

CROSS-NATIONAL PUBLIC ACCEPTANCE OF SUSTAINABLE GLOBAL SUPPLY CHAINS POLICY INSTRUMENTS

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Abstract

Despite increasing their consumption footprints, high-income countries have improved domestic environmental and labor conditions. This incongruity is enabled by international trade, dissociating consumption benefits from adverse production impacts. However, political debates on new regulation to make environmental and labor practices more sustainable throughout companies' global supply chains have emerged in the Global North. While shifting public sentiment towards regulating global business practices could place sustainability on the policy agenda forefront, citizen support for such policies remains under-identified. Here we explore dimensions of citizen support for global supply chain regulations via survey-embedded experiments. We find that citizens prefer strong reporting requirement and enforcement capabilities across the 12 largest OECD importing countries (N=24,003). Further, such policy preferences are driven by environmental attitudes and political ideology, and are robust against pro-/anti-market informational manipulation. These results suggest substantial, cross-national public opinion mandates for policy interventions to make global supply chains more transparent. From a sustainability perspective, this is an a priori encouraging finding as it implies that over the last decade, public opinion on this emerging policy topic has matured. Consequently, political actors have an incentive to situate the subject prominently in their policy programs.

Keywords: sustainability governance, globalization, supply chains, survey experimental design

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Introduction

In order to meet the United Nations' Sustainable Development Goals (SDGs), high-income societies of the Global North need to implement substantial changes to both the supply (corporate-level, producer) and demand (individual-level, consumer) side of economic activity [1]. In recent years, intense political debates on policy interventions to make global supply chains more sustainable (i.e., the corporate producer side) have emerged throughout the Global North [2]. Several countries (e.g., Germany, France, and the UK) have unilaterally implemented binding supply chain regulations largely focused around increasing transparency, with additional policies currently in the design process in the EU and elsewhere [3]. Likewise, the United States government has become increasingly willing to intervene in global business conduct by enforcing sustainability standards [4].

Yet, there appear to be limited incentives for both governments and firms to impose stricter sustainability transparency standards on global supply chains. Actually, tightening regulation of firms' overseas production and sourcing practices is clearly at odds with the general understanding of (global) public goods governance as a collective action problem, where governments are likely to shirk [5]. That is, the absence of binding international agreements is likely to constrain national governments' willingness to impose stricter domestic rules unilaterally [6]. Further, facilitating more sustainable global supply chains could be associated with differential opportunity costs for firms. While some firms may benefit from stricter policies in this field (particularly those that already serve niche markets for sustainable products [7]), others are likely to anticipate or experience difficulties in passing the increased costs of production resulting from stricter sustainability requirements on to consumers [8].

Thus, we are presented with the puzzle of how to make sense of the widespread, unilateral policy shifts towards stronger sustainability transparency regulations of global supply chains within industrialized economies.

Exploring fundamental changes in public sentiment towards business conduct provides

a useful starting point. Within high-income democracies, the social license to operate – the societal legitimacy benchmark of what companies ‘owe’ society and what constitutes acceptable corporate behavior [9] – has shifted over recent decades. Empirical findings from the United States [4] and Switzerland [3] point to considerable public support for government intervention in global supply chains, even though the benefits of these policies are largely experienced abroad (such as environmental quality improvements and fairer and safer labor conditions that would result there).

However, a comprehensive multi-country assessment of public policy preference formation – and the resulting political operating space so to speak – to regulate information disclosure in global supply chains is missing in the literature to date. Extant research studies largely focus on the perceived legitimacy of state intervention in response to patterns of conduct by firms and governments. While previous findings suggest that citizens support government interventions aimed at aligning international business conduct with an evolving normative benchmark, the policy designs which garner heightened and diminished citizen support remain under-identified. This is an important omission for several reasons.

From a sustainability perspective, the geographic dissociation of consumption and production has particularly severe consequences. The current global economy is operating well beyond the Earth’s ecological carrying capacity – in 2020, demand for environmental resources exceeded Earth’s ecological capacity by approximately 60% [10]. Large multinational corporations carry substantial leverage on potential progress towards the SDGs [11] - around 80% of goods traded worldwide are linked to the international production networks of the world’s largest enterprises [12]. Yet, efforts towards making economic activity more sustainable are often undermined by global supply chains and international trade practices. These global conveyor belts enable high-income societies of the Global North to ‘have the cake and eat it too’ – to consume much more than their respective territory and population could sustainably provide while preserving a high level of domestic environmental quality and good labor conditions.

From a public policy perspective, environmental and social externalities of global sup-

ply chains have, thus far, largely been governed by a system of voluntary sustainability standards, whose remedial effectiveness have been contested by ex-post analyses [13]. However, if instead, hybrid governance schemes (i.e., blends between legally binding public policy and voluntary measures by firms) are negotiated or conceived in the shadow of hierarchy (i.e., initiated by the government and/or in anticipation of a regulatory threat [14]) public opinion has the potential to shift (ideally, increase) [15, 16] the ambition levels of non-state initiatives – particularly with regards to increased stringency and government enforcement capacity.

Lastly, the heterogeneous macro (i.e., country)-level conditioning of individual-level support for sustainability regulation of global supply chains remains largely unknown. Even within the increasingly interconnected Global North, substantive economic, political, social, and cultural differences remain [17]. These factors shape citizens' economic self-interest and allegiance to political ideologies in environmental policy debates [18]. Accordingly, further insights are necessary to explore [in]consistency across countries in citizens' global supply chain sustainability policy preferences.

In this paper we, thus, provide systematic insights into public support across the Global North for stricter global supply chain sustainability standards, drawing on a novel survey-embedded experiment, which we implemented in the 12 largest (by imports) high-income OECD member economies (BE, CA, CH, DE, ES, FR, IT, JA, KO, NL, UK, US, N=24,003). In aggregate, these economies account for almost 45% of goods imports globally [19]. In particular, we examine public sentiment across a range of policy design attributes: policy scope, transparency reporting requirements, and governmental rule enforcement capacity. These policy design attributes reflect dimensions of current political and academic debates – from voluntary business standards for large multinational companies only to government-enforced mandates applying to most businesses. We explore the support for individual policy measures and identify politically (from a public opinion viewpoint) feasible policy designs (packages of multiple policy instruments). Furthermore, we use a vignette experiment to assess citizens' preference formation in response to to pro-, and anti-, market informational

treatments. Lastly, we examine how individual-level socio-economic factors, environmental attitudes, political ideology and social value orientations influence support for sustainable global supply chain policies.

Research Design

To explore cross-national support for global supply chain policy instruments, we conduct a conjoint choice experiment [20], embedded within a larger original survey. Conjoint experiments present respondents with two randomly generated separate policy proposals (A and B), and ask them which one would they prefer. In our case, the proposals are policy designs (packages) to regulate global supply chains. The proposals vary across three attributes, each of which could assume several expressions (levels): (i) scope (4 levels), where a new law could apply to companies with ‘25 or more employees’ to ‘25,000 employees or more’, (ii) transparency mandates (3 levels), where a new law could make companies’ disclosure ‘slightly stricter than current regulations’ up to ‘much stricter’ (e.g., public, detailed reporting requirement), and (iii) enforcement of these disclosure mandates (3 levels), where if a company withholds or presents false information, the new law could adopt ‘no changes’ to the enforcement capacity of the state, to allowing for ‘strong government action’ where the company would be placed on a public list, face a financial penalty, and be liable to legal charges. Thus, each policy proposal presents a random mix of attribute levels (one level per attribute, resulting in a full factorial of 36 unique designs). In total, each respondent is presented with 5 choice tasks between two proposals. The Methods Section summarises the full set of attribute levels.

Conjoint experimental designs have become common within political science, allowing for causal inferences to be made about preferred policy instruments (e.g., preferences for ‘slightly stricter’ versus ‘much stricter’ transparency requirements), as well as (in the sense of gaining majority support) policy designs mixes (mixes of policy instruments, policy packages). Further, we explore how support for policy instruments varies by country, individual

respondent characteristics (political orientation, environmental attitudes, social value orientation), as well as by informational anchor – a vignette treatment to test the robustness of citizens' preferences (random assignment to either pro-, anti-market information, or control with no information presented). Further context on the conjoint experimental design is provided in Methods.

Results

We analyze these results using marginal means [21], which present the probability of selecting (in a forced choice task), a proposal that contains a specific policy instrument (level of policy attribute). Given the choice between A or B, marginal means are centered around 0.50, which we plot as a reference in each of the graphs. Hence, for example in Figure 1, support for proposals with 'no changes' to government enforcement is estimated at 0.39, while proposals including 'strong action' are much more supported, at a probability of 0.57 (equivalent to an average marginal component effect of 0.18).

The survey instrument was structured as follows: First, we ask respondents broad questions on attitudes towards global business, then we implement an informational treatment, followed by the conjoint choice tasks. Next, we probe respondents perceived policy consequences, and lastly, we record political and environmental attitudes. The Methods Section includes more information on all survey components. The analyses report results from the conjoint experiment (Figures 1-3), attitudes items (Figure 4), and vignette (Figure 6), but also include one of the consequences probes in order to identify respondent expectations regarding costs associated with regulating supply chains (Figure 5).

Sustainable Supply Chain Policies Support

Panel A of Figure 1 depicts the distribution of respondents' support for mandatory disclosure of information on environmental and working conditions by companies in general terms. Respondents provided this general preference before completing the experimental

components of the survey and before receiving any additional information on supply chains. The response distribution indicates that most respondents agree that governments should adopt new laws to make information disclosure on environmental and working conditions mandatory (average response of 5.26 out of 7).

Next, drawing upon the conjoint choice experimental design, we explore support for global supply chain policy across three dimensions: scope (company size subject to regulation), transparency (the extent of mandatory corporate disclosure), and enforcement (the capacity of the government to sanction non-compliance) (Panel B of Figure 1). We find strong support for comprehensive policy measures across all three dimensions. Overall, citizens prefer policies that apply to companies of most sizes (broad scope), with a slight preference for policies applying to large and very large companies ($\Pr(\text{Proposal} \geq 2,500 \text{ employees})=0.51$). Furthermore, policies that aim to strongly increase transparency (detailed government rules on required reporting content, public report) obtain strong support – 0.54% of policy combinations that make transparency reporting ‘much stricter’ are selected as preferred policy designs, in comparison to $\sim 45\%$ of those that only ‘slightly increase’ reporting requirements. Lastly, respondents prefer robust government enforcement competencies in cases of non-compliance (e.g., naming and shaming, imposing financial penalties, canceling public procurement, pressing legal charges). ‘Strong’ governmental action receives far greater support (0.57) than policies that do ‘not change’ current (relatively weak) enforcement schemes (0.38), a difference of almost 20 percentage points.

