**Model 4** b (S.E.)	**Model 5** b (S.E.)
Cat 1: Not at all interested[b]					
Log absolute income	0.05 (0.06)			0.03 (0.08)	0.08 (0.09)
Log Yitzhaki index		0.02 (0.01)		0.12 (0.19)	-2.33 (0.96)*
Yitzhaki index^2				NS, Excluded	0.11 (0.06)
Log proportion income			1.09 (2.03)	3.00 (5.74)	10.01 (8.16)
Political Ideology					-1.89 (0.62)**
Pol ideol*absol. Income[c]					NS, Excluded
Pol ideol*Yitzhaki ind					0.15 (0.06)*
Pol ideol*prop income[c]					NS, Excluded
Statistical Controls					
Rent home (own=ref.)[d]	-0.01 (0.13)	-0.05 (0.13)	-0.02 (0.13)	-0.01 (0.13)	-0.13 (0.14)
Home, other (own=ref.)[d]	0.41 (0.48)	-0.14 (0.39)	0.40 (0.48)	0.40 (0.48)	0.21 (0.48)
Education, logged	0.85 (0.23)***	0.88 (0.18)***	0.85 (0.23)***	0.85 (0.24)***	0.89 (0.25)***
Occup. prestige, logged	0.24 (0.20)	0.36 (0.17)*	0.26 (0.20)	0.23 (0.20)	0.31 (0.20)
Male	-0.15 (0.11)	-0.11(0.10)	-0.14 (0.11)	-0.15 (0.11)	-0.11 (0.11)
Age	0.38 (0.15)*	0.15 (0.14)	0.38 (0.15)*	0.35 (0.16)*	0.32 (0.21)
Black (ref.=White)	-0.13 (0.15)	-0.21 (0.13)	-0.15 (0.14)	-0.13 (0.15)	-0.25 (0.15)
Other (ref.=White)	0.13 (0.19)	0.05 (0.17)	0.13 (0.19)	0.14 (0.19)	0.04 (0.20)
Household size, logged	0.16 (0.16)	0.11 (0.14)	0.18 (0.16)	0.16 (0.16)	0.15 (0.17)
Size of place, logged	0.04 (0.03)	0.00 (0.03)	0.04 (0.03)	0.04 (0.03)	0.02 (0.03)
Cat 2: Mod. Interested[b]					
Log absolute income	-0.11 (0.04)**			-0.13 (0.06)*	-0.05 (0.07)
Log Yitzhaki index,		0.01 (0.01)		-0.07 (0.11)	-1.96 (0.61)**
Yitzhaki index^2		NS, Excluded		NS, Excluded	0.12 (0.04)**
Log relative income			-1.41 (0.97)	-0.63 (3.33)	8.97 (4.64)
Political Ideology					-0.62 (0.24)*
Pol ideol*absol. income[c]					NS, Excluded
Pol ideol*Yitzhaki ind					0.03 (0.02)
Pol ideol*prop income[c]					NS, Excluded
Statistical Controls					
Rent home (own=ref.)[d]	0.06 (0.09)	0.11 (0.08)	0.09 (0.09)	0.06 (0.09)	-0.04 (0.09)
Home, other (own=ref.)[d]	0.23 (0.30)	0.26 (0.28)	0.27 (0.30)	0.23 (0.30)	-0.15 (0.30)
Education, logged	0.58 (0.17)***	0.41 (0.13)**	0.53 (0.17)**	0.57 (0.17)***	0.46 (0.16)**
Occup. prestige, logged	-0.03 (0.12)	-0.03 (0.11)	-0.06 (0.12)	-0.04 (0.12)	0.00 (0.12)
Male	0.04 (0.06)	0.01 (0.06)	0.03 (0.06)	0.03 (0.06)	0.06 (0.07)
Age	0.31 (0.10)**	0.24 (0.09)**	0.30 (0.10)**	0.33 (0.10)**	0.21 (0.14)
Black (ref.=White)	0.07 (0.09)	0.18 (0.09)*	0.09 (0.09)	0.07 (0.09)	-0.00 (0.10)
Other (ref.=White)	0.25 (0.11)*	0.23 (0.10)*	0.25 (0.11)*	0.25 (0.11)*	0.17 (0.12)
Household size, logged	-0.12 (0.09)	-0.19 (0.09)*	-0.15 (0.09)	-0.13 (0.09)	-0.11 (0.10)
Size of place, logged	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.02 (0.02)
N	**6021**	**6661**	**6021**	**6021**	**5847**
Number of years pooled	**6**	**6**	**6**	**6**	**6**

Standard errors (robust) in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[a] Year of survey dummy variables (year fixed effects) were included in the estimation, but are excluded from this table to keep it relatively contained and focused on the variables of interest and statistical controls.

