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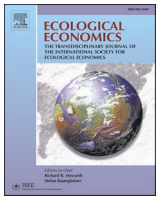

The environment–economic growth trade-off: does support for environmental protection depend on its economic consequences?

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ABSTRACT

Belief in a trade-off between economic growth and environmental protection is an important feature of the politics of environmental policy. Yet the prevalence and consequences – for policy positions – of this belief are only indirectly examined in dominant treatments of public attitudes. We investigate belief in the existence of the trade-off directly. Those who believe more strongly in the trade-off express more moderate policy views. However, increasing belief in the existence of the trade-off via experimental manipulation yields null effects on policy positions. Appealing to the trade-off to justify prioritising growth may not provide a logical defense in the eyes of the public.

1. Introduction

Political contestation of environmental policy questions is closely tied to economic policy concerns. In 2024, the UK government's economic strategy stressed "break[ing] down barriers to regional growth, speed[ing] ahead to net zero and clean power by 2030, and build[ing] prosperity on strong and secure foundations,"[1] but Conservatives in office just a year before had defended moves to slow environmental measures on the grounds that "[f]or too many years politicians in governments of all stripes have not been honest about costs and trade-offs. Instead, they have taken the easy way out, saying we can have it all."[2] The French elections of the same time pitted a Rassemblement National position of "defending the French people's quality of life by refusing punitive ecology" against "decoupling the economy and reindustrialising France" from the New Popular Front left coalition.[3]

These political positions vary not only in their enthusiasm towards economic growth and environmental protection, but also in their underlying expectations of the feasibility of achieving both at once – their belief in the existence of a trade-off. The UK Labour position (implicitly), and the New Popular Front (more explicitly) embody a green growth approach, rejecting the incompatibility of environmental and economic progress. Meanwhile, their more right-wing counterparts seek not only to deprioritise environmental concerns, but to do so with explicit reference to the economic trade-offs involved.

These two distinct dimensions – environment-economy positions, and belief in the existence of a trade-off – provide a simple way to characterise these partisan positions, and also to pose the question: what relationship is there between belief in the trade-off, and positions within it? In particular, we are interested in the answer to this question with reference to public opinion. Support for environmental protection is widespread (Baiardi, 2023), but implicit in the recourse to the trade-off to justify policy delays is the idea that the trade-off undermines the case for environmental action. However, the accuracy of this "Sunak hypothesis" as a description of public attitudes is unclear. It is equally logical to expect that the costs in the trade-off would undermine support for growth.

Despite the proliferation of work on public attitudes towards environmental policy, this specific question is not well accommodated in major existing approaches. Important work in ecological economics provides some perspective on the trade-off (Drews et al., 2018;

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[1] Rachel Reeves, speech to Labour party conference, September 2024. https://labour.org.uk/updates/press-releases/rachel-reeves-speech-at-labour-party-conference-2024/

[2] Rishi Sunak, Speech on net zero, September 2023. https://www.bbc.co.uk/news/uk-politics-66857551

[3] See https://www.actu-environnement.com/ae/news/programme-environnement-energie-climat-rassemblement-national-44303.php4 and https://www.actu-environnement.com/ae/news/programme-environnement-energie-climat-front-populaire-legislatives-44246.php4 for analyses of the environmental content of the French party platforms.

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Tomaselli et al., 2019). However, it does not provide direct expectations about the salience-position relationship. The explanatory action in these approaches is in variation in orientations towards growth, rather than to the existence of the trade-off itself. Meanwhile, a distinct political science literature examines the impact of economic conditions on support for environmental policy. This work builds in the trade-off as a central mechanism, and may imply explanatory action in the degree to which it is binding, but never directly considers the existence of the trade-off in the minds of the relevant actors (Beiser-McGrath, 2022; Rudolph and Gomm, 2024; Scruggs and Benegal, 2012).

We thus examine three types of public attitude towards the economy (specifically, economic growth) and the environment in the UK in 2024. We examine 'unconstrained' levels of concern about environmental protection and low economic growth, in the absence of a trade-off. Second, we consider positions when environmental protection and economic growth are explicitly set against one another. Finally, we both measure and experimentally manipulate belief in the existence of that trade-off, and consider how the constrained and unconstrained preferences differ based on that belief. This allows us to characterise public opinion on these conceptual dimensions, and to directly investigate the consequences of belief in a trade-off for and policy positions.

In line with previous work, we find that the public express high levels of concern about the environment. However, we also find extensive concern about economic growth. When brought explicitly into conflict, environmental protection remains the priority for the majority of respondents, but extreme enthusiasm is tempered. There is wide variation and also uncertainty in public opinion on the existence of a trade-off. The bulk of opinion leans slightly against the existence of a trade-off, but the most common answers sit right in the middle, or don't know.

However, it seems unlikely that weak belief in the existence of the trade-off underpins public support for environmental protection. It is respondents with the most extreme positions – both pro-growth, and pro-environment – who are characterised by the strongest rejection of the trade-off. Moreover, in an information provision experiment embedded in the survey, we find that while highlighting the economic costs of environmental action on emissions increases belief in the trade-off, it has no discernible impact on policy positions.

2. What do we know about economy-environment linkages in public opinion?

There are two large bodies of work providing evidence on how the economy and the environment are linked in public beliefs. The first comes from an approach grounded in questions of sustainable development broadly conceived, mapping public attitudes to economic growth in relation to broader social and environmental goals and well-being. The second comes from a political science literature seeking to explain when, where and why environmental protection receives more or less public support. However, neither of these approaches can provide a clean analytical characterisation of the contemporary party positions outlined above.

Two clarifications here are important. First, we are interested in opinions about a substantive trade-off between environmental and economic goals: a policy trade-off. There may be an additional layer of political substitution between the two due to the finite nature of attention, such that when the economy is taking up political space, there is less room for environmental concerns, and vice versa. We abstract from this attention trade-off since it is unclear why its economy-environment manifestation should receive particular emphasis among all possible issues competing for attention. Second, for the purposes of examining public attitudes we can be quite agnostic about the realities of this policy trade-off (Hickel and Kallis, 2020; Jackson, 2011; Stern, 2006; Stern and Stiglitz, 2023), and whether it is the appropriate focus of debate (van den Bergh, 2011; Savin and van den Bergh, 2022). There is some disagreement among experts here, but the *accuracy* of public views is not our concern.