Figure Captions

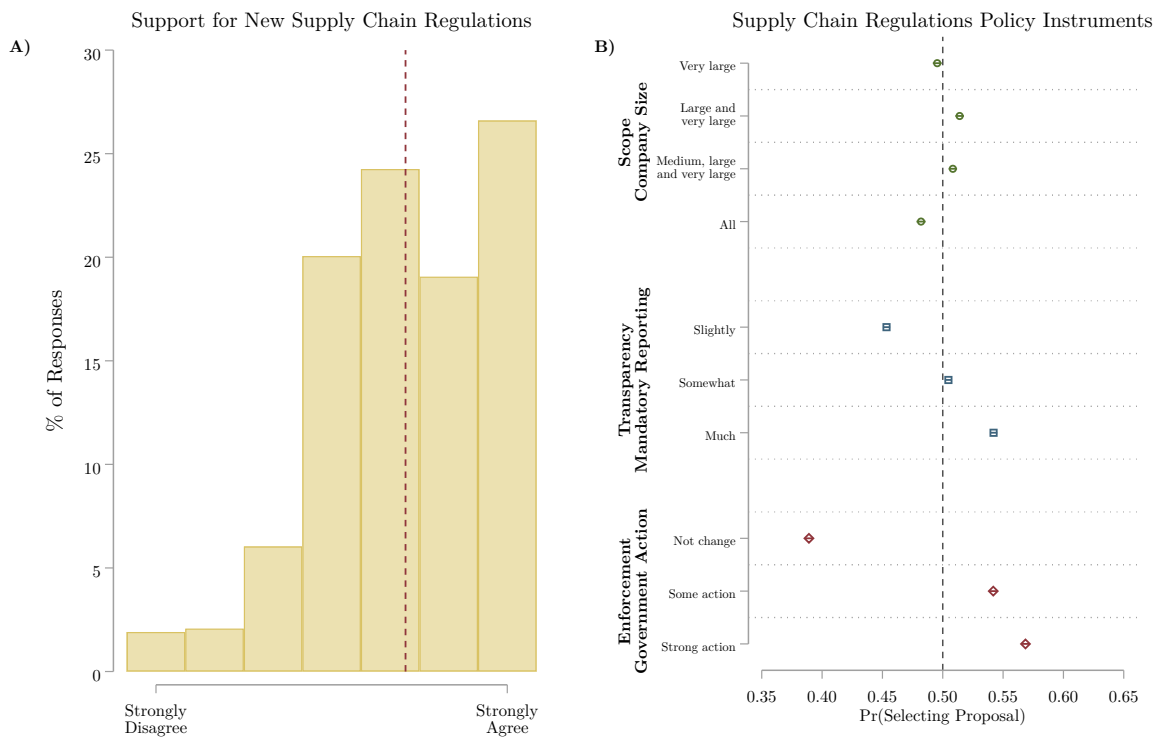


Figure 1: Support for global sustainable supply chain policies. *Panel A:* Mean and distribution on survey item ‘[Respondent’s country] should adopt and enforce new laws that make it mandatory for any company in [respondent’s country] to provide accurate information to consumers on the environmental and working conditions under which imported products they are selling were made abroad.’ Responses measured on a 7-point Likert scale (7: ‘strongly agree’; 1 ‘strongly disagree’). Dotted red line represents mean response (5.26). *Panel B:* Marginal means (predicted probabilities) are calculated from the conjoint choice experiment for dimensions scope, transparency, and enforcement with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal (A or B) is the dependent variable. 50% probability of selecting a proposal with the given characteristics is plotted in black.

Support for sustainability policy interventions to global supply chains is remarkably consistent across all 12 countries examined (Figure 2). The most notable differences are for respondents in Japan, which were comparatively less likely to support the application of new supply chain regulation to all companies ($\text{Pr}(\text{Proposal} \geq 25 \text{ employees})=0.43$), making reporting requirements ‘much stricter’ ($\text{Pr}(\text{Proposal ‘much more’})=0.52$) and allowing for ‘strong’ government enforcement ($\text{Pr}(\text{Proposal ‘strong action’})=0.52$). However, these differences in Japan are substantively small, where for example, a majority still prefers more

transparency regulation and stronger enforcement provisions. In sum, these findings indicate that there is strong public support across the largest importing economies of the Global North for stricter sustainability regulation of supply chains.

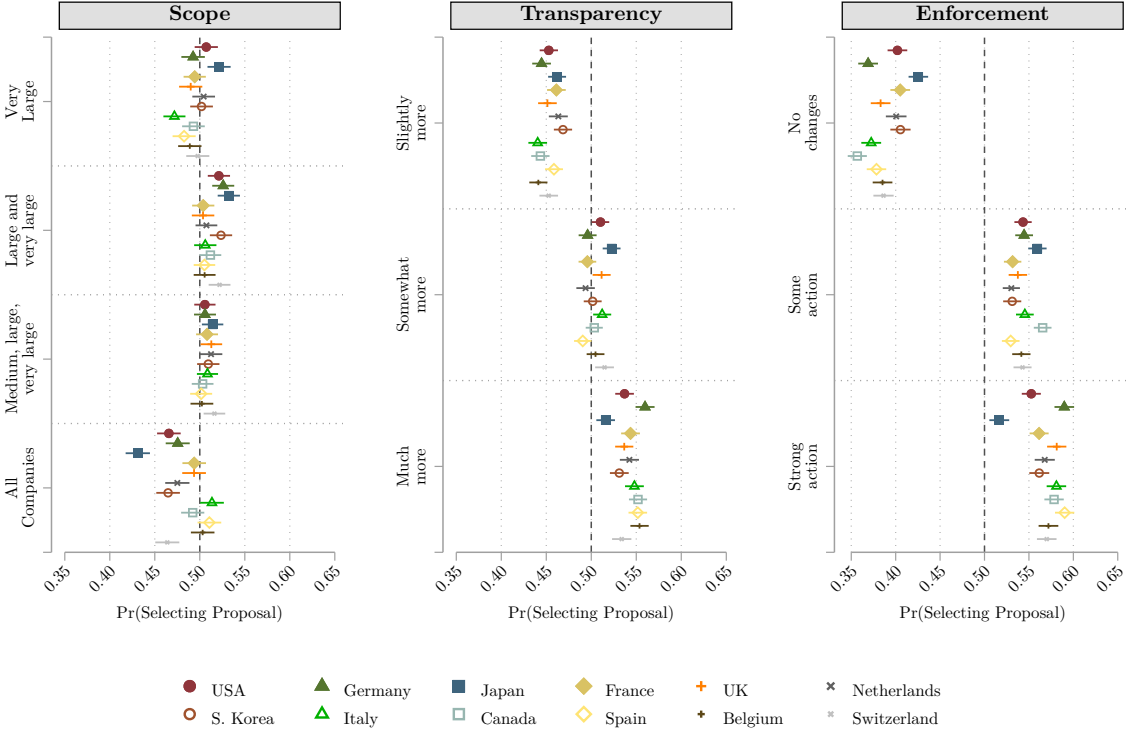


Figure 2: Marginal means of supply chain policy support by country. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions of scope, transparency, and enforcement, with 95% confidence intervals (respondent-level clustered standard errors) individually for each country. Individual choice based on preference towards a policy proposal (A or B) is the dependent variable. 50% probability of selecting a proposal with the given characteristics is plotted in black.

Policy Packages

To identify the variance in public support for policy packages, we conducted full factorial, three-way interaction analyses across all levels of the three policy attributes (Figure 3) [22]. Specifically, we calculated the marginal means for each iteration of the full-factorial interaction to explore “horizontal” policy packages (i.e., inclusive of multiple dimensions related to the same policy goal) to identify ‘ideal’ combinations of policy designs which have the

greatest support. The marginal means for each iteration of the policy design are akin to average component interaction effects (ACIE) for the full-factorial of policy instruments [20].

We find that policy designs including ‘much stricter’ transparency reporting and ‘strong’ government enforcement obtain the strongest support. Around 60% of respondents support such policy designs, particularly when applied to companies with $\geq 2,500$ employees. In contrast, policy designs that include only ‘slightly stricter’ transparency reporting requirements and bring ‘no changes’ to governmental enforcement are, on average, rejected by respondents ($\sim 35\%$ support), regardless of the company size to which new rules would apply. These findings suggest that policymakers can build upon a fairly strong public regulatory mandate if adopting policy designs inclusive of more stringent transparency and enforcement mechanisms.

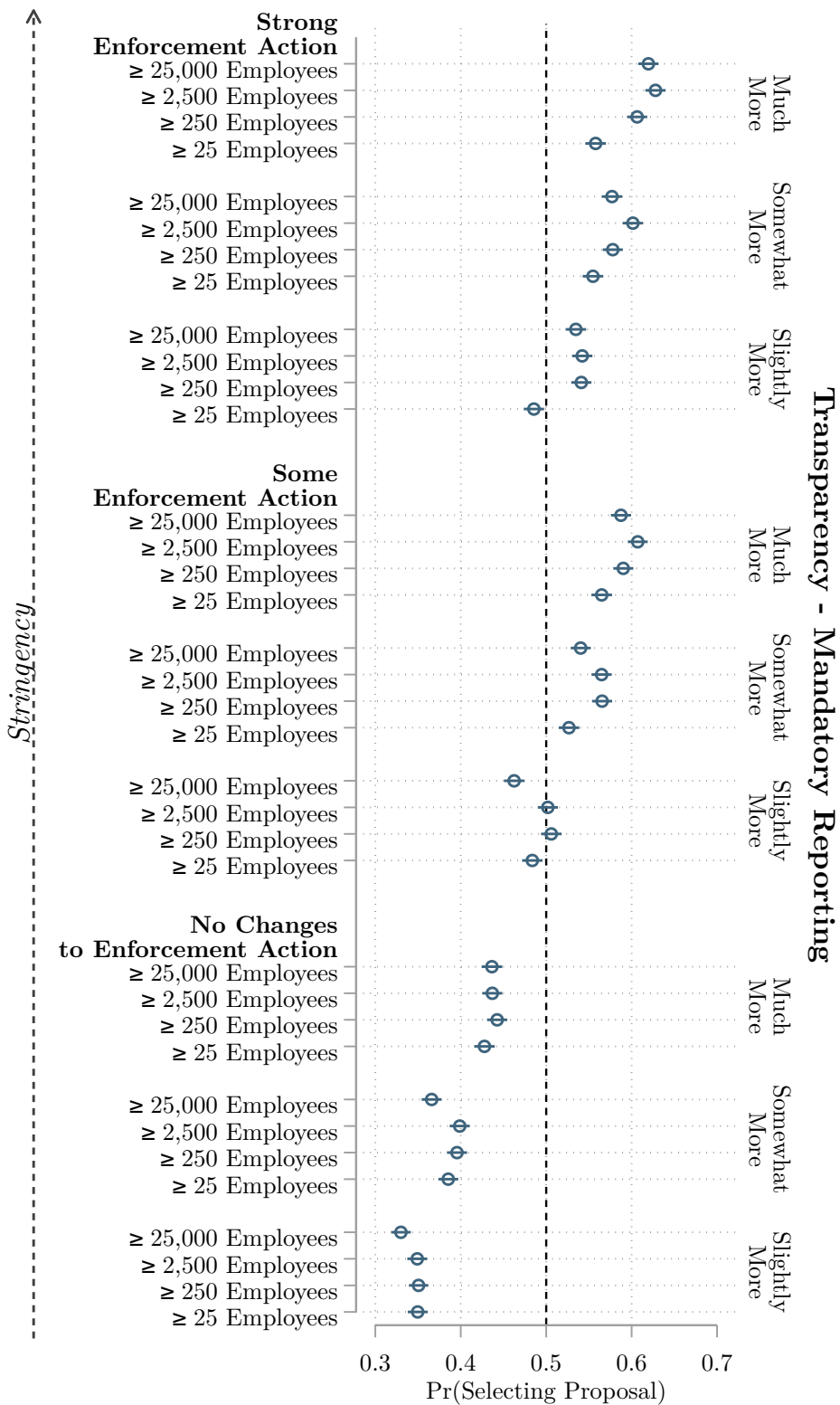


Figure 3: Marginal means of supply chain policy packages. Marginal means (predicted probabilities) are calculated from the conjoint choice experiment of policy packages for full factorial, interactive product terms of all policy instruments, with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal (A or B) is the dependent variable. 50% probability of selecting a proposal with the given characteristics is plotted in black.

However, Figure 3 also illustrates that depending on the specific attribute level, policy features can either be considered complements or substitutes in individuals' preference formation. Specifically, without robust enforcement provisions ('no changes' to enforcement action), none of the policy packages reaches the 50% public support threshold (regardless of the level of transparency requirements). However, as soon as government enforcement becomes part of the package ('some enforcement action'), nearly all policies exceed support levels of 50%. At this point, extending the transparency reporting requirements can, in some cases, substitute for tightening enforcement provisions further ('strong enforcement action'). For instance, a policy package applying to firms $\geq 2,500$ employees and including 'much stricter' transparency reporting requirements has one of the greatest probabilities of support, despite being backed by only moderate ('somewhat more') government enforcement capacities.

Drivers of Variation in Individuals' Support

The first two steps in the empirical analysis established that cross-national public support for regulating supply chains in terms of policy scope, transparency, and government enforcement is strong. However, citizens vary on their attitudinal and value-related priors, and this variation affects evaluations of policy designs. Since regulating global supply chains is an attempt to provide environmental and social public goods *abroad* [3] (and there are less clearly defined domestic pocket book 'winners' and 'losers') we expect particularly strong moderating effects of individual characteristics on policy preferences. Consequently, we evaluate support for policy attributes by individuals' characteristics in terms of environmental attitudes [23] (from low to high), political orientation (self-assignment on a left-right scale), and social value orientations [24]. We calculate each policy attribute's predicted probability of support at substantive levels of each characteristic.

First, support for increased policy scope is moderately related to environmental attitudes and political orientation, but not to measures of social value orientations (see Figure 4, Panel A). For example, the predicted probability of supporting policies that apply to all

companies (≥ 25 employees) differs by 5 percentage points between respondents with low (-2SD) and high (+2SD) levels of environmental attitudes.