[b] The excluded category of the outcome variable is *very interested*

[c] NS=Not significant

[d] A large proportion of respondents did not answer this question. They were recoded into a fourth category and included in our regression models as dummies so as to not lose too many cases. We are, however, not reporting regression coefficients for this category.

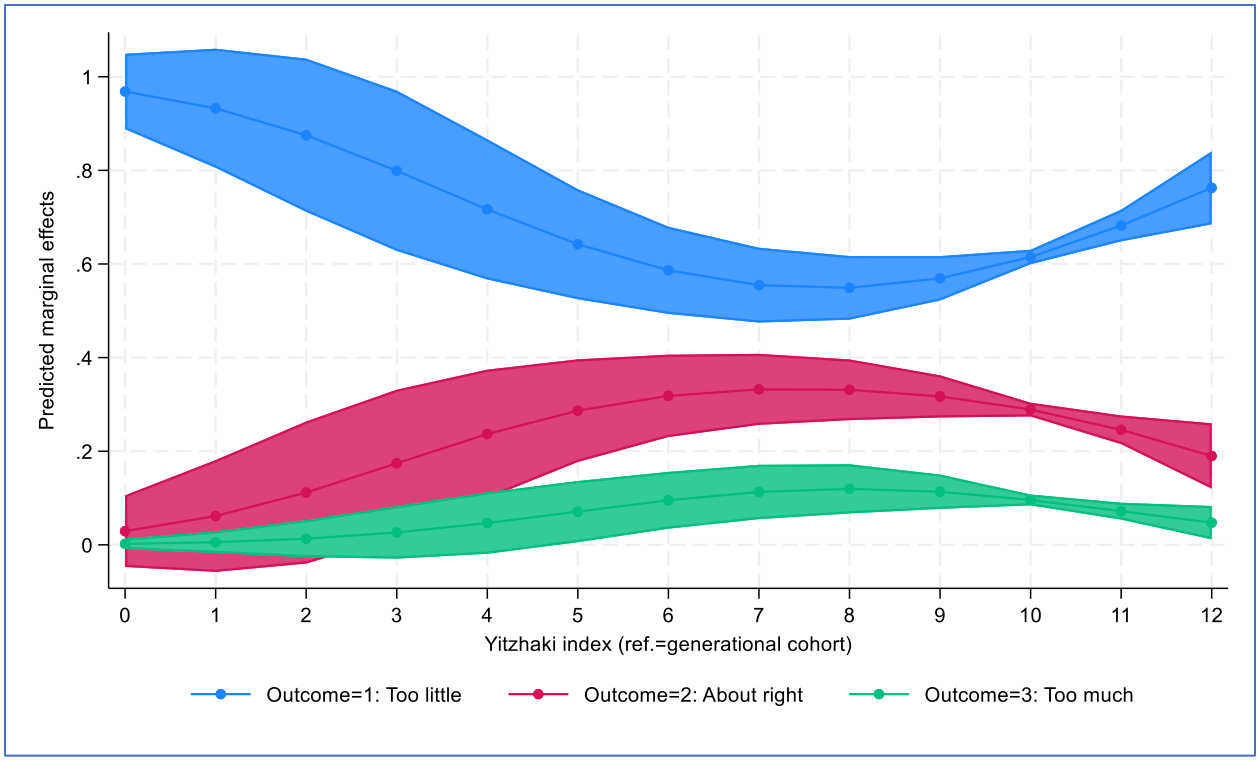


Figure 1: Quadratic relationship between Yitzhaki index and views about whether we are spending *too little, about right, or too much* to improve and protect the environment.