2.1. Environment-economy links in ecological economics

One prominent approach to the link between the economy and environment characterises public attitudes along the lines of theoretical approaches: green growth, degrowth and agrowth (van den Bergh, 2011). Anchored in critically examining the value of economic growth, these positions come from a broad debate across moral, cultural and social questions, as well as the narrower version of environmental policy that we are concerned with here.

Examining views across this wide spectrum of issues, three main clusters of opinion are well-defined among scientific experts (Drews et al., 2019). The green growth cluster reject the idea that growth is always harmful to the environment, alongside holding more pro-growth views. In contrast, a degrowth cluster tends very much to endorse the existence of a trade-off between environment and economy, to reject the importance of growth for the quality of life, and to emphasize inequality reduction as a goal. The largest group, labelled agrowth, sits between these two groups on all dimensions. On the specific dimension of environmental damage from economic growth which is our central concern here, they respond with mild disagreement (a 3 on the 7-point Likert scale) to the statement that growth always harms the environment. Using distinct strategies for measurement, Lehmann et al. (2022) find an even stronger preference for growth-critical orientations among environmental protection experts in Germany, and Kallis et al. (2024) similarly find degrowth and green growth opinions, and a position they characterise as eco-socialism, "agnostic towards growth", among MEPs interested in questions of radical climate policy. In a link to the post-materialist approach (discussed further below), King et al. (2023) find that among climate policy researchers, the distribution of opinion across the green growth, degrowth and agrowth positions varies with national economic contexts (in the form of average incomes), with green growth positions less common in higher-income countries.

More directly relevant for our purposes here, though, are the attitudes of the public at large. Drews et al. (2019) provide an analysis of Spanish public opinion alongside the scientific experts they survey, recovering three relatively similar clusters as well as an "indifferent" group. However, the distinctiveness of the three main groups – especially between the green growth and agrowth groups – is less clear in the public sample. Importantly for our purposes here, too, on the narrow questions directly pertaining to growth and environmental damage, and technological decoupling, there is significant overlap between the clusters Divergence in the public samples is more strongly driven by social issues. Another large-scale analysis of environment-economy views in public opinion, Tomaselli et al.'s, 2019 study of Canadians, uses a slightly different battery of questions, but also centers on the broad desirability of economic growth. It yields slightly different results, with only 23 % "lean[ing] more towards ecological attitudes" – positions similar to both agrowth and degrowth (p. 44). However, Tomaselli et al.'s question battery does not contain any explicit questions about the existence of a trade-off between growth and environmental protection.

In both the Canadian data and the original Spanish survey, then, the conceptual scope of "the environment-growth trade-off" is much more broadly encompassing than the narrow version that we have in mind. Segmenting growth attitudes generates clusters mapping broadly onto green growth, agrowth, and degrowth positions, but they are less clear than the scientific, economic, and policy expert clusters.

One reason for the lack of clear growth-skeptical positions in the public – at least in some countries – may be their relative absence from mainstream party platforms. Rachel Reeves' position in our introduction is readily characterised within the as one of green growth: a commitment to both growth and environmental concerns. While Green parties in Europe often articulate agrowth and sometimes degrowth ideas, their relative popularity is more limited in countries such as the UK and France, as the examples we opened with, and also in the broader set of rich Anglophone democracies. However, the emphasis on the existence of the trade-off by politicians on the right, seeking to slow or limit

environmental action, has no obvious counterpart in this three-cluster framework where the cluster with the strongest trade-off beliefs place the lowest priority on economic growth.

2.2. The economy and environmental policy preferences in political science

A distinct tradition in the study of environmental policy preferences comes from political science and sociology. Here, the central outcome of interest is typically public positions on environmental policies, and a core concern has been whether support for action on environmental issues is undermined by adverse economic situations. The key questions are about the impact of economic characteristics – at the national, local, or other sociotropic level; at the individual level; or as policy characteristics – but the implied mechanism is a trade-off between economic and environmental goals.

In its most general form, and with the broadest scope, the literature on post-materialism incorporated the investigation of economic influences on public environmental attitudes (Inglehart, 1990). The "conventional wisdom" of this thesis was that "only rich people and nations are environmentally concerned", and that postmaterialist values provide the explanation for these patterns (Brechin and Kempton, 1997). However, there is considerable evidence of high levels of environmental concern beyond the rich (both individuals and countries), including in the absence of post-materialist values (Dunlap and Mertig, 1997). However, when specific economic costs are implied – that is, when the issue at stake is the economy-environment in trade-off, rather than an unconstrained environmentalism – a weaker version of the conventional wisdom may yet apply. Recent evidence on views over the explicit sacrifice of growth for environmental sustainability shows a positive association with income at both the individual and national level (Gugushvili, 2021).

More recent work on this topic tends to consider the response of environmental attitudes to economic changes over time within countries. Over the long run, there is some evidence of both a general increase in concern about the environment (alongside gradual economic growth), and a pro-cyclical correspondence between concern for the environment and the economic cycle (Scruggs, 2009). Support for environmental protection *tends* to fall in recessions (Scruggs and Benegal, 2016), but this is a weak tendency rather than a hard and fast rule (Lundquist, 2024). Work leveraging exogenous adverse shocks find that economic crisis leads to a de-prioritisation of environmental concerns: Scruggs and Benegal (2012) show a pattern of declining environmental concern in response to the 2008 financial crisis in the United States, and Beiser-McGrath (2022) shows the same response to the Coronavirus in the UK, although data from Spain, while showing a similar decline in reported environmental *concern* during the pandemic, reveal higher levels of acceptance of carbon taxation (Drews et al., 2022).

The literature in political science has also paid considerable attention to how individual economic circumstances shape views on environmental policy. More comfortable economic positions (higher incomes, lower economic risk exposure) are expected to be associated with greater support for environmental policy. However, the evidence for this individual version of the post-materialist idea is mixed, if not disconfirming. Kenny (2017) finds that neither individuals' changing economic perceptions nor changing household financial circumstances account for changes in environmental protection prioritisation witnessed in the aftermath of the great recession; and Rudolph and Gomm (2024) find the same null result for those personally affected by adverse economic shocks in the Coronavirus crisis. Individuals also differ in their exposure to environmental risk, and to risks arising from policies aiming to protect the environment – particularly in terms of climate change and its mitigation (Gaikwad et al., 2022). Systematic inequalities in risk across economic groups may confuse links between economic position and concern – particularly in the context of a "willingness to pay" trade-off (Lo, 2014).