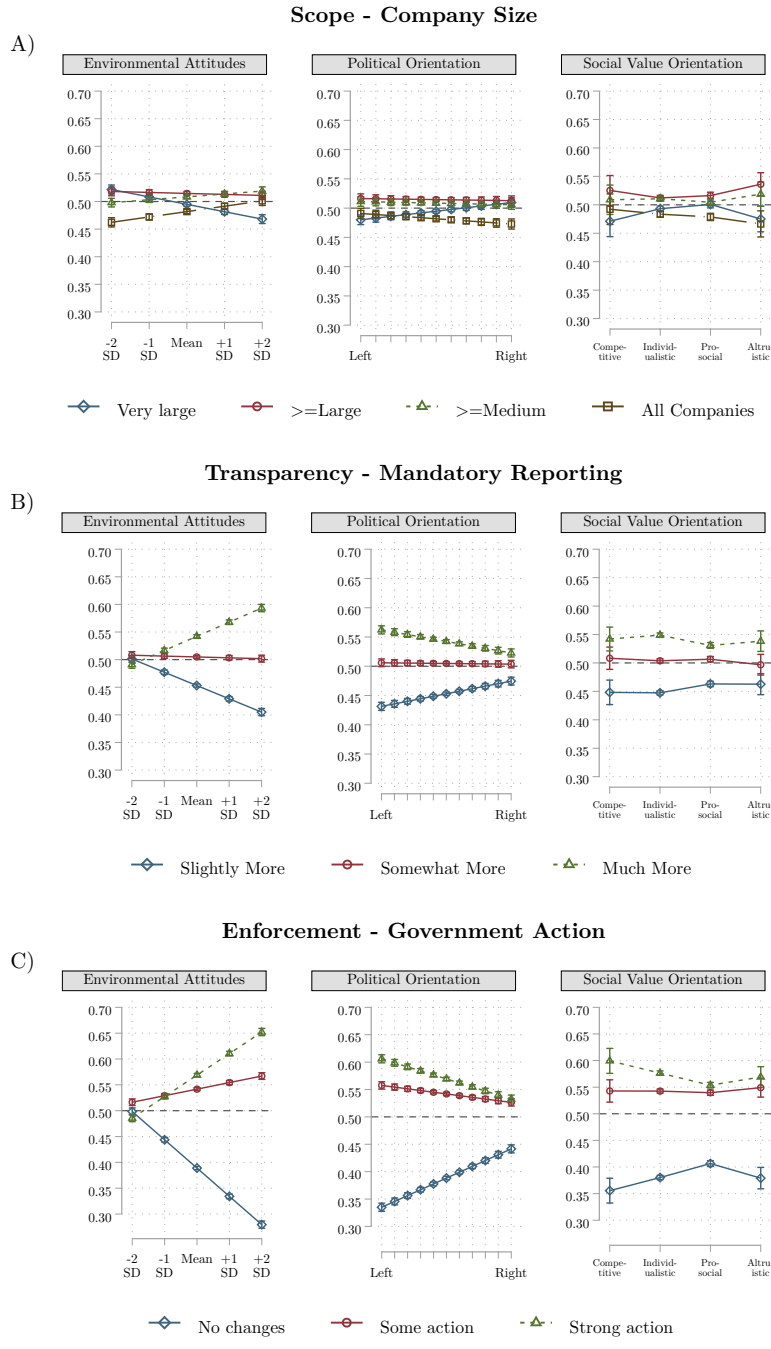


Figure 4: Marginal means of supply chain policy support by subgroups. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions scope, transparency, and enforcement with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal (A or B) is the dependent variable. Marginal means are conditioned by subgroups at different levels of environmental attitudes (-2SD to +2SD), political orientation (left to right), and social value orientation (competitive, individualistic, prosocial, and altruistic). 50% probability of selecting a proposal with the given characteristics is plotted in black.

Next, support for increased transparency reporting requirements is more strongly associated with environmental attitudes and political orientation (see Figure 4, Panel B). The likelihood of supporting ‘much more’ mandatory reporting is ~ 10 percentage points greater for those with heightened environmental attitudes (e.g., +2SD compared to -2SD). Similarly, respondents on the political left are ~ 5 percentage points more likely to support policies with ‘much more’ mandatory reporting, while alternatively, those on the right are ~ 5 percentage points more likely to support policies with only ‘slightly more’ transparency. Again, we find minimal substantive differences across social value orientations.

Last, we observe the strongest moderating effects of individual characteristics on increased government enforcement competencies (see Figure 4, Panel C). Support for ‘strong action’ against non-compliant actors is ~ 15 percentage points greater for respondents with ‘high’ levels of environmental attitudes. While, respondents on the political right are ~ 10 percentage points more likely to support proposal with ‘no changes’ to governmental enforcement actions than those on the political left. Lastly, for social value orientations, we find substantively smaller differences, where for example, respondents with ‘pro-social’ values are roughly 5 percentage points more likely to support policies with ‘no changes’ than those with ‘competitive’ values.

Perceptions of Cost Implications and Robustness

Furthermore, we tested how respondents view the potential costs implications of new supply chain policies for them as consumers. After the conjoint experiment, we presented respondents with one of three randomly assigned policy packages, consisting of varied levels of stringency (low, medium, high). We then tasked respondents with evaluating their expectations of this policy package across a range of potential impacts (on 7-point scales). Here, we focus on perceptions of cost implications, calculating the marginal means of responses across these three policy packages (see Figure 5).

We estimate marginal means of respondents’ expected policy costs for consumers due to the (hypothetical) adoption of low-, medium-, and high-stringency policy packages by

their home country (comparison between-subjects). We observe that respondents expect cost impacts for all low-, medium- and high-stringency policy packages (grand mean of 4.32), whereby expected costs impacts are greatest for high-stringency policies (0.46 above scale mid-point, 28% of standard deviation). Yet, while this difference from the scale mid-point is substantially large, the evaluations between the three policy packages do not differ by much. For example, low stringency policy packages are similarly evaluated to be 0.16 above the scale midpoint, or 10% of standard deviation). Accordingly, these findings suggest that while respondents do perceive some cost implications of supply chain regulations, the perceived differences between more nuanced designs may not be large enough to substantively shape support for these policies on the basis of cost perceptions.

Given the relatively recent development of global supply chain policies, we tested the robustness of respondents' preferences. First, we investigated potential effects of informational treatments on policy preferences [25]. To that end, we implemented an informational vignette experiment, where each respondent was assigned either to a pro-market treatment (emphasizing corporate credibility and the effectiveness of certification labeling schemes), an anti-market treatment (highlighting issues of greenwashing and the 'labeling jungle'), or the control group where no further information was presented. If, indeed, supply chain regulation has become a contested political subject, we would expect relatively only small (if any) preference updates in response to informational framing. Indeed, we find that citizen preferences for supply chain policy instruments are largely robust to framing effects (see Figure 6). Across all policy dimensions, there are only minor substantive differences in preferred policy design features based upon informational treatment assignment (all differences in support are ≤ 5 percentage points).

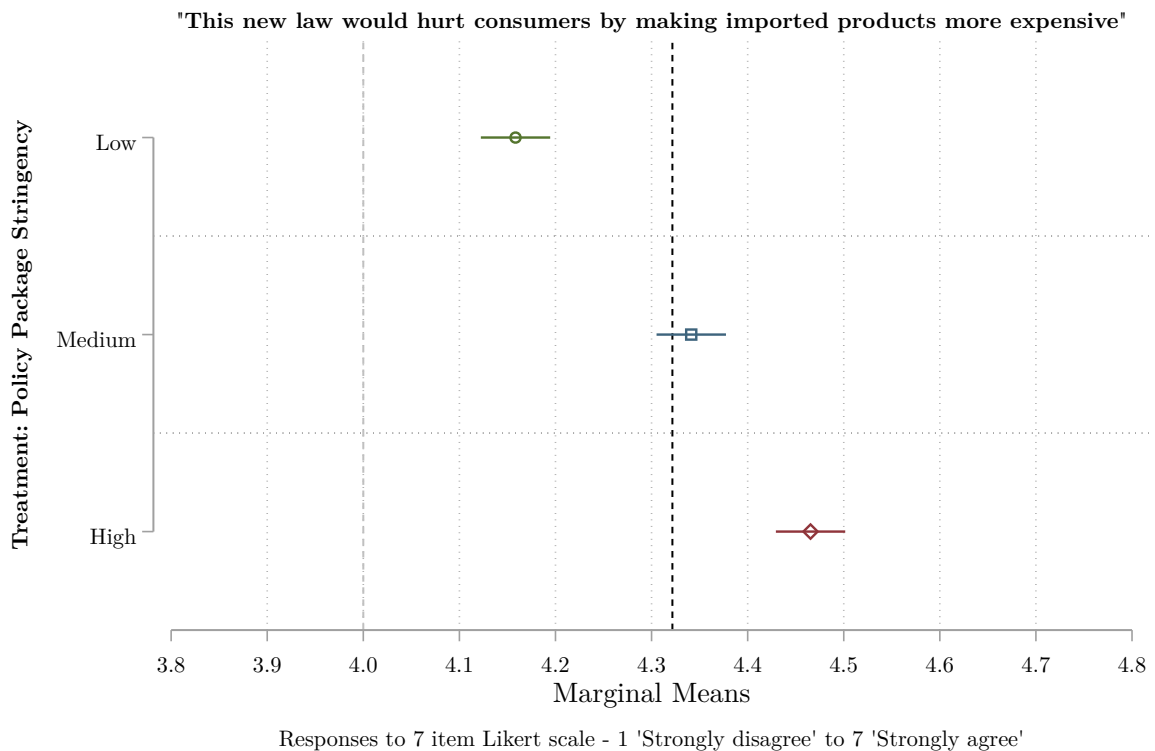


Figure 5: Marginal means of cost perceptions by supply chain policy package stringency. Marginal means (predicted probabilities) of costs perceptions for low-, medium- and high-stringency policy packages are calculated based on responses to the 'cost perception' follow-up probe, with 95% confidence intervals. Respondents are randomly presented one of three levels of policy stringency and asked to evaluate the impact of such a policy. Statement wording: 'This new law would hurt consumers in [respondent's country] by making imported products more expensive.' Responses measured on a 7-point scale (1: 'strongly disagree'; 7 'strongly agree'). Dotted black line represents mean response across policy stringency conditions (4.32), while dashed grey line is the center of the response scale (4).

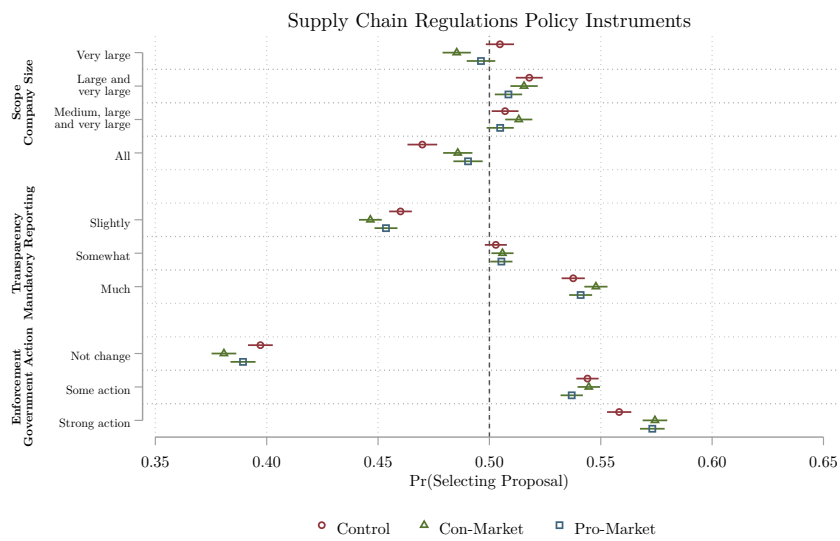


Figure 6: Marginal means of supply chain policy by informational treatment. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions scope, transparency, and enforcement, with 95% confidence intervals. Individual choice based on preference towards a policy proposal (A or B) is the dependent variable. Marginal means are calculated conditioned by sub-groups whether respondents received the pro-, the con- or no treatment about market outcomes. 50% probability of selecting a proposal with the given characteristics is plotted in black.