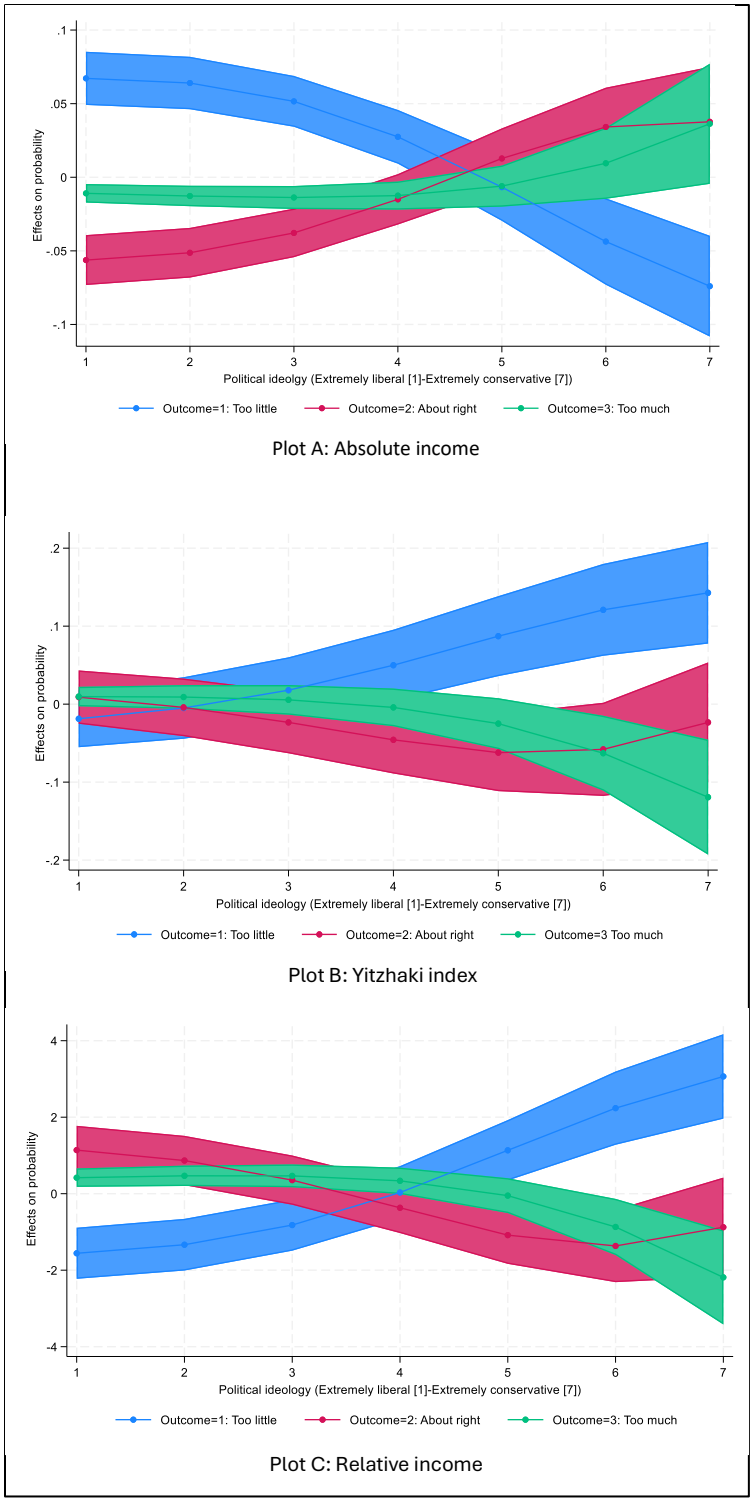


Figure 2: Marginal effects of absolute income (Plot A), Yitzhaki index (Plot B), and Relative Income (Plot C) on whether we are spending *too little, about right, or too much* to improve and protect the environment (by political ideology).