Finally, a relatively straightforward dimension of the economy-environment trade-off is examined in treatments that focus primarily on variation between different policy designs. Here the unsurprising findings are that those policies expected to be less economically costly – especially in imposing costs on those with low incomes – garner greater support from the public (Maestre-Andrés et al., 2021).

Taken together, then, the literature on environmental policy preferences from political science does investigate how binding the economic constraint on environmental preferences may be, across contexts, people, and policies. But the existence of this trade-off is taken for granted. Equally, a positive orientation towards higher incomes and growth is taken as given. Thus this approach also stops short of providing direct expectations for the consequences of increasing belief in an environment-economy trade-off. A shift towards economically-oriented preferences would seem consistent with the underlying logic, but a change in the awareness of potential costs is not the same thing as changing costs themselves, which is what this approach has directly examined.

3. Preference positions and belief in the existence of a trade-off

It is hard to integrate the two sets of findings summarised above. While the two approaches are not in conflict, they look for explanations of policy preferences in fundamentally different places, and maintain quite different assumptions. It is also not clear what the theoretical expectations either tradition would generate about the consequences of increasing belief in the trade-off between environmental and economic goals. A distinct theoretical lens distinguishing economic and environmental positions, on the one hand, and the belief that the two are in conflict, on the other, provides greater leverage on both this puzzle, and helps characterise the divergence of the two canonical existing approaches.

Our conceptual framework thus differentiates three logically distinct types of preference around the economy-environment trade-off. The first is the most common type of attitude in the political science literature, the relative priority between the two, when they are in explicit trade-off. This particular dimension of environment-economy attitudes has been central in the political science and sociology literature since the 1970s (Kenny, 2021). It does not provide a full characterisation of public environmental views (Daniels et al., 2012), nor full coverage of all kinds of views about the links between growth and other sustainability goals (Drews et al., 2019). What it does capture is the explicit prioritisation when both economic growth and environmental protection are at stake. This is the policy position that increasing belief in the trade-off is most likely to affect, and the one which the strategy of mobilising the trade-off seems to target.

However, if people do not perceive a trade-off between the economy and the environment, it is also useful to understand their "unconstrained" positions when environmental and economic concerns are treated separately. Even for those who recognise the existence of a trade-off, these unconstrained attitudes may be important. For example, a middling position in the trade-off question could arise from symmetrically high levels of support for the pursuit of growth and environmental protection, or from indifference to both. In line with the trade-off idea, it is useful for us to frame these unconstrained preferences as levels of concern about adverse outcomes on each dimension.

Finally, the logical link between these two types of attitude is belief in the existence of a trade-off. There are a number of ways of conceptualising this kind of attitude, but we are interested in orientations towards a general and abstract trade-off. This general level of analysis most closely distinguishes political positions, as illustrated in our introduction here.

The existing work that provides the closest inspiration for this focus is Drews et al. (2018), who consider what we would refer to as constrained and unconstrained preferences and belief in the trade-off (or, the converse, the compatibility of environmental protection and growth)

in a number of existing surveys. We build on this work in two key ways. Focusing on the trade-off question in the form of a general tendency incorporates not only the "theoretical possibility" but also "practical likelihood" of the stated relationship. Second, our manipulation of belief in the existence of the trade-off is precisely through information to address a possible "lack of understanding" (Drews et al., 2018, p.267).

From a theoretical perspective, distinguishing unconstrained preferences, preferences in trade-off, and the belief in the existence of a trade-off can also help highlight where existing approaches diverge in their assumptions. Table 1 provides this theoretical analysis.

Two of the four clusters yielded by the ecological economics approach can be easily distinguished by their belief in the existence of a trade-off: the degrowth and green growth groups. However, this distinction emerges implicitly from the existence in variation in the two clusters' orientation towards growth versus broad social goals, as the pro-environmental pole is inferred from the general support for non-growth objectives. In fact, in Drews, Savin and van den Bergh's data all three clusters in the public deliver median responses of 4 – the midpoint of the scale – for the question which directly tracks the existence of the trade-off, and only the degrowth group is distinctive in its response to growth-environment strategy.

Meanwhile, the political science approach assumes the existence – and perception – of the trade-off between environmental and economic goals as the underlying mechanism whereby economic conditions are expected to lead to reduced support for environmental protection. In the absence of belief in a trade-off, there would be no reason to expect that recession should dampen support for environmental measures: green growth would be the solution to both problems.

Greater belief in the trade-off leading to a de-prioritisation of environmental protection in favour of economic growth also provides a logic for appeals to the trade-off as justification for environmental policy delay: the "Sunak hypothesis." However, in logical terms it need not – de-growth could be the outcome. With explicit reference to belief in the existence of a trade-off, we can investigate whether highlighting the trade-off is likely to be an effective justification of pro-growth policy, or the reverse.

Our approach also provides a lens through which it is much easier to characterise contemporary political positions than existing theoretical frames. The green growth position of the contemporary centre-left can be readily described as not only pro-growth and pro-environment, but also as denying the existence of the trade-off. The implicit stance of the strategy in which those seeking to dampen public enthusiasm for environmental policy seek to increase belief in the trade-off – as per the UK Conservatives in 2023 – can be understood as the political embodiment of the expectation that belief in the existence of a trade-off is associated with leaning more towards economic prioritisation rather than environmental.

Table 1
Major approaches to the environment-economy trade-off characterised on our four component dimensions.

	Growth preferences	Environmental protection prefs.	Existence of a trade-off	Preferences in trade-off
Ecological economics	Variable	Pro-protection	Variable	Variable – depends on growth preferences
	Explicitly examined	Assumed	Implicitly incorporated	Explicitly examined
Political science	Pro-growth	Pro-protection	Exists	Variable-depends on economic context
	Assumed	Assumed	Assumed	Explicitly examined

Table 2
Survey question texts and response scale anchors.