Discussion

Here we present a cross-national assessment of public acceptance of sustainable global supply chain regulations in high-income societies of the Global North, finding strong support for unilateral interventions aimed to increase sustainable labor and environmental conditions. Specifically, citizens in 12 high-income democracies greatly prefer policy designs that include stricter corporate disclosure mandates and strong governmental enforcement capacities. However, crucially, we further observe that respondents expect increased consumer costs as a consequence of any policy package (high stringency policy packages in particular), in line previous research finding that respondents associate supply chain regulations with opportunity costs and competitive disadvantages for firms [3].

These findings corroborate arguments that public support for (localized) environmental and social public goods – a societal consequence of increased macro-economic development – apply to both domestic and overseas contexts [3]. Further, the experimental design allows for causal inferences regarding public support for specific policy designs and how individual characteristics influence policy preferences [21]. Crucially, these findings highlight that a medium-level amount of governmental enforcement competencies – including ‘naming and shaming’ of non-compliant companies and financial penalties – are required components for policy packages to receive majority support. Hence, our study points to a contemporary political operating space, which, in terms of stringency, extends beyond the current (rather fragmented) governance in global supply chain management, which is predominantly characterized by corporate voluntarism, non-coercive partnerships and more recently, reporting mandates [26].

From an environmental or human rights perspective, this is an encouraging finding as it provides political actors (‘entrepreneurs’) with a high baseline level of public sentiment to cultivate the subject further [27]. Shifting public opinion could be effective in bringing the issue to the forefront of the policy agenda, especially since relevant actors have established themselves in pivotal positions – for example, green parties are currently part of govern-

ing coalitions in 7 EU Member States and have recently received record electoral support across democratic states of the Global North [28].

Furthermore, at least two important political framework conditions appear to be favorable. First, while corporate lobbying often presents serious obstacles to implementation of new policies [8], preferences towards global supply chains' sustainability (and their regulation) are quite heterogeneous, where conflicts between competing interest groups could push policy design in opposite directions [29]. Thus, intervention-averse interest groups may not carry sufficient political momentum to blunt governments' choices towards parochial trajectories. Second, governments might be able to apply pre-existing (domestic environmental) structures (based on, e.g., transparency and sanctioning) to optimize market processes to a new policy area. The current state of public sentiment, political entrepreneurs and political boundary conditions [27] is favorable such that the political system could respond to public support for further policy action in this area.

Limitations and Future Research

Still, questions remain regarding underlying policy preference formation mechanisms. For instance, voters might systematically prefer coercive but level-playing-field policy instruments at the firm level (e.g., mandatory disclosure) over paternalistic interventions aimed at changing individual consumer behaviors [e.g., taxation 30]. This may be a consequence of consumers being i) unwilling to adapt due to a hedonic utility loss via unpleasant information [31] or ii) unable to make changes due to costs associated with information-seeking [32]. Accordingly, future inquiries could focus on individual willingness to pay for additional sustainability information to quantify the value such disclosure mandates may have to consumers [33]. In any case, developing a deeper understanding of consumers' sensitivity or indifference vis-a-vis costs is vital because the effectiveness of a heightened sustainability information supply (induced by disclosure mandates) partly depends on facilitating more sustainable consumption. Otherwise, disclosure-based policies run the risk of being expressive, "producing a sense that something has been accomplished without actually

helping anyone” [34, p.133].

Hence, further research could probe deeper into processes effecting differences between regulatory approaches within high-income states [35] – such as public pressure for regulation varying across industrial sectors (e.g., mineral extraction, agriculture, textiles). Similarly, future research could test whether public support for transparency is constant across different stages of the supply chain. For example, the public might be particularly interested in information about conditions of production upstream because, such (relatively distant from a consumer perspective) harms of production tend to diffuse to regions with weak governance.

It remains essential to consider that while achieving more transparency (the focus of this study) constitutes an important lever to improve sustainability in global supply chains, “transparency is only ever a means, not an end”[36, p.171]. In other words, the relationship between transparency and sustainability is not automatic, though greater transparency is likely to be a necessary (though not sufficient) condition for more sustainable global supply chains. This means that we need more research on how effective particular types of disclosure initiatives are under particular conditions. It is also important to consider the distributional implications of such initiatives. For instance, poorly-designed transparency initiatives in high-income countries could reduce or even prevent market access by smaller producers from countries in the Global South [37]. Future research should thus examine the policy preferences towards sustainability governance of global supply chains also in countries of the Global South to assess whether and where preferences align or differ from the preferences in the Global North.

We suggest further studies to replicate and expand upon these findings. While there may be country-specific differences in regulatory approaches and intervention strategies – e.g., between the EU and the anglophone countries – our results suggest that global supply chains likely will remain a key item on individuals’ and parties’ economic and foreign policy programs.

Methods

We implemented an original survey between September 22 and November 3, 2021, with 24,003 respondents from the 12 largest high-income importing economies (BE, CA, CH, DE, ES, FR, IT, JA, KO, NL, UK, US, N= 2,000 each) [19]. We recruited respondents from Dynata's (formerly Survey Sampling International and Research Now) online panel. Our sampling strategy targeted only citizens eligible to vote, i.e., respondents had to be at least 18 years of age. We set quotas on age, gender (interlocked with age), and education (3 categories), whereby our study sample followed the distribution of these characteristics in the target countries' censuses.

We fielded the survey in English, German, French, Italian, Spanish, Flemish, Dutch, Japanese, and Korean, the main official languages in our target countries. We implemented a multi-step translation procedure: First, translators at Dynata translated the survey instrument from English to all other languages. In a second step, native speakers reviewed the translations, correcting minor errors and suggesting improvements. In a final step, the translations were finalized by the Dynata translators. Our survey instrument was approved by the ETH Zurich's Ethics Committee (EK-2021-N67), and we pre-registered it on Harvard Dataverse (see: <https://doi.org/10.7910/DVN/KLOTB6>).

We implemented a series of checks to control respondents' attention and safeguard data quality. Specifically, we flagged respondents for meeting any of the following criteria: a) response duration below 45% of the median duration (conditional on the respondent country and experimental group, see below, grand median at 14 minutes) b) incorrect answer on an item requesting respondents to indicate how many wheels a bicycle has (question in the first third of the survey) c) incorrect answer on an item requesting respondents to 'select the triangle' (other shapes being displayed, question in the last third of the survey). Respondents flagged twice were replaced in the sampling process, and they are not included in our empirical analysis. These bad quality interviews amount to around 3.2% of the total sample.

Further, while we set quotas across essential socio-demographic characteristics, and non-probability samples can yield equally accurate inferences as traditional probability samples, we assess the risk of bias derived from our non-probability sampling design [38]. Accordingly, we explore the congruence of non-quota relevant attitude dimensions (political and non-political) between our online sample and a sample collected using probability sampling techniques. In particular, if we compare the Swiss sample used in these analyses to a probability sample collected for the Swiss Mobility Panel (N=9,500, 2020-2022), we only find non-substantive differences in the descriptive statistics for political orientation and social value orientation (Table S10). These findings suggest that our online, 'convenience' sample is representative of the underlying populations beyond quota-relevant characteristics.

Next, given the multiple components included in this survey instrument, there may be ordering effects, particularly in the sub-group attitudinal scales which are presented at the end of the survey design. Methodological research suggest that even within strong, 'directional' treatment designs (such as repeated within-subject vignette experiments), there are minimal treatment biases shaping subsequent survey items [39]. Further, given that conjoint experiments are non-directional and multiplicative, such designs are likely less prone to creating biases. Lastly, we also explore potential biases generated as a results of the vignette treatment assignment. We compare the descriptive statistics of the environmental attitudes and political orientation scale, finding minimal differences resulting from treatment assignment (see Table S9). In sum, we expect minimal biases as a result of these experimental components.

Citizens' Policy Preferences

A conjoint choice experiment was at the core of our research design [40]. Conjoint experiment designs are quite adaptable, and well suited for questions addressed in a wide range of social science research. In particular, they are commonly used to identify policy designs (packages or mixes of policy instruments) to maximize support and political fea-

sibility of policies (for example in carbon taxation [41]). Furthermore, such designs can be adopted to assess policy support by decomposing policy packages into their individual instruments [40]. This focus on the role of individual instruments allows for researchers to leverage the conjoint experimental design to make causal inferences regarding preferred policy elements.

We requested respondents to evaluate two policy proposals, A and B, displayed side-by-side in that experiment. Each of the policy proposals was composed of three attributes. Each of these attributes, in turn, represented a dimension of potential government intervention into global supply chains. The particular attribute values making up policies A and B were drawn randomly from the full set of attribute values. Respondents completed five rounds of the choice experiment.

We used three items to measure respondents' policy preferences. First, we asked respondents to indicate whether they would oppose or favor either proposal separately. As the main outcome (response) variable in the conjoint experiment, respondents were asked to indicate which of the two policy proposals they would support if they had to vote today (forced choice). Respondents who indicated they would oppose both policies were prompted in a follow-up question to tell why they opposed both proposals. In that case, respondents could either state that 'neither proposal was strict enough' that 'both proposals were too restrictive' or fill in a text field.

Before entering the conjoint experiment, respondents were given the following introductory information (United States example):

"Products sold in the United States are often made partially or entirely in another country. Think, for example, of coffee, computers, clothes, cars, gold, chemicals, or steel. These products are manufactured and sold through international supply chains that may involve multiple companies from the United States and from other countries abroad."

"Each country has its own distinct standards for labor conditions and environ-

mental protections. Hence, imported products that we buy locally in the United States may be produced abroad under certain working (i.e., wages, working hours, safety rules) and environmental conditions (i.e., clean air and water quality) that are different from US standards.”

In the next step, respondents were informed that “politicians and societies around the world are debating whether governments should adopt and enforce new laws.” Finally, we introduced respondents to all conjoint attributes and their values. Despite a global shift in sustainable economy policy towards comprehensive (i.e., across economic sectors) supply chain regulation, discussions on policy design vary considerably between national contexts (e.g., depending on the legal system). Hence, to draw generalizable inferences, we had to abstract from these debates. Consequently, we based our experimental attributes on key policy design dimensions identified by the global environmental governance literature. Specifically, most policy blueprints to govern common goods suggest that transparency/monitoring provisions [42] and a sanctioning regime to punish non-compliance are necessary [43]. Thus, even though we maintain that our list of attribute values reflects real-world debates in all of our sample countries, we avoided national policy design idiosyncrasies (Rudolph et al. provide an excellent summary of the state of current affairs across countries in their supplementary material [3]).

In particular, we translate insights from the governance literature to the supply chains context by focusing on three key policy characteristics. In particular, the first attribute – the scope attribute – represents the share of the private sector that would be subject to new regulation, whereby we distinguish companies by the number of employees (a common distinction in regulatory policy-making, and also a simple to grasp feature for our respondents). Thereby, we relate to literature on corporate self-regulation, which has conceptualized the extent of participation in environmental policy as ‘breadth’ [44, 2] and calibrated the corresponding attribute based on the European Commission recommendation 2003/361, which situates small- and medium-sized enterprises up to around 250 employees. However, since

debates on supply chains policies are often linked to large companies [11], we set the attribute levels such as to generate variation near the upper boundary of company size.

The second attribute – the transparency attribute – identifies how firms are required to report on environmental and labor conditions in their supply chains. This attribute varies on whether the report is confidential or public and to what extent the government mandates specific contents of the report. The underlying logic is that more detailed and public reporting increases reputational stakes for firms, which in turn is likely to decrease corporate shirking incentives. Empirical evidence on social activism even suggests that ‘good’ firms that disclose more information actually make better targets for advocacy groups [45]. To make the substantive differences between the attribute levels easy to understand, we vary both attribute dimensions simultaneously whereby future research could tease out differences in public support for more specific reporting instruments.

The third attribute – the enforcement attribute – measures the strength of accountability mechanisms. In other words, the attribute indicates what happens if companies do not comply with disclosure mandates. Standard arguments posit that accountability mechanisms – although not popular in the private sector – are necessary to increase compliance pressure and, particularly in bottom-up governance, to reduce the incentives to free-ride [46]. To identify respondents’ confidence in private-sector reporting absent enforcement, we set a zero accountability baseline. Again, we made the qualitative differences between the attribute levels easy to understand for respondents by increasing the strength of government capabilities on several common sanctioning dimensions – ‘naming and shaming’, fines and legal action. Table S1 in Supplementary Information reports all attribute levels.