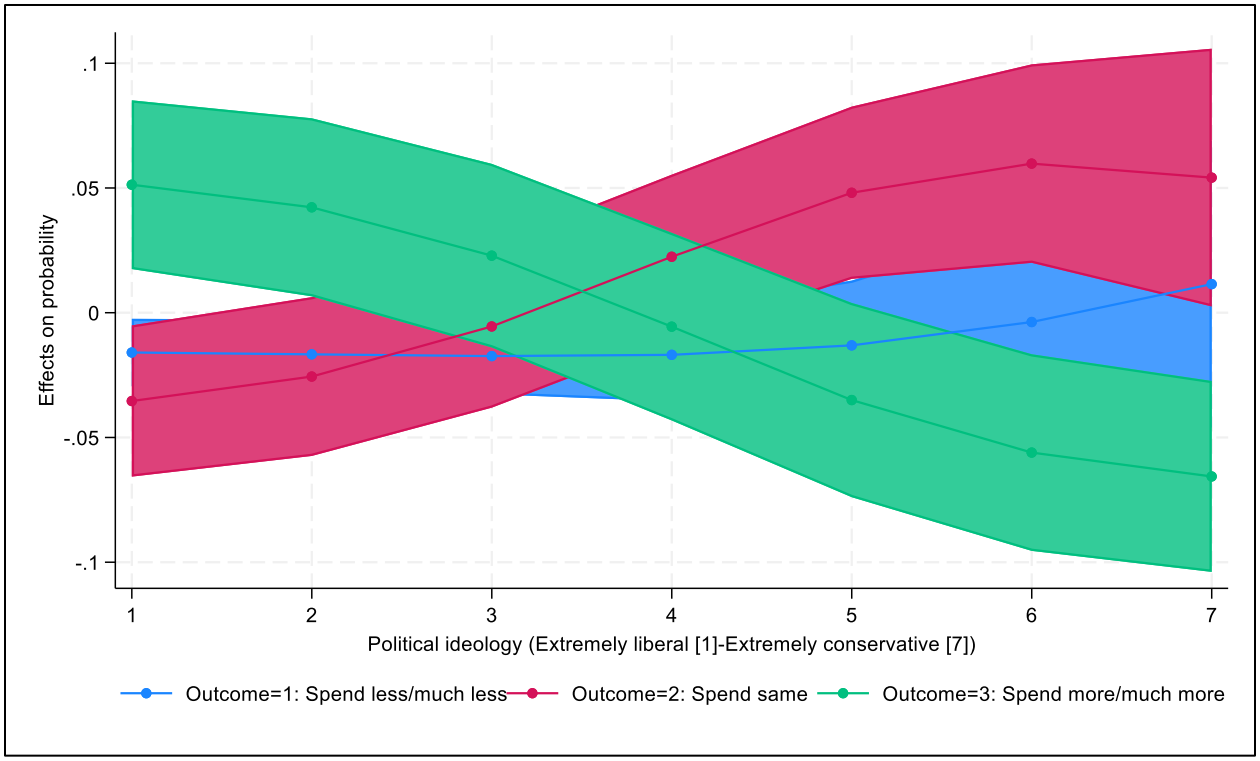


Figure 3: Marginal effects of absolute income on whether we are should spend *less/much less, the same, or more/much more* to improve and protect the environment (by political ideology).