Question text	Scale 0	Scale 10
How concerned are you about: Protecting the environment?	Not at all concerned	Extremely concerned
How concerned are you about: Low economic growth?	Not at all concerned	Extremely concerned
Some believe that protecting the environment should have priority even if that reduces economic growth. Others believe that economic growth should have priority even if that hinders protecting the environment. What is your opinion?	Economic growth should have priority	Protecting environmental change should have priority
In general, do you think protecting the environment is harmful for economic growth? OR In general, do you think economic growth is harmful for the environment?	Not at all harmful	Extremely harmful

3.1. Information provision and the causal effect of belief in a trade-off

Political efforts to draw attention to the trade-off make it important not only to consider belief in the existence of an economy-environment trade-off that is latent in public opinion, but also the degree to which it can be shaped by the provision of information. Because this is something that we can manipulate experimentally, we can also credibly identify causal effects. If information about the nature of the economy-environment trade-off changes levels of belief in that trade-off, randomizing the provision of that information creates exogenous variation in that belief that allows us to identify its effects (Armingeon and Bürgisser, 2021). This allows us to isolate differences directly attributable to the belief in a trade-off from other differences (both observed and unobserved) between those people who 'naturally' believe in it and those who do not. Rettig et al. (2023) have shown that negative consequences of climate mitigation and adaptation for specific social groups affect support for these policies through a similar survey-experimental design.

4. Empirical design and methods

Our empirical investigation thus has two components, both of which we pursue through a large-scale survey in the United Kingdom. First, we measure and map the three types of environment-economy attitude – and their existing relationships – in public opinion. Second, we study the effects of increasing belief in the trade-off through an information provision experiment embedded in the survey design. Our questions were fielded by YouGov as part of their omnibus surveys on March 25th and 26th 2024. We gathered data from 2051 respondents.

4.1. Survey questions

We field four questions to measure unconstrained preferences towards the environment and economic growth; the prioritisation of economic growth relative to environmental protection; and individuals' belief in the existence of a trade-off. All the responses are on 11-point scales (from 0 to 10), with the respective poles anchored as shown in Table 2. For each question, respondents have the option to report "don't know".

The existence of a trade-off question is presented (with a random split) in one of two forms to prevent any ordering effects between economic growth and the environment, and to reflect two potential types of

trade-off: whether environmental policies reduce economic growth, and whether economic growth harms the environment.[4] All respondents see the same three blocks of questions, with partial randomization of the ordering as part of the experimental set-up.

We use a single-item question to measure the specific prioritisation of economic growth relative to environmental protection, adopting the same wording used in multiple waves of the British Election Study in order to compare our data to that broader sample. This follows much of the political science literature with which we are in dialogue here (e.g. Beiser-McGrath, 2022). However, it is a departure from the 16- or 5-item battery used in the ecological economic literature discussed above to segment opinion into the degrowth, green growth and agrowth clusters (Drews et al., 2019). Our choice between the two approaches is a direct consequence of our specific theoretical focus. Measures of environmental attitudes show different patterns depending on their precise substance (Kenny, 2021), and our interest here is only in people's orientation towards the environment-growth trade-off rather than issues including public services, life satisfaction, stability and development space (Savin et al., 2021).

4.2. Experimental treatment

Our experimental treatment aims to increase belief in the trade-off by highlighting potential reductions in growth associated with reducing emissions. Our treatment group thus sees a vignette with the general form:

Scientists think we need to reduce emissions to stop global temperatures rising. To reduce emissions, many politicians are considering 'green' policies [such as [X]].

Economists predict that reducing emissions on the scale required may reduce economic growth [by [Y] percentage points every year].

We randomize both whether we provide concrete policy details and the content of those policies (X), and whether we specify a quantitative effect on growth and what that is (Y). This is not to make inferences about the specific information features, but rather to protect against specific design details of this kind driving differences between treatment and control groups (Blumenau and Lauderdale, 2024; Fong and Grimmer, 2023). Further details can be found in the supplementary material.

The survey experiment was deemed exempt from full ethical review by the Political Science Department research ethics board at University College London as a study of public behaviour that is purely observational (non-invasive and non-interactive). The information we provide on the economy-environment trade-off varies within the range of state-of-the-art estimates, and so are non-deceptive.

Given these operationalisations, we can now reformulate our empirical expectations for the experiment as formal statistical hypotheses. First, the information provision vignette will increase belief in the existence of the trade-off:

H1. Respondents in the treatment group will express greater belief in the existence of a trade-off between environmental protection and growth:
$E(\text{Existence} \mid \text{Treatment}) > E(\text{Existence} \mid \text{Control})$.

Second, the idea that highlighting the existence of the trade-off will lead to a de-prioritisation of environmental concerns – the "Sunak hypothesis", implies:

H2. Respondents in the treatment group will deprioritise the environment in the presence of the trade-off:
$E(\text{Prioritisation} \mid \text{Treatment}) < E(\text{Prioritisation} \mid \text{Control})$

While logically less obvious, we also investigate any effects on the unconstrained items resulting from highlighting the trade-off.

H3a. Respondents in the treatment group will express less concern for the environment in the unconstrained setup:
$E(\text{Environment} \mid \text{Treatment}) < E(\text{Environment} \mid \text{Control})$.

H3b. Respondents in the treatment group will express less concern for low economic growth in the unconstrained setup:
$E(\text{Growth} \mid \text{Treatment}) < E(\text{Growth} \mid \text{Control})$

Our main tests thus compare all those respondents seeing trade-off vignettes to the control group. The exception here is that for hypothesis 1 we can compare the treatment group to a broader control group, as our order randomization generates a larger group of people who provide their views on the existence of the trade-off before the administration of the vignettes, which we take advantage of to increase statistical power. We use 2-sided *t*-tests, reporting conventional thresholds for statistical significance ($p < 0.05$). "Don't know" responses are excluded from our experimental analysis. We follow Miratrix et al. (2018) and present results without survey weights applied, as we are trying to establish the causal effect within a given population and thus avoid potential efficiency costs. All these analysis decisions follow our pre-analysis plan.[5]

Our design is powered to detect 'small' effects, at least for the central prioritisation outcome. Using British Election Study (2023) data, an effect size equivalent to a Cohen's D of 0.2 ('small) is a 0.5-point difference on the prioritisation scale. At 80 % power and a 5 % statistical significance level, we require a total sample of 1094 – i.e. 257 in the control and 834 in the treatment to detect an effect of this size. Our design, based on the pre-fielded expected total sample of 2000, implied 1700 (400 control and 1300 treated) respondents.[6] Our empirical sample size was 411 respondents in the control group, and 1334 in the treatment group, with 376 and 1243 respectively, once don't know responses are excluded.