We analyze the conjoint data using marginal means [21]. Since every respondent evaluated two policies in five choice tasks, our data collection resulted in around 240,000 observations. Marginal means represent the average choice probability across all policy packages in which a particular attribute value was part. Further, we implement this method to investigate respondent preferences in subgroups – e.g., differentiated by political left-right orientation [21].

Individual Characteristics

Arguments related to the Environmental Kuznets Curve model posit that, in general terms, citizens in high-income countries will support policy to provide domestic (environmental) public goods. However, concerning the provision of environmental and social public goods *abroad*, we expect more substantial variation in citizens' policy preferences depending on their attitudinal and value-related priors [3]. We base this expectation on the fact that, unlike trade policy debates, discussions on global supply chains tend not to be characterized by cleavages between economic 'winners' and 'losers'. Therefore, we stratify our analyses by three crucial individual characteristics in this context.

First, we asked respondents to indicate their political preferences on an 11-point left-right scale: "In politics people sometimes talk of 'left' and 'right'. Where would you place yourself on this scale, where 1 means the 'left' and 11 means the 'right'?".

Second, we measured respondents' general environmental attitudes drawing on the battery of 7-items developed by the International Social Survey Programme, previously implemented in 2010 (Environment III) [23]. These 7-items measure different components of environmental attitudes, with 2 items capturing measures of perceived environmental impact, while the other 5 items more broadly measure environmental attitudes. Given the ordinal nature of the response outcomes for environmental attitudes (Likert scale, 1-7), we conduct a factor analysis using a polychoric correlation matrix [47], using the iterated principal factors method for extraction [48]. For all 7-items, the factor analysis indicates a likely two latent factors underlying this construct (5 items measuring attitudes, and 2 measuring direct effect of environmental impacts). We use the 5 items measuring environmental attitudes for these analyses, via a predict factor score, which was standardized (Mean=0, SD=1). Specific item wording and factor analyses are presented in Tables S4 and S5 in the appendix.

Third, we recorded respondents' social value orientations using an instrument developed by Murphy and colleagues [24]. In a nutshell, based on six tasks, in which individuals

distributed an amount of (fictional) money between themselves and an anonymous 'other person'. For example, they could choose between different sets of funds where the respondent would hypothetically receive between 50-100 dollars, and the 'other' would also receive somewhere between 15-100 dollars. Given the variance in these potential choices (which are not zero sums, e.g., not all choice sets sum to 150 for both the respondent and the other), we are able to estimate how willing the respondent is to maximize payouts for themselves (individualistic), for others (benevolent), for both themselves and the other (pro-social), and minimizing the payout to the other (competitive).

Robustness of Policy Preferences

To examine how crystallized citizens' attitudes on the topic are, we implemented a vignette survey experiment. In the experiment, we used informational anchors regarding the current state of global supply chains management. In other words, if supply chain regulation has become a salient policy issue and if indeed, citizens have had sufficient time to develop strong attitudes, we would expect no effects of one-off information on policy preferences.

Specifically, before entering the conjoint experiment – i.e., after the explanatory information on supply chains, but before being introduced to the conjoint attribute levels – respondents were assigned to a control, a pro-market or a con-market group. Respondents in the control group did not receive any additional information. Respondents in the treatment groups were confronted with four short text excerpts. After each text, respondents were prompted to reflect and indicate (on seven-point scales) to what extent the information they just read affected a) their confidence in how companies informed consumers about environmental and working conditions in their supply chains and b) their support for new government laws on how companies disclose information to consumers about the environmental and working conditions in their supply chains. The pro-market treatment text excerpts emphasized the credibility of corporate efforts and the effectiveness of certification and labeling in communicating the sustainability of products to consumers. In contrast, the con-market treatment text excerpts highlighted that many companies engage in greenwashing and how

the 'labeling jungle' caused consumer confusion [49]. See our pre-registered study design for the complete treatment wording.

Second, our findings broadly suggest preferences for increased regulatory interventions of global supply chains (Figure 1, Panel A), where support increases along with measures for heightened stringency (Figure 3). Lastly, as a robustness check in the conjoint experimental design, after asking respondents to choose which policy they would prefer (A or B), we asked them separately if they would prefer either policy A and B separately (yes or no). We replicated the findings presented in Figure 1-6 presented here using this alternative response methodology (see Figure S1-S5).

Finally, to investigate perceptions of policy consequences and get a deeper understanding of individual preference formation mechanisms, we confronted respondents with hypothetical policy scenarios, which, in terms of wording, we based closely on the conjoint attributes. Specifically, respondents were randomly assigned to one of 3 possibilities – a low, middle and high stringency policy scenario. In a next step, we asked respondents for their evaluation of the consequences of the presented policy proposal on a 7-point scale (agreement to disagreement). In particular, we implemented this experiment to test to what extent respondents associated policy with potential costs for them as consumers. We Table in , we summarize the three policy scenarios in Table S2 in Supplementary Information.

Data Availability: Data replication materials are publicly available on Harvard Dataverse: <https://doi.org/10.7910/DVN/URL6A4>.

Code Availability: Code replication materials are publicly available on Harvard Dataverse: <https://doi.org/10.7910/DVN/URL6A4>.

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Author Contributions: D.K. and E.K.S. collected the data, developed and analyzed the results, and co-wrote the manuscript. D.K., E.K.S. and T.B. contributed to the research design, drafting and revising of the manuscript.

Competing Interests Statement: The authors declare no competing interests.

References

- [1] Thomas Wiedmann, Manfred Lenzen, Lorenz T. Keyßer, and Julia K. Steinberger. Scientists' warning on affluence. *Nature Communications*, 11(1):3107, June 2020. ISSN 2041-1723. doi: 10.1038/s41467-020-16941-y.
- [2] Dennis Kolcava, Lukas Rudolph, and Thomas Bernauer. Voluntary business initiatives can reduce public pressure for regulating firm behaviour abroad. *Journal of European Public Policy*, 28(4):591–614, April 2021. ISSN 1350-1763. doi: 10.1080/13501763.2020.1751244.
- [3] Lukas Rudolph, Dennis Kolcava, and Thomas Bernauer. Public demand for extraterritorial environmental and social public goods provision. *British Journal of Political Science*, 2022. doi: 10.1017/S0007123422000175.
- [4] Matthew Amengual and Tim Bartley. Global Markets, Corporate Assurances, and the Legitimacy of State Intervention: Perceptions of Distant Labor and Environmental Problems. *American Sociological Review*, 87(3):383–414, April 2022. ISSN 0003-1224. doi: 10.1177/00031224221092340.
- [5] Robert O. Keohane and David G. Victor. Cooperation and discord in global climate policy. *Nature Climate Change*, 6(6):570–575, June 2016. ISSN 1758-6798. doi: 10.1038/nclimate2937.

- [6] Scott Barrett. Dikes versus windmills: Climate treaties and adaptation. *Climate Change Economics*, 11(04):2040005, November 2020. ISSN 2010-0078. doi: 10.1142/S2010007820400059.
- [7] Hamish van der Ven. *Beyond Greenwash? Explaining Credibility in Transnational Eco-Labeling*. Oxford University Press, New York, 2019. ISBN 978-0-19-086600-6.
- [8] Jared Cory, Michael Lerner, and Iain Osgood. Supply Chain Linkages and the Extended Carbon Coalition. *American Journal of Political Science*, 65(1):69–87, January 2021. ISSN 0092-5853, 1540-5907. doi: 10.1111/ajps.12525.
- [9] H. Österblom, J. Bebbington, R. Blasiak, M. Sobkowiak, and C. Folke. Transnational Corporations, Biosphere Stewardship, and Sustainable Futures. *Annual Review of Environment and Resources*, 47(1), October 2022. ISSN 1543-5938, 1545-2050. doi: 10.1146/annurev-enviro-120120-052845.
- [10] Mathis Wackernagel, Laurel Hanscom, Priyangi Jayasinghe, David Lin, Adeline Murthy, Evan Neill, and Peter Raven. The importance of resource security for poverty eradication. *Nature Sustainability*, 4(8):731–738, August 2021. ISSN 2398-9629. doi: 10.1038/s41893-021-00708-4.
- [11] Carl Folke, Henrik Österblom, Jean-Baptiste Jouffray, Eric F. Lambin, W. Neil Adger, Marten Scheffer, Beatrice I. Crona, Magnus Nyström, Simon A. Levin, Stephen R. Carpenter, John M. Anderies, Stuart Chapin, Anne-Sophie Crépin, Alice Dauriach, Victor Galaz, Line J. Gordon, Nils Kautsky, Brian H. Walker, James R. Watson, James Wilen, and Aart de Zeeuw. Transnational corporations and the challenge of biosphere stewardship. *Nature Ecology & Evolution*, 3(10):1396–1403, October 2019. ISSN 2397-334X. doi: 10.1038/s41559-019-0978-z.
- [12] John Gerard Ruggie. Multinationals as global institution: Power, authority and relative autonomy: Multinationals as global institution. *Regulation & Governance*, 12(3):317–333, September 2018. ISSN 17485983. doi: 10.1111/rego.12154.
- [13] Genevieve LeBaron and Jane Lister. The hidden costs of global supply chain solutions. *Review of International Political Economy*, 29(3):669–695, August 2021. ISSN 0969-2290. doi: 10.1080/09692290.2021.1956993.
- [14] Erin M. Reid and Michael W. Toffel. Responding to public and private politics: Corporate disclosure of climate change strategies. *Strategic Management Journal*, 30(11): 1157–1178, 2009. ISSN 1097-0266. doi: 10.1002/smj.796.
- [15] Christopher Wlezien. The Public as Thermostat: Dynamics of Preferences for Spending. *American Journal of Political Science*, 39(4):981, November 1995. ISSN 00925853. doi: 10.2307/2111666.
- [16] Anselm Hager and Hanno Hilbig. Does Public Opinion Affect Political Speech? *American Journal of Political Science*, 64(4):921–937, 2020. ISSN 1540-5907. doi: 10.1111/ajps.12516.