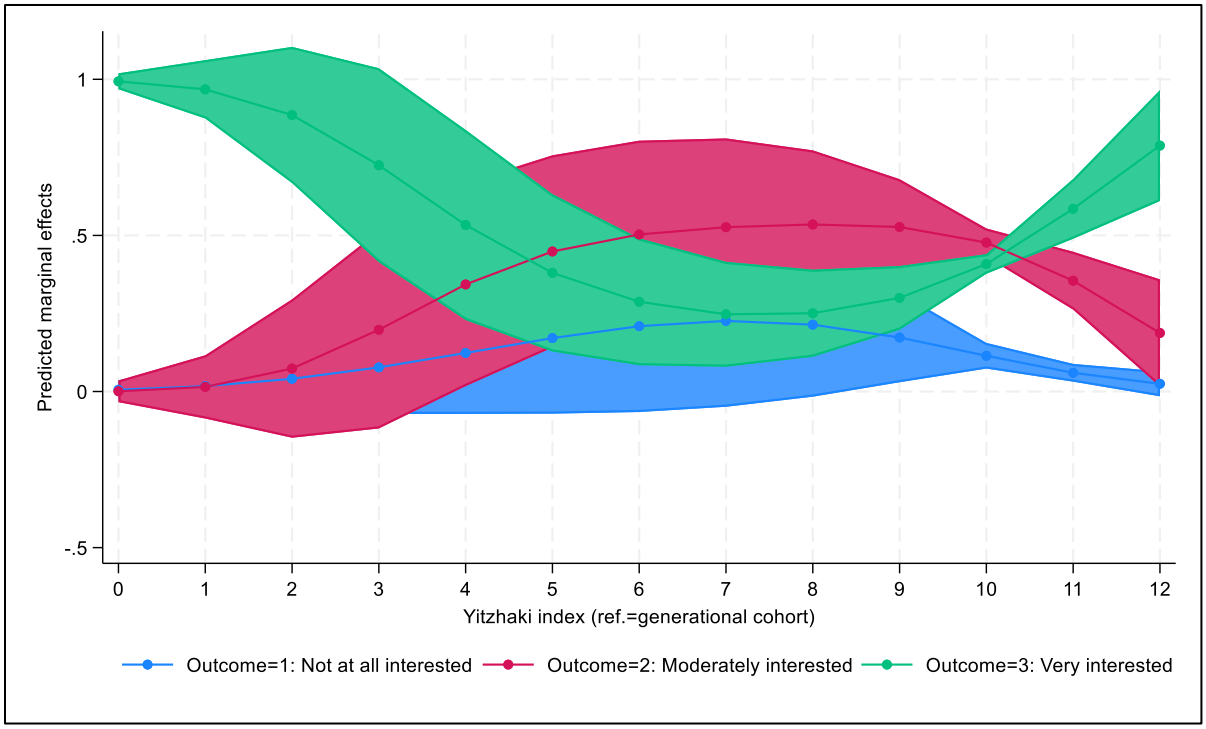


Figure 4: Quadratic relationship between Yitzhaki index and level of interest in environmental pollution.

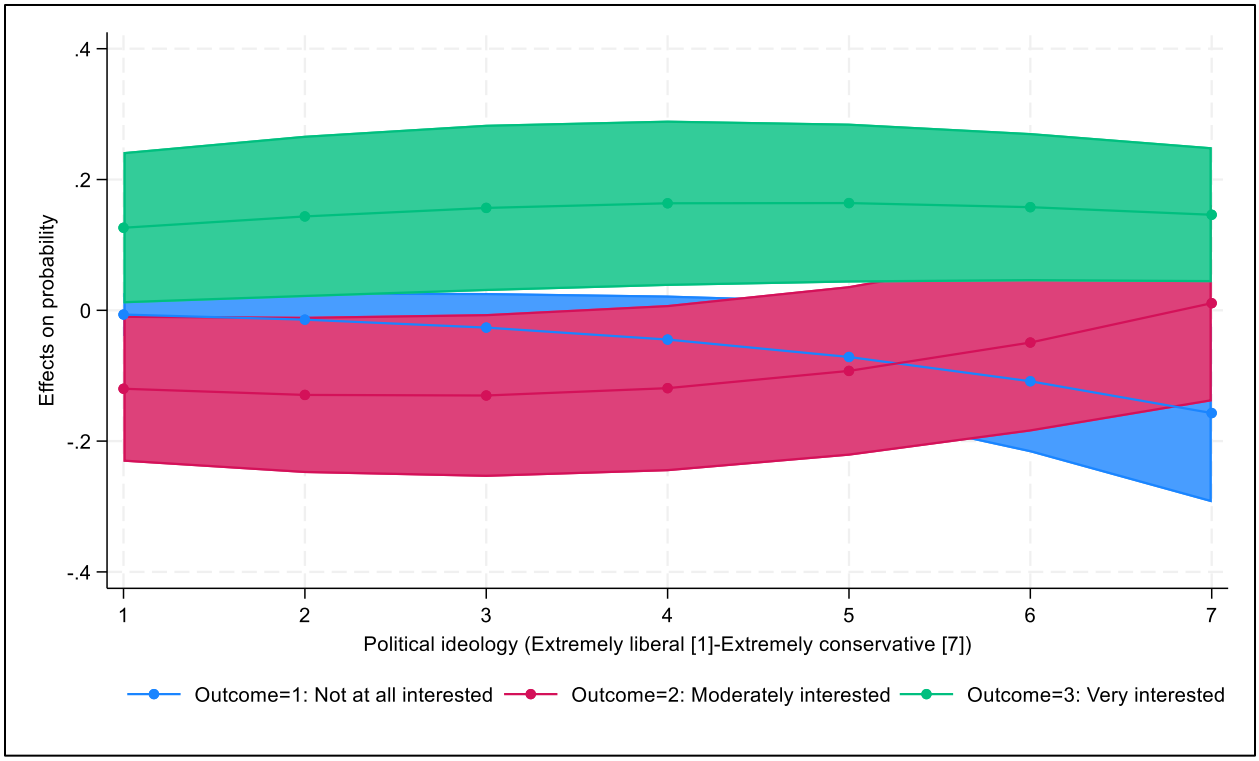


Figure 5: Marginal effects of Yitzhaki index (ref.=generational cohort) on interest in environmental pollution (by political ideology).