5. Results

5.1. Characterising the four trade-off variables

To understand the data in its simplest terms, we first describe the univariate distributions of our response variables (Fig. 1).

Most respondents show a high level of concern for the environment in the unconstrained setting. 66.4 % of the population give responses above a five, on the 0–10-point scale. There is also an important sense of concern about low growth, with 62.1 % of respondents on the 'concerned' side of the scale. The distributions are somewhat different, however, most strikingly in the quarter of the population who choose the highest possible level of concern about the environment.

Considering the explicit trade-off confirms this pro-environment orientation. The mean response is 5.6, but there is some polarization: the second highest frequency response (13.6 %) gives full priority to environmental protection, and 10 % give full priority to growth. This mean score from our survey is close to the mean of the same question in Wave 25 of the British Election Survey (5.46), which has a much larger sample. Compared to the unconstrained results, putting the economy and environment into explicit trade-off does seem to temper demands for environmental protection – exemplified by the reduction in the "maximally environmental" response. However, it is worth noting that the average change from the unconstrained to constrained versions of the question is larger for concerns about low growth. Reversing the

[4] Descriptive statistics and analyses for the two versions, can be found in the supplementary material.

[5] Registered before data collection at https://osf.io/s3v82

[6] A group of ~300 individuals was assigned to treatment with a positive complementarity vignette which, as pre-registered, does not form part of these analyses.

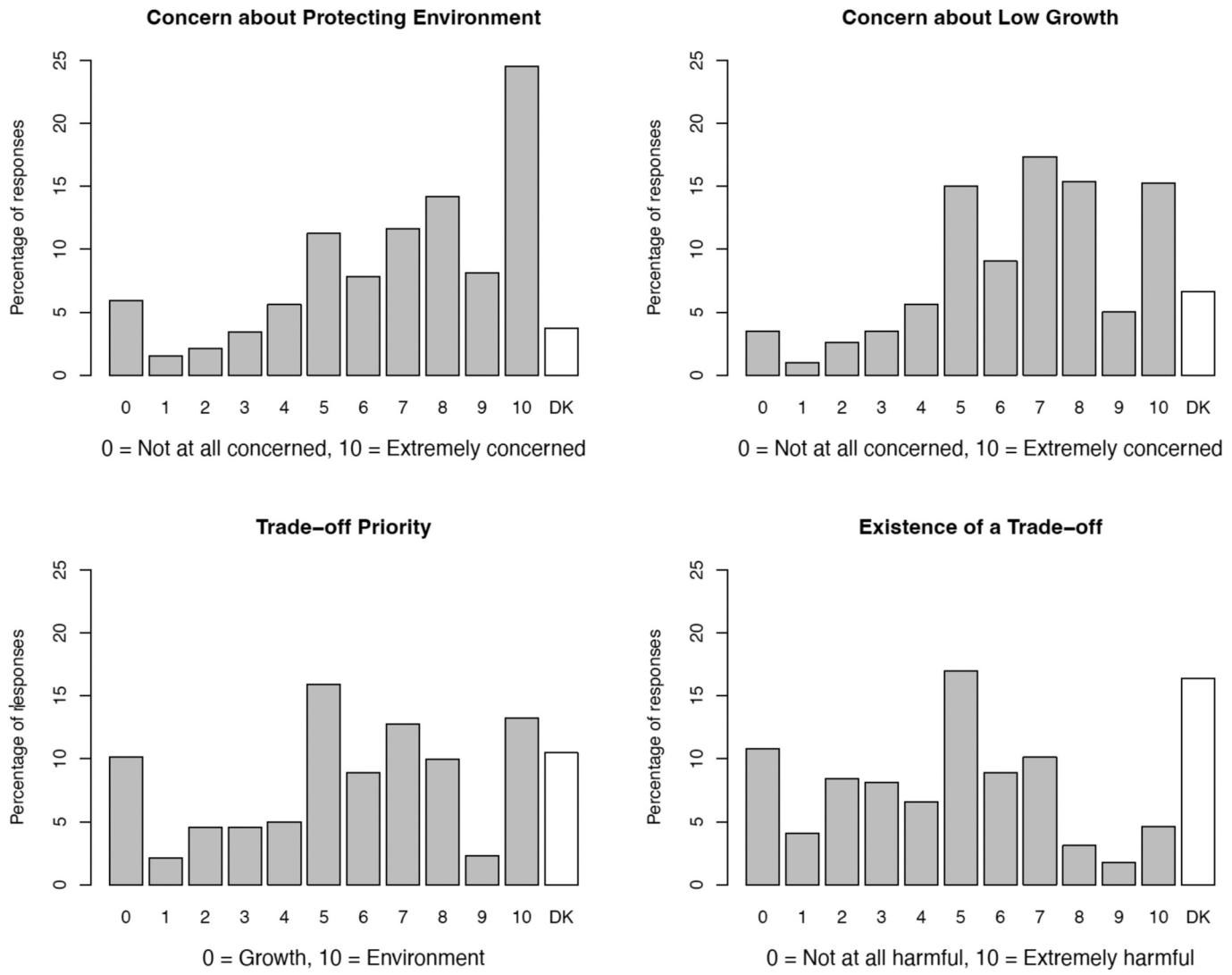

Fig. 1. Distribution of the dependent variables. *Notes: Survey weighted data based on respondents in the control group. DK=Don't Know.*

prioritisation score so that it reflects support for economic action yields a score of 4.4, a 2.1 point drop from the unconstrained economic concern question, where the difference in environmental concern is 1.2 points.