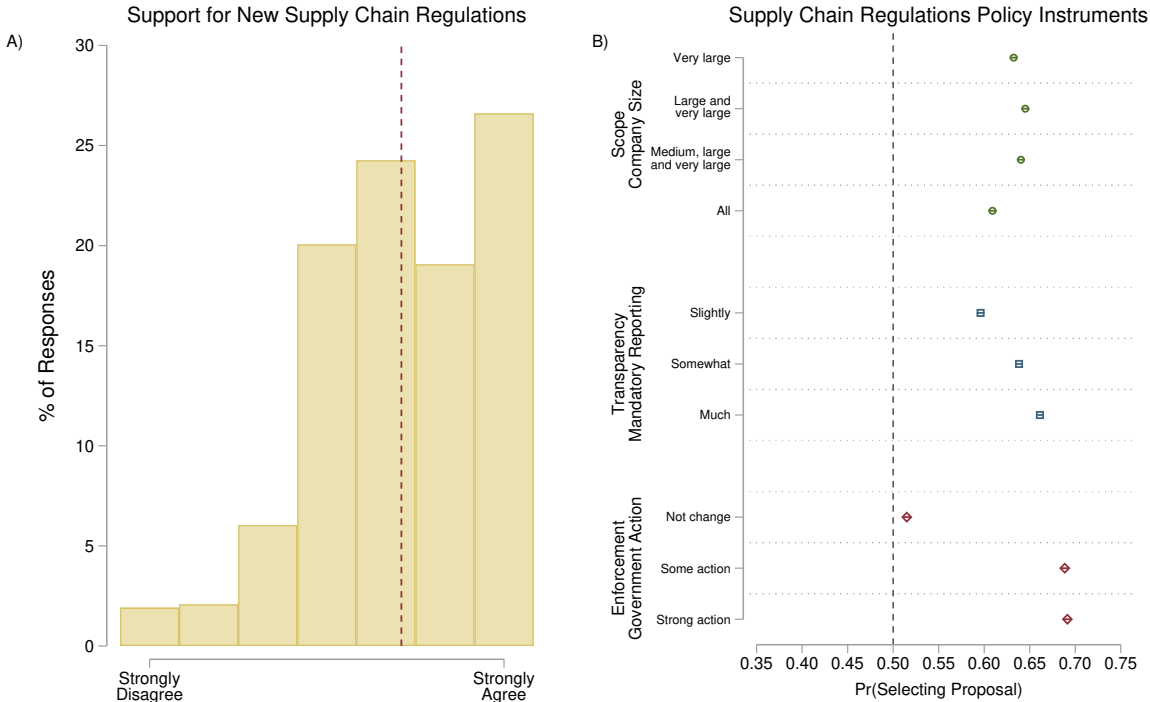
- [17] Zachary Wendling, John W Emerson, Alex De Sherbinin, and Daniel C. Esty. *Environmental Performance Index 2020*. Yale Center for Environmental Law & Policy, 2020. doi: 10.13140/RG.2.2.21182.51529.
- [18] Sara Maestre-Andrés, Stefan Drews, Ivan Savin, and Jeroen van den Bergh. Carbon tax acceptability with information provision and mixed revenue uses. *Nature Communications*, 12(1):7017, December 2021. ISSN 2041-1723. doi: 10.1038/s41467-021-27380-8.
- [19] International Trade Centre. Data from Trade Map. Trade statistics for international business development 2001-2020., 2020.
- [20] Jens Hainmueller, Daniel Hopkins, and Teppei Yamamoto. Causal Inference in Conjoint Analysis : Understanding Multidimensional Choices via Stated Preference Experiments. *Political Analysis*, 22(1):1–30, 2014. doi: 10.1093/pan/mpt024.
- [21] Thomas J. Leeper, Sara B. Hobolt, and James Tilley. Measuring Subgroup Preferences in Conjoint Experiments. *Political Analysis*, 28(2):207–221, 2020. ISSN 1047-1987, 1476-4989. doi: 10.1017/pan.2019.30.
- [22] Moshe Givoni, James Macmillen, David Banister, and Eran Feitelson. From Policy Measures to Policy Packages. *Transport Reviews*, 33(1):1–20, January 2013. ISSN 0144-1647. doi: 10.1080/01441647.2012.744779.
- [23] ISSP Research Group. International social survey programme: Environment III–ISSP 2010 [ZA5500 Data file Version 3.0]. Technical Report ZA5500 (v3.0.0), GESIS Data Archive, Cologne, 2010. URL 10.4232/1.13271.
- [24] Ryan O. Murphy, Kurt A. Ackermann, and Michel J. J. Handgraaf. Measuring social value orientation. *Judgment and Decision Making*, 6(8):771–781, 2011. ISSN 1930-2975(Print).
- [25] Lorraine Whitmarsh, Dimitrios Xenias, and Christopher R. Jones. Framing effects on public support for carbon capture and storage. *Palgrave Communications*, 5(1):1–10, February 2019. ISSN 2055-1045. doi: 10.1057/s41599-019-0217-x.
- [26] Eva-Marie Meemken, Christopher B. Barrett, Hope C. Michelson, Matin Qaim, Thomas Reardon, and Jorge Sellare. Sustainability standards in global agrifood supply chains. *Nature Food*, 2(10):758–765, October 2021. ISSN 2662-1355. doi: 10.1038/s43016-021-00360-3.
- [27] Catherine E. De Vries, Sara B. Hobolt, and Stefanie Walter. Politicizing International Cooperation: The Mass Public, Political Entrepreneurs, and Political Opportunity Structures. *International Organization*, 75(2):306–332, 2021. ISSN 0020-8183, 1531-5088. doi: 10.1017/S0020818320000491.
- [28] Joshua Nevelt. How green politics are changing Europe. *BBC News*, October 2021.

- [29] Gene M. Grossman and Elhanan Helpman. *Interest Groups and Trade Policy*. Princeton University Press, October 2020. ISBN 978-0-691-22017-8. doi: 10.1515/9780691220178.
- [30] William Hagman, Arvid Erlandsson, Stephan Dickert, Gustav Tinghög, and Daniel Västfjäll. The effect of paternalistic alternatives on attitudes toward default nudges. *Behavioural Public Policy*, 6(1):95–118, January 2022. ISSN 2398-063X, 2398-0648. doi: 10.1017/bpp.2019.17.
- [31] Cass R. Sunstein. Ruining popcorn? The welfare effects of information. *Journal of Risk and Uncertainty*, 58(2):121–142, June 2019. ISSN 1573-0476. doi: 10.1007/s11166-019-09300-w.
- [32] Anthony Heyes, Sandeep Kapur, Peter W. Kennedy, Steve Martin, and John W. Maxwell. But What Does It Mean? Competition between Products Carrying Alternative Green Labels When Consumers Are Active Acquirers of Information. *Journal of the Association of Environmental and Resource Economists*, 7(2):243–277, March 2020. ISSN 2333-5955. doi: 10.1086/706548.
- [33] Lucia A. Reisch, Cass R. Sunstein, and Micha Kaiser. What do people want to know? Information avoidance and food policy implications. *Food Policy*, 102:102076, July 2021. ISSN 03069192. doi: 10.1016/j.foodpol.2021.102076.
- [34] Cass R. Sunstein. *Too Much Information: Understanding What You Don't Want to Know*. MIT Press, Cambridge, MA, USA, September 2020. ISBN 978-0-262-04416-5.
- [35] Genevieve LeBaron and Andreas Rühmkorf. The domestic politics of corporate accountability legislation: Struggles over the 2015 UK Modern Slavery Act. *Socio-Economic Review*, 17(3):709–743, July 2019. ISSN 1475-1461, 1475-147X. doi: 10.1093/ser/mwx047.
- [36] T.A. Gardner, M. Benzie, J. Börner, E. Dawkins, S. Fick, R. Garrett, J. Godar, A. Grimard, S. Lake, R.K. Larsen, N. Mardas, C.L. McDermott, P. Meyfroidt, M. Osbeck, M. Persson, T. Sembres, C. Suavet, B. Strassburg, A. Trevisan, C. West, and P. Wolvekamp. Transparency and sustainability in global commodity supply chains. *World Development*, 121:163–177, 2019. ISSN 0305750X. doi: 10.1016/j.worlddev.2018.05.025.
- [37] Federico Cammelli, Samuel A. Levy, Janina Grabs, Judson Ferreira Valentim, and Rachael D. Garrett. Effectiveness-equity tradeoffs in enforcing exclusionary supply chain policies: Lessons from the Amazonian cattle sector. *Journal of Cleaner Production*, 332:130031, January 2022. ISSN 0959-6526. doi: 10.1016/j.jclepro.2021.130031.
- [38] Carina Cornesse, Annelies G Blom, David Dutwin, Jon A Krosnick, Edith D De Leeuw, Stéphane Legleye, Josh Pasek, Darren Pennay, Benjamin Phillips, Joseph W Sakshaug, et al. A review of conceptual approaches and empirical evidence on probability and nonprobability sample survey research. *Journal of Survey Statistics and Methodology*, 8(1):4–36, 2020.

- [39] Scott Clifford, Geoffrey Sheagley, and Spencer Piston. Increasing Precision without Altering Treatment Effects: Repeated Measures Designs in Survey Experiments. *American Political Science Review*, 115(3):1048–1065, August 2021. ISSN 0003-0554, 1537-5943. doi: 10.1017/S0003055421000241.
- [40] Kirk Bansak, Jens Hainmueller, Daniel J. Hopkins, and Teppei Yamamoto. Conjoint Survey Experiments. In Donald P. Green and James N. Druckman, editors, *Advances in Experimental Political Science*, pages 19–41. Cambridge University Press, Cambridge, 2021. ISBN 978-1-108-47850-2. doi: 10.1017/9781108777919.004.
- [41] Liam F. Beiser-McGrath and Thomas Bernauer. Could revenue recycling make effective carbon taxation politically feasible? *Science Advances*, 5(9):eaax3323, September 2019. ISSN 2375-2548. doi: 10.1126/sciadv.aax3323.
- [42] Virginia Haufler. Disclosure as Governance: The Extractive Industries Transparency Initiative and Resource Management in the Developing World. *Global Environmental Politics*, 10(3):53–73, August 2010. ISSN 1526-3800. doi: 10.1162/GLEP_a_00014.
- [43] Adrienne Héritier and Sandra Eckert. New Modes of Governance in the Shadow of Hierarchy: Self-regulation by Industry in Europe. *Journal of Public Policy*, 28(1):113–138, April 2008. ISSN 1469-7815, 0143-814X. doi: 10.1017/S0143814X08000809.
- [44] Neil Malhotra, Benoît Monin, and Michael Tomz. Does Private Regulation Preempt Public Regulation? *American Political Science Review*, 113(1):19–37, February 2019. ISSN 0003-0554, 1537-5943. doi: 10.1017/S0003055418000679.
- [45] Mary-Hunter McDonnell, Brayden G King, and Sarah A. Soule. A Dynamic Process Model of Private Politics: Activist Targeting and Corporate Receptivity to Social Challenges. *American Sociological Review*, 80(3):654–678, 2015. ISSN 0003-1224, 1939-8271. doi: 10.1177/0003122415581335.
- [46] Daniel Kinderman. Time for a reality check: Is business willing to support a smart mix of complementary regulation in private governance? *Policy and Society*, 35(1):29–42, March 2016. ISSN 1449-4035, 1839-3373. doi: 10.1016/j.polsoc.2016.01.001.
- [47] Francisco Pablo Holgado-Tello, Salvador Chacón-Moscoso, Isabel Barbero-García, and Enrique Vila-Abad. Polychoric versus pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality & Quantity*, 44(1):153–166, 2010.
- [48] Daniel W Russell. In search of underlying dimensions: The use (and abuse) of factor analysis in personality and social psychology bulletin. *Personality and social psychology bulletin*, 28(12):1629–1646, 2002.
- [49] Rick Harbaugh, John W. Maxwell, and Beatrice Roussillon. Label Confusion: The Groucho Effect of Uncertain Standards. *Management Science*, 57(9):1512–1527, September 2011. ISSN 0025-1909, 1526-5501. doi: 10.1287/mnsc.1110.1412.