Finally, we consider belief in the existence of a trade-off. First, "Don't know" (DK) answers comprise 16.4 % of responses. This is consistent with our expectation that assessing the existence of a trade-off is the most complicated task. Among other categories, there is some concentration on the lower end of the scale, and the mean is 4.37, indicating some scepticism of the ideas that growth harms the environment, and environmental protection harms growth. In particular, around 10 % of respondents completely reject the trade-off, giving "Not at all harmful" (0) responses. However, the modal response is 5, with a considerable concentration of responses on this midpoint.

5.2. Characterising respondents' response profiles: latent class analysis

To map public views across the different types of attitude, we consider patterns across the four items at the individual respondent level using latent class analysis. Conceptually, the intention here is to find types of similar respondent in the data. This focus on groups – entailing a clustering or latent class approach – is widespread in the literature on environmental attitudes (Poortinga and Darnton, 2016; Drews et al., 2019). We use latent class analysis (implemented in R using the poLCA package) to summarise the data in this way. Latent class analysis is a non-hierarchical clustering method, or, put differently, an unsupervised method generating a categorical latent variable measure from categorical indicators.

Treating the item responses as categorical allows us to include "don't know" responses, and to capture the intuition that the midpoint does something different from simply being a numeric "5", readily interpretable on a continuous scale. To simplify the model and its communication, we collapse the original 11-point scales, plus don't know, to six polytomous response categories for each outcome, based on the distributions above. The first two distinctive categories across all items are "don't know", and the midpoint category. For the unconstrained variables we then collapse all responses below the midpoint as indicative of low (below mid-point) concern. We separate those indicating the highest level (10), a high level of concern (8–9), and those who are leaning towards concern just above the mid-point (6–7). For the trade-off and existence variables, on the other hand, we take a symmetric approach, separating the two extreme positions (0 and 10) as the bottom and high categories, and combining other values below the midpoints (2–4) and above (6–9).

We use the Bayesian Information Criterion to determine the number of classes to use in the estimation. It is minimised at six classes. Moreover, the resulting classes are readily interpretable in terms of the patterns of responses within each class.

Figure 2 shows these response profiles in terms of conditional item response – the probability (shading level) of each response category (x-axis position) for each item (y-axis position) conditional on membership in each latent class (panel). The first key payoff to this approach is that we can readily separate single-item "don't know" responses from don't knows by respondents who systematically choose this option. The same is true for the responses clustering on the middle category of the scale. The two groups consisting of people providing one of these two responses every time comprise 5 % (always the midpoint) and 7 % (always don't know) of respondents.

The remaining four groups are readily interpretable in environment-economy terms. First, shown in the top panel, 9 % of respondents have a quite extreme pro-economy profile. They rate their concern about the environment in the lowest category, and their concern about low growth in the highest, and, consistently, strongly prioritise growth when the two are set in trade-off. Notably, this group tends to reject the existence of the trade-off. This is a small group, but not trivially so.

At the other end of the spectrum is a larger (19 % of respondents) group who are highly concerned about the environment and prioritise it strongly in the trade-off item. This group's views on economic growth in the unconstrained item, however, are mixed: a plurality indicate the lowest level of concern, but disregard for economic growth is not symmetric to the dismissal of environmental concerns among the economistic group.

The remaining two classes are most strongly distinguished by the concentration of responses in the trade-off item on either a lean towards economic concerns (the moderate economistic group, 20 % of respondents) or a lean towards environmental ones (the moderate environmentalist group, 37 % of respondents). In the unconstrained items, majorities both of these groups express substantive (i.e. above the midpoint of the scale) concern for both economy and environment – though the economic concerns of the moderate environmentalists are

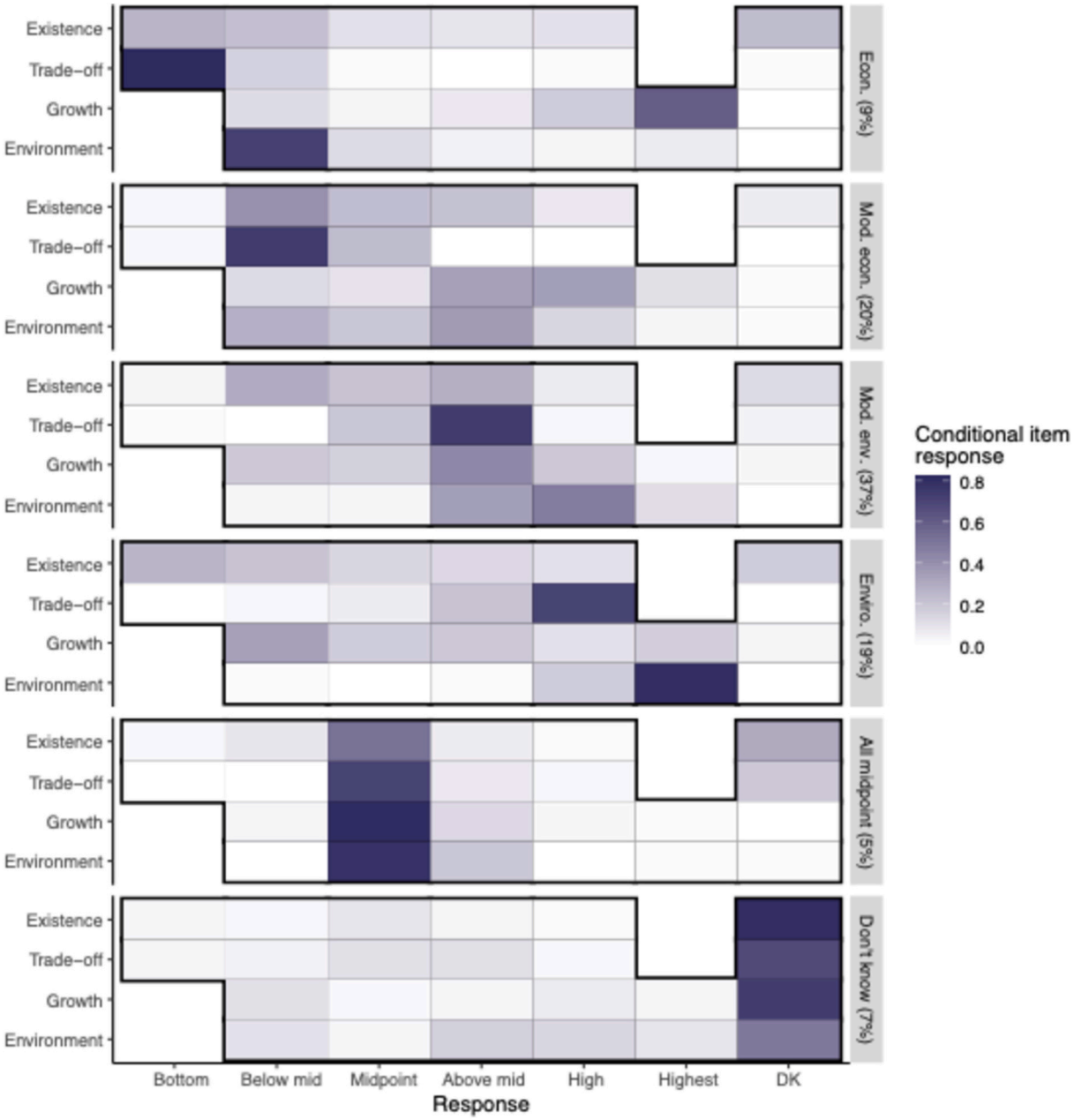

Fig. 2. Conditional item responses for unconstrained growth and environment items, trade-off item, and existence item responses, grouped by latent class. Blank cells outside the bold outline are response categories not applicable in those respective question items.

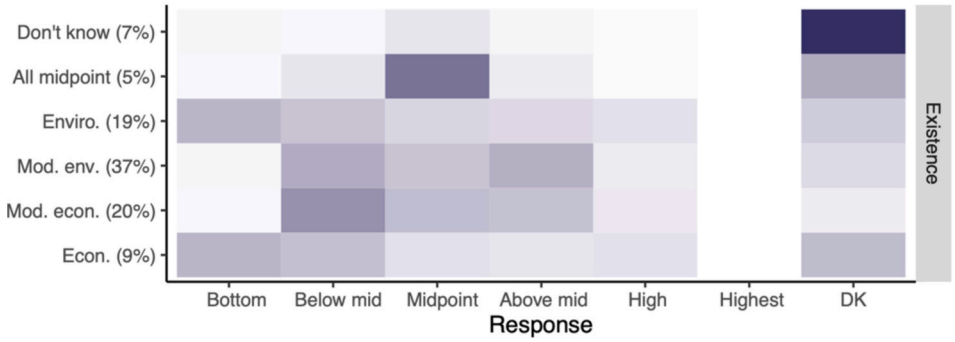

Fig. 3. Conditional item responses for belief in the existence of the trade-off between environment and economy for the six latent classes.

slightly more pronounced than the environmental concerns of the moderately economistic.

Figure 3 re-organises the same data to highlight patterns in belief in the existence of the trade-off across the six classes. The first thing that this visualisation makes clear is the higher level of "don't know" responses to this question even outside the "don't know" class. Within the four substantive classes, however, there is a clear non-linear pattern on this variable. The two more extreme groups (environmental and economistic) moderate groups are more likely than their moderate counterparts to completely dismiss the existence of the trade-off, while the more moderate groups are spread across the intermediate categories. Between the two moderate groups, those leaning economistic are more skeptical of the trade-off than those leaning environmental.

This observational analysis thus highlights three features of public opinion on the environment-economy trade-off. First, contrary to the ecological economics approach, when given these explicit choices respondents articulate meaningful levels of concern about economic growth. For two classes, almost one third of the sample, this concern outweighs concern over environmental protection, and even for the plurality "moderate environmentalist" group, growth is not dismissed. Only for the strong "environmental" group in these data does a degrowth or agrowth appellation seem accurate. This echoes existing findings of differential willingness to sacrifice economic goals within broad pro-environment coalitions (Nadeau et al., 2022).

In contrast to the political economy literature, however, belief in the existence of a trade-off seems weaker than we might have expected, if it is supposed to serve as the mechanism translating economic hardship to lower levels of environmentalism. Moreover, there is little evidence that those more committed to the idea of a trade-off are more likely to resolve that trade-off in favour of growth. This highlights a problem with any mechanism implied for the impact of economic downturns on environmental protection that runs through the expectation of economic slowdown being a consequence of greater environmental protection, or vice versa. It also points to an initial disconfirmation of the "Sunak hypothesis" that the more attention people are paying to the trade-off, the less likely they are to support environmental protection measures.

5.3. Experimental results

However, this hypothesis is more appropriately examined through the comparison of people under different conditions, in terms of belief in the trade-off, than it is by the comparison of different people who evaluate the trade-off differently under similar conditions. The former comparison is the one which our survey experiment delivers. Fig. 4 summarises our main results from the experimental survey. It shows the inferential quantity of interest, the difference in means between treated and control groups for each of the three types of economy-environment attitude.

Those individuals who saw the vignette highlighting the existence of a negative trade-off were more likely to believe that protecting the environment is harmful for growth, or vice versa, by 0.61 points. The mean of the control was 4.37 compared to the mean of the treatment group of 4.98. The difference in means is statistically significant ($p < 0.0001$). Hypothesis 1 is thus supported.

For the prioritisation question, the control and treatment group means of 5.77 and 5.71 are statistically indistinguishable ($p = 0.74$), and the point estimate of the difference in means is substantively small. It does not appear that increasing belief in the trade-off is consequential for people's policy positions.[7]

We also find no evidence that the treatment affects unconstrained attitudes. The mean of the unconstrained environment score is 7.07 for the control group compared to 6.94 in the treatment group ($p = 0.41$). For the expression of concern about low growth, the treatment group mean (6.27) is *lower* than the mean in the control condition (6.54). However, the pre-registered significance threshold is not cleared ($p = 0.06$).

The experimental results thus confirm that while belief in the existence of a trade-off may be subject to change through the provision of information, this has minimal consequences for policy preferences on environmental versus economic goals.

6. Conclusion

Overall, we find that greater public attention to the possibility of an environment-economic growth trade-off has only limited effects on support for environmental protection. Observationally, across the population greater emphasis on the trade-off is associated with moderation of positional views. There is marginal evidence in both the experimental and observational data, that greater emphasis on the trade-off leads to lower weight being put on growth. However, the main take-away from the experimental intervention is a null result. Our informational vignette does not change public concern about the environment nor preferences within the trade-off framing.