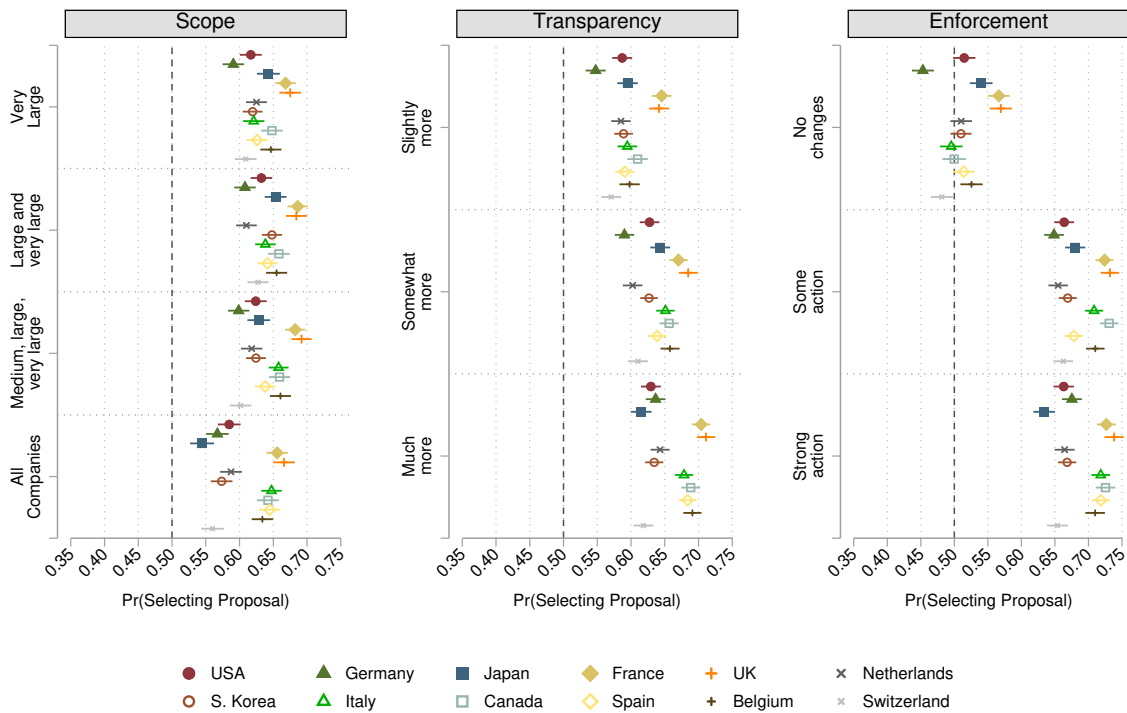
Supplementary Materials

Figures



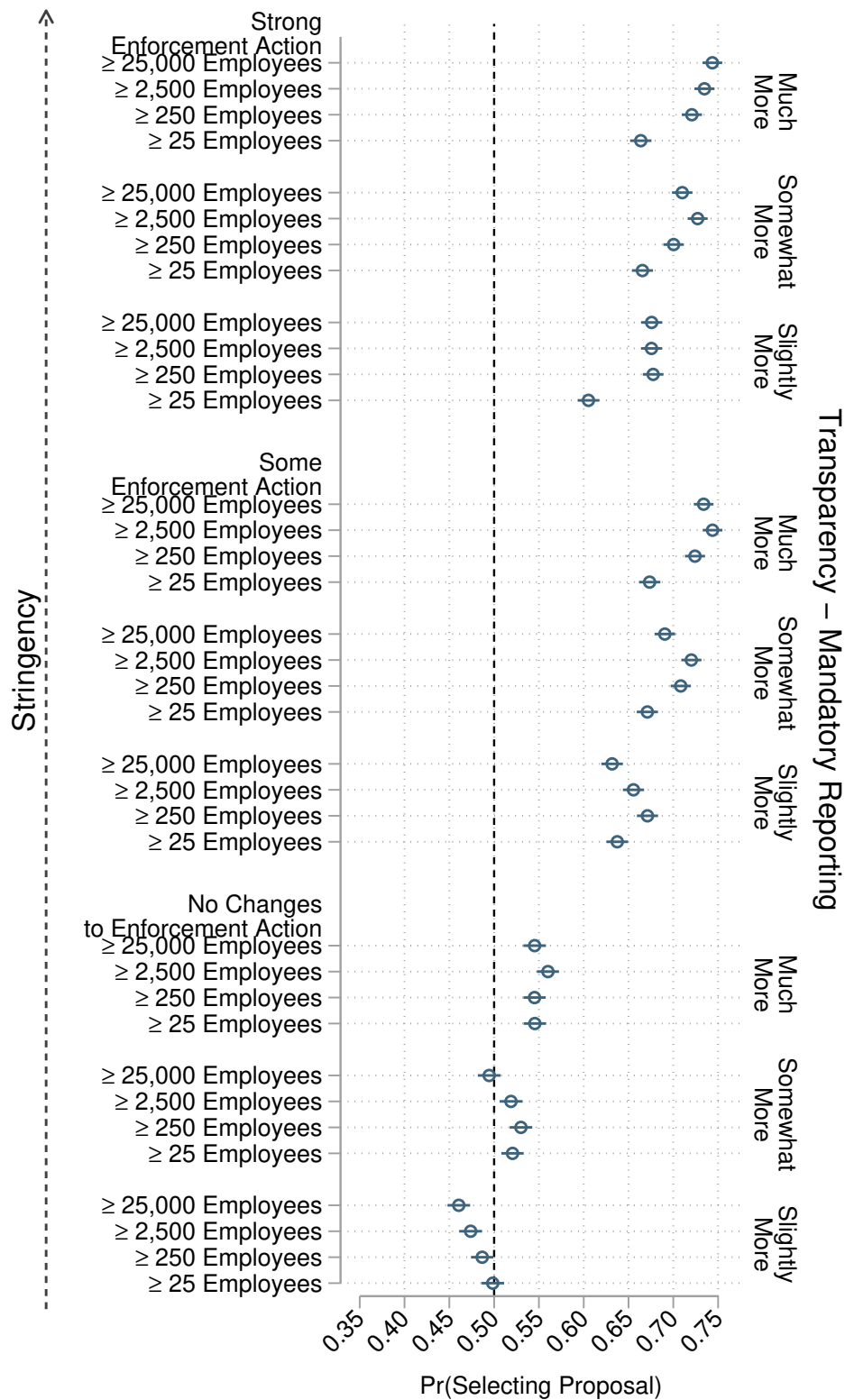
n=24,003 respondents for Panel A. Error bars in Panel B represent 95% confidence intervals (df=24,002) from 24,003 respondents * 10 choices for n=240,030 observations

Figure S1: Support for global sustainable supply chain policies. *Panel A:* Mean and distribution on survey item ‘[Respondent’s country] should adopt and enforce new laws that make it mandatory for any company in [respondent’s country] to provide accurate information to consumers on the environmental and working conditions under which imported products they are selling were made abroad.’ Responses measured on a 7-point Likert scale (7: ‘strongly agree’; 1 ‘strongly disagree’). Dotted red line represents mean response (5.26). *Panel B:* Marginal means (predicted probabilities) are calculated from the conjoint choice experiment for dimensions scope, transparency, and enforcement with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal A and B is the dependent variable (asked independently, support proposal ‘yes/no’?). 50% probability of selecting a proposal with the given characteristics is plotted in black.



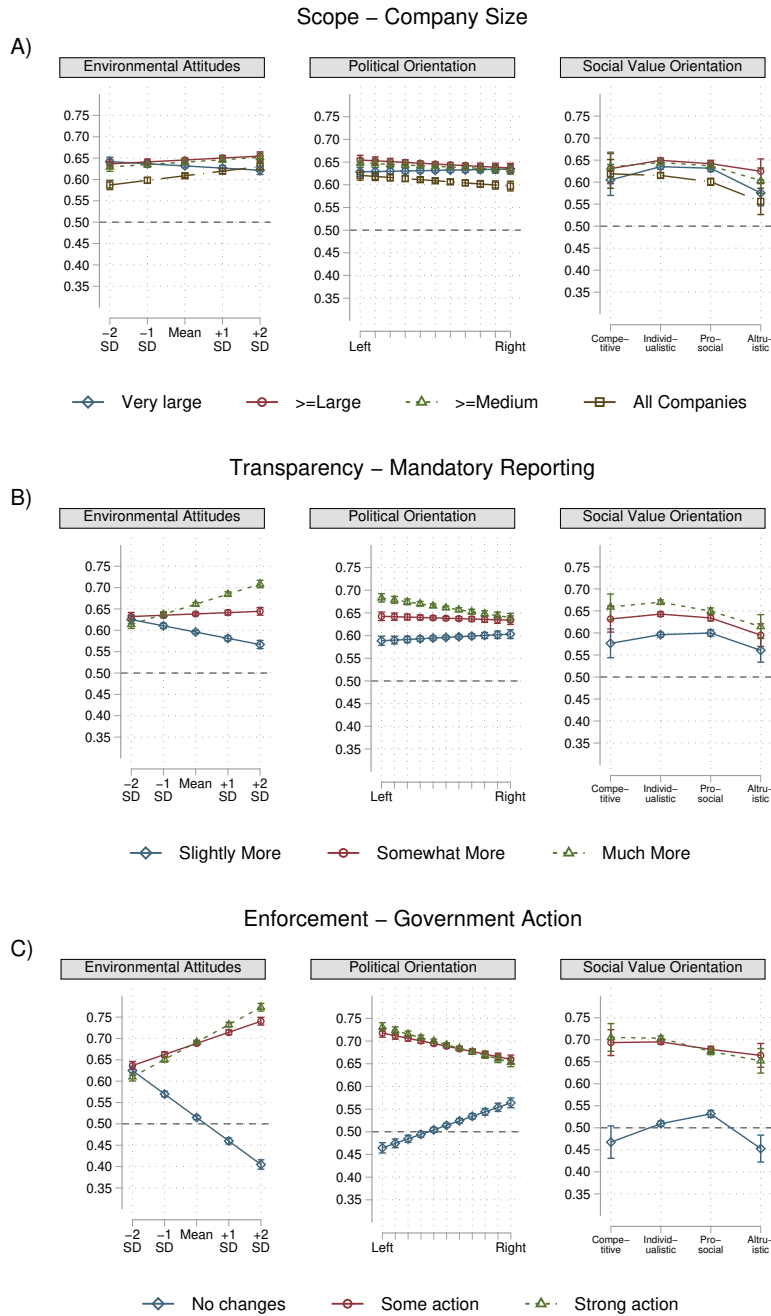
Error bars in represent 95% confidence intervals (df= 2,001) from 2,002 respondents * 10 choices for n= 20,020 observations for each country

Figure S2: Marginal means of supply chain policy support by country. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions of scope, transparency, and enforcement, with 95% confidence intervals (respondent-level clustered standard errors) individually for each country. Individual choice based on preference towards a policy proposal A and B is the dependent variable (asked independently, support proposal 'yes/no?'). 50% probability of selecting a proposal with the given characteristics is plotted in black.



Error bars in represent 95% confidence intervals (df=24,002) from 24,003 respondents * 10 choices for n=240,030 observations

Figure S3: Marginal means of supply chain policy packages. Marginal means (predicted probabilities) are calculated from the conjoint choice experiment of policy packages for full factorial, interactive product terms of all policy instruments, with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal A and B is the dependent variable (asked independently, support proposal 'yes/no?'). 50% probability of selecting a proposal with the given characteristics is plotted in black.



Error bars in represent 95% confidence intervals (df=24,002) from 24,003 respondents * 10 choices for n=240,030 observations

Figure S4: Marginal means of supply chain policy support by subgroups. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions scope, transparency, and enforcement with 95% confidence intervals (respondent-level clustered standard errors). Individual choice based on preference towards a policy proposal A and B is the dependent variable (asked independently, support proposal 'yes/no?'). Marginal means are conditioned by subgroups at different levels of environmental concern (low to high), political orientation (left to right), and social value orientation (competitive, individualistic, prosocial, and altruistic). 50% probability of selecting a proposal with the given characteristics is plotted in black.

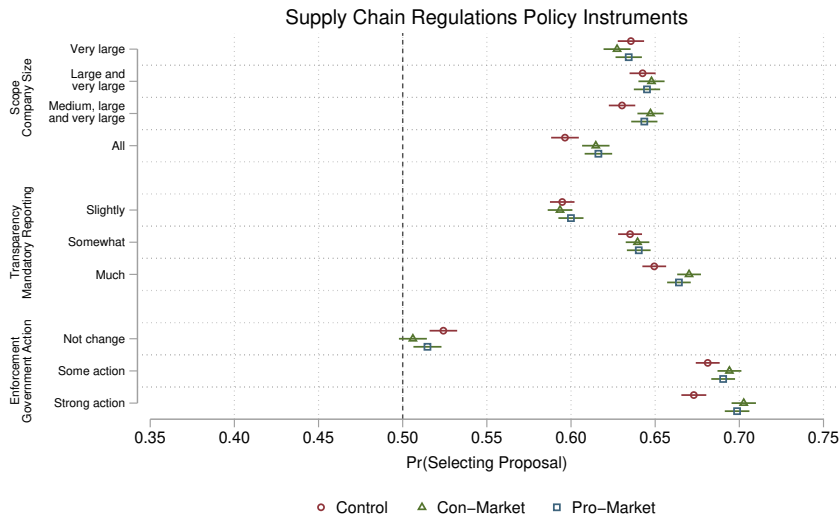


Figure S5: Marginal means of supply chain policy by informational treatment. Marginal means (predicted probabilities) are calculated from conjoint choice experiment for dimensions scope, transparency, and enforcement, with 95% confidence intervals. Individual choice based on preference towards a policy proposal A and B is the dependent variable (asked independently, support proposal 'yes/no?'). Marginal means are calculated conditioned by subgroups whether respondents received the pro-, the con- or no treatment about market outcomes. 50% probability of selecting a proposal with the given characteristics is plotted in black.

Tables

Table S1: Overview of Policy Attributes in Conjoint Experiment

| Attributes | Values |
|---|--|
| <p>Scope – A new law could apply to:</p> | <ul style="list-style-type: none"> • Very large companies (25,000 employees or more) • Large and very large companies (2,500 employees or more) • Medium sized, large and very large companies (250 employees or more) • All companies with 25 employees or more |
| <p>Transparency – A new law could make companies’ reporting:</p> | <ul style="list-style-type: none"> • Slightly stricter – no government rules on required content (companies can freely choose what they report), annual confidential report to government • Somewhat stricter – some general government rules on required content (companies can partially choose what they report), annual confidential report to government • Much stricter – detailed government rules on required content (companies must report according to a specific set of questions), annual public report (online) |
| <p>Enforcement – If a company withholds or presents false information, a new law could:</p> | <ul style="list-style-type: none"> • Not change the status quo and not allow for government action against the company. The company can only remind the company of its responsibility. • Allow for some government action – putting the company on a public list of companies that provide unreliable information and imposing a moderate financial penalty • Allow for strong government action – putting the company on a public list of companies that provide unreliable information, imposing a severe financial penalty, stop buying government supplies from that company, press legal charges against the company management. |

Table S2: Overview of Policy Scenarios

| Stringency Level | Scenario Components |
|------------------|---|
| Low | <ul style="list-style-type: none"> • Very large companies (25,000 employees or more) • Slightly stricter – no government rules on required content (companies can freely choose what they report), annual confidential report to government • Not change the status quo and not allow for government action against the company. The company can only remind the company of its responsibility. |
| Medium | <ul style="list-style-type: none"> • Medium sized, large and very large companies (250 employees or more) • Somewhat stricter – some general government rules on required content (companies can partially choose what they report), annual confidential report to government • Allow for some government action – putting the company on a public list of companies that provide unreliable information and imposing a moderate financial penalty |
| High | <ul style="list-style-type: none"> • All companies with 25 employees or more • Much stricter – detailed government rules on required content (companies must report according to a specific set of questions), annual public report (online) • Allow for strong government action – putting the company on a public list of companies that provide unreliable information, imposing a severe financial penalty, stop buying government supplies from that company, press legal charges against the company management. |

Table S3: Descriptive Statistics and Variable Coding

| <i>Variable</i> | <i>Coding</i> | <i>Mean</i> | <i>Std. Dev.</i> |
|-----------------------------|--|-------------|------------------|
| Environmental Concern Scale | 1 'Lowest' to 7 'Highest', see Table S4 | 4.37 | 1.06 |
| Political Orientation | 1 'Left' to 11 'Right' | 6.08 | 2.42 |
| Social Value Orientation | Coded according to Murphy et al. [24] | | |
| Competitive | 0 'Not Competitive' to 1 'Competitive' | 0.02 | 0.14 |
| Individualistic | 0 'Not Individualistic' to 1 'Individualistic' | 0.60 | 0.49 |
| Pro-social | 0 'Not Pro-social' to 1 'Pro-social' | 0.35 | 0.48 |
| Altruistic | 0 'Not Altruistic' to 1 'Altruistic' | 0.03 | 0.16 |
| N | | 24,003 | |

Table S4: Environmental Attitudes Items, Variable Coding and Descriptive Statistics

| <i>Variable</i> | <i>Coding</i> | <i>Mean</i> | <i>Std. Dev.</i> |
|---|---|-------------|------------------|
| Environmental Concern Scale | 1 'Lowest' to 7 'Highest' | 4.37 | 1.06 |
| (1) It is just too difficult for someone like me to do much about the environment. | 1 'strongly agree' to 7 'strongly disagree' | 4.29 | 1.74 |
| (2) There are more important things to do in life than protect the environment. | 1 'strongly agree' to 7 'strongly disagree' | 4.32 | 1.80 |
| (3) There is no point in doing what I can for the environment unless others do the same. | 1 'strongly agree' to 7 'strongly disagree' | 4.26 | 1.93 |
| (4) Many of the claims about environmental threats are exaggerated. | 1 'strongly agree' to 7 'strongly disagree' | 4.59 | 1.87 |
| (5) I find it hard to know whether the way I live is helpful or harmful to the environment. | 1 'strongly agree' to 7 'strongly disagree' | 4.07 | 1.64 |
| N | | 24,003 | |

Table S5: Items and polychoric factor loading of Environmental Concern Scale. Items are mirrored to reflect a scale of low-high levels of environmental concern. See Table S4 for item wording and descriptive statistics.

| Item | Factor Loadings | | | | Uniqueness |
|--|-----------------|--------|--------|--------|------------|
| | (1) | (2) | (3) | (4) | |
| <i>To what extent do you agree or disagree with the following statement?</i> | | | | | |
| (1) Too difficult for someone like me | 0.760 | 0.281 | -0.062 | -0.072 | 0.335 |
| (2) More important things to do in life than protect | 0.744 | -0.274 | -0.030 | -0.105 | 0.360 |
| (3) No point in doing what I can for the environment unless others do the same | 0.710 | 0.080 | -0.130 | 0.111 | 0.461 |
| (4) Claims about environmental threats are exaggerated | 0.760 | -0.269 | 0.091 | 0.069 | 0.338 |
| (5) Hard to know whether the way I live is helpful or harmful to the environment | 0.539 | 0.256 | 0.172 | 0.004 | 0.615 |
| Eigenvalue | 2.501 | 0.298 | 0.059 | 0.033 | |
| Difference | 2.204 | 0.238 | 0.026 | 0.034 | |
| Proportion | 0.865 | 0.103 | 0.021 | 0.012 | |
| Cumulative | 0.865 | 0.968 | 0.989 | 1.000 | |
| N | 24,003 | | | | |

Table S6: Regression estimates of stated policy preferences on conjoint experiment attributes. Regression estimates are presented for the full sample, and by experimental vignette treatment. Null hypothesis test of $\beta = 0$, 2-tailed t-test.

| | Full Sample | Control | Con-market | Pro-market |
|--|------------------|------------------|------------------|------------------|
| <i>Scope - Company Size (ref. All companies with 25 employees or more)</i> | | | | |
| <i>Very large companies</i> | 0.01** (0.00) | 0.03** (0.01) | -0.00 (0.01) | 0.01 (0.01) |
| <i>Large and very large companies</i> | 0.03** (0.00) | 0.05** (0.01) | 0.03** (0.01) | 0.02** (0.01) |
| <i>Medium sized, large, and very large companies</i> | 0.03** (0.00) | 0.04** (0.01) | 0.03** (0.01) | 0.02** (0.01) |
| <i>Transparency - Mandatory Reporting (ref. Slightly stricter)</i> | | | | |
| <i>Somewhat stricter</i> | 0.05** (0.00) | 0.04** (0.00) | 0.06** (0.00) | 0.05** (0.00) |
| <i>Much stricter</i> | 0.09** (0.00) | 0.08** (0.00) | 0.10** (0.00) | 0.09** (0.00) |
| <i>Enforcement - Government Action (ref. Not change this)</i> | | | | |
| <i>Allow for some government action</i> | 0.15** (0.00) | 0.15** (0.00) | 0.16** (0.00) | 0.15** (0.00) |
| <i>Allow for strong government action</i> | 0.18** (0.00) | 0.16** (0.00) | 0.19** (0.01) | 0.18** (0.01) |
| N | 24,003 | 8,054 | 7,997 | 7,952 |

Ordinary least squares regression coefficients with clustered standard errors in parentheses. P-value *0.05 and **0.01

Table S7: Regression estimates of stated policy preferences on conjoint experiment attributes conditioned by political orientation. Null hypothesis test of $\beta = 0$, 2-tailed t-test.

| | |
|--|-------------------|
| Scope - Company Size (<i>ref. All companies with 25 employees or more</i>) | |
| Very large companies | -0.02 (0.01) |
| Large and very large companies | 0.02** (0.01) |
| Medium sized, large, and very large companies | 0.02* (0.01) |
| Transparency - Mandatory Reporting (<i>ref. Slightly stricter</i>) | |
| Somewhat stricter | 0.08** (0.01) |
| Much stricter | 0.14** (0.01) |
| Enforcement - Government Action (<i>ref. Not change this</i>) | |
| Allow for some government action | 0.24** (0.01) |
| Allow for strong government action | 0.29** (0.01) |
| Political Orientation | |
| × Very large companies | 0.00** (0.00) |
| Political Orientation × Large and very large companies | 0.00 (0.00) |
| Political Orientation × Medium sized, large, and very large companies | 0.00 (0.00) |
| Political Orientation × Somewhat stricter | -0.00** (0.00) |
| Political Orientation × Much stricter | -0.01** (0.00) |
| Political Orientation × Allow for some government action | -0.01** (0.00) |
| Political Orientation × Allow for strong government action | -0.02** (0.00) |
| Vignette Treatment (<i>ref. Control</i>) | |
| Con Market | 0.00 (0.00) |
| Pro Market | -0.00 (0.00) |
| Country (<i>ref. BE</i>) | |
| CA | 0.00 (0.00) |
| CH | 0.00 (0.00) |
| DE | 0.00 (0.00) |
| ES | 0.00 (0.00) |
| FR | -0.00 (0.00) |
| IT | 0.00 (0.00) |
| JA | 0.00 (0.00) |
| KO | 0.00 (0.00) |
| NL | -0.00 (0.00) |
| UK | 0.00 (0.00) |
| US | 0.00 (0.00) |
| N | 12 |
| | 24,003 |

Ordinary least squares regression coefficients
 Clustered standard errors in parentheses. P-value *0.05 and **0.01

Table S8: Regression estimates of stated policy preferences on conjoint experiment attributes conditioned by environmental concern. Null hypothesis test of $\beta = 0$, 2-tailed t-test.

| | |
|--|-------------------|
| Scope - Company Size (<i>ref. All companies with 25 employees or more</i>) | |
| Very large companies | 0.11** (0.01) |
| Large and very large companies | 0.08** (0.01) |
| Medium sized, large, and very large companies | -0.04* (0.01) |
| Transparency - Mandatory Reporting (<i>ref. Slightly stricter</i>) | |
| Somewhat stricter | -0.04** (0.01) |
| Much stricter | -0.12** (0.01) |
| Enforcement - Government Action (<i>ref. Not change this</i>) | |
| Allow for some government action | -0.12** (0.01) |
| Allow for strong government action | -0.21** (0.01) |
| Environmental Concern | -0.06** (0.00) |
| ×Very large companies | -0.20** (0.00) |
| Environmental Concern×Large and very large companies | -0.01** (0.00) |
| Environmental Concern×Medium sized, large, and very large companies | -0.01** (0.00) |
| Environmental Concern×Somewhat stricter | 0.02** (0.00) |
| Environmental Concern×Much stricter | 0.05** (0.00) |
| Environmental Concern×Allow for some government action | 0.06** (0.00) |
| Environmental Concern×Allow for strong government action | 0.09** (0.00) |
| Vignette Treatment (<i>ref. Control</i>) | |
| Con Market | 0.00 (0.00) |
| Pro Market | -0.00 (0.00) |
| Country (<i>ref. BE</i>) | |
| CA | 0.00 (0.00) |
| CH | 0.00 (0.00) |
| DE | 0.00 (0.00) |
| ES | -0.00 (0.00) |
| FR | -0.00 (0.00) |
| IT | 0.00 (0.00) |
| JA | 0.00 (0.00) |
| KO | -0.00 (0.00) |
| NL | -0.00 (0.00) |
| UK | 0.00 (0.00) |
| US | -0.00 (0.00) |
| N | 13 |
| | 24,003 |

Ordinary least squares regression coefficients

Clustered standard errors in parentheses. P-value *0.05 and **0.01

Table S9: Environmental and Political Attitudes by Vignette Treatment Assignment

| | Environmental Attitudes Scale | | Political Orientation | |
|------------|-------------------------------|-------|-----------------------|------|
| | Mean | SD | Mean | SD |
| Control | 0.00 | 1.008 | 6.04 | 2.42 |
| Pro-market | 0.00 | 0.994 | 6.06 | 2.41 |
| Con-market | -0.01 | 0.997 | 6.08 | 2.40 |
| N | 24,003 | | | |

Table S10: Comparison of Political Orientation and Social Value Orientation Measurements in Switzerland, Paper Online Sample and Probability Sample from SMP.

| Comparison of Political Orientation and Social Value Orientation | 2021 Swiss Online Sample (Paper Analysis) | 2020-2022 Swiss Probability Sample (Swiss Mobility Panel) |
|--|--|--|
| | Mean (SD) | Mean (SD) |
| Political Orientation | 5.90 (2.28) | 5.81 (2.08) |
| SVO | | |
| <i>Competitive</i> | 0.02 (0.14) | 0.02 (0.14) |
| <i>Individualistic</i> | 0.63 (0.48) | 0.66 (0.43) |
| <i>Pro-social</i> | 0.32 (0.47) | 0.30 (0.40) |
| <i>Altruistic</i> | 0.03 (0.17) | 0.02 (0.13) |
| N | 24,003 | 9,500 |

Table S11: Sampling Quotas (BE-FR). Distribution of Sample by Gender interlocked with Age and Educational attainment for Belgium, Canada, Switzerland, Germany, Spain and France. Displaying population distribution compared with survey sample.

| | BE | | CA | | CH | | DE | | ES | | FR | |
|-----------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|
| | Pop. | Sample | Pop. | Sample | Pop. | Sample | Pop. | Sample | Pop. | Sample | Pop. | Sample |
| Male