How generalisable are these results likely to be beyond the UK? While economic and environmental concerns in general may be universal, the specificities of the details to particular contexts do limit the universality of our findings. We would anticipate different kinds of attitudinal relationships and dynamics in political and economic systems that are very different from the UK. Even among rich democracies, different industrial structures drive some diversity in the nature of the challenge (Kupzok and Nahm, 2024). However, the UK faces environment-economy challenges similar to other advanced industrial countries, and in terms of climate policy stringency the UK sits roughly in the middle of this pack (Finnegan, 2022). In economic terms, then, while we counsel caution in generalising too broadly from any single-country study, the UK is not an obviously outlying case among rich democracies.

[7] We find no evidence of heterogeneous effects across the implementation variations within the treatment group.

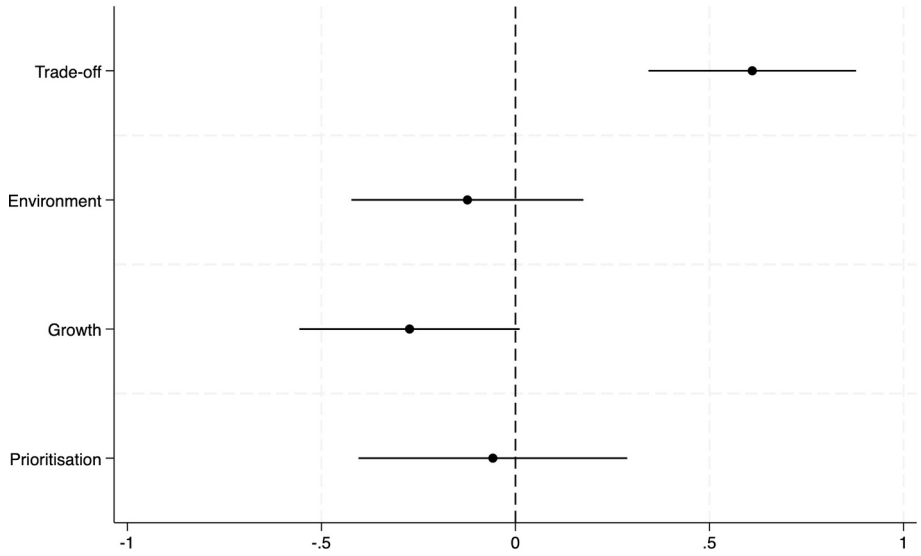

Fig. 4. The effect of information of a trade-off on attitudes towards the environment - difference in means between the control and treatment groups. Notes: Bars in all figures represent 95 % confidence intervals. Trade-off = the existence of a trade-off dependent variable; environment = unconstrained environment; growth = unconstrained growth; prioritisation = economic growth-environment prioritisation.

On the political side, we have highlighted the lack of consensus between UK political parties in their position on an environment-economic growth trade-off. One contrast is between the centre-left historically downplaying any adverse trade-off, and parties of the right highlighting the economic cost of environmental protection. Only quite recently has green growth complementarity been incorporated into mainstream positions. This political orientation is echoed in the United States and the 'Anglosphere', but elsewhere in Europe the existence of the trade-off has been more actively contested under the 'green growth' frame (Killick, 2023, 121–127). In this sense the UK is a useful but potentially distinctive case within Europe, more likely to see the separation of the "existence" from the "position" dimensions, and the lack of the anti-environmental response to the trade-off. This result may more plausibly generalise to other Anglophone rich democracies. Direct empirical work is the only way to fully answer these questions.

Why are these results important? First, from a theoretical perspective we think there are payoffs to the conceptual focus on the three types of attitude that we focus on in this paper. While this requires a narrowing of scope from the conceptual space of the economy-environment in the ecological economics literature, it brings this literature into dialogue with other disciplinary approaches – particularly in political science – by providing a clear articulation of the distinctive assumptions and focuses of each approach. It also provides a conceptual framework within which to understand the potential consequences of the changing salience of the trade-off, including via deliberate political mobilization.

In particular, this lens, and this set of survey questions, offer a different perspective on public attitudes to that provided in the existing ecological economics approach to the environment-economy trade-off. The broad appetite for the pursuit of outcomes other than economic growth that this literature documents is beyond the scope of this paper, and not in dispute here. However, both unconstrained attitudes towards growth, preferences articulated in the trade-off condition, and the analysis of latent classes defined on these specifically economy-environment dimensions all point to positive public orientations towards growth: fairly universally when it is not constrained by the trade-off, and for a sizeable minority even when in conflict with environmental goals. Pro-growth sentiment in public opinion is not a hegemonic justification for simplistic economic policy, but it is an important empirical feature of public attitudes.

Finally, the null link between belief in the existence of the trade-off and policy position – including the null experimental result – is surprising in the context of the literature linking economic conditions to support for environmental protection (e.g. Beiser-McGrath, 2022). Declining support for environmental protection when the trade-off is more strongly felt would provide a policy trade-off mechanism for the observed associations between economic conditions and environmental preferences. There are two plausible reasons why this is not what we see. First, the mechanism may be a trade-off in attention, rather than policy; or second, the true nature of the policy trade-off is not well-captured by our experiment. This latter might be due to our focus on the "wrong" type of economic trade-off (focusing on growth rather than jobs, for example), or to the artificiality of the survey context and experimental design. It seems unlikely that the key issue here is our attention on the macroeconomic, rather than personal pocketbook, trade-off given the stronger results for the former than the latter in the existing literature (Rudolph and Gomm, 2024).

Notwithstanding these caveats, from a policy perspective, the null provides a glass half full view of the world for those who view environmental change as a potentially cataclysmic global event. Regardless of potential conflict between environmental protection and economic growth, citizens may continue to support environmental policy action in full awareness of the trade-offs that entails.

CRediT authorship contribution statement

Andrew McNeil: Writing – review & editing, Writing – original draft, Project administration, Investigation, Formal analysis, Data curation, Conceptualization. **Lucy Barnes:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.

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Data availability

The data for this paper are available at https://doi.org/10.7910/DVN/E55HEK.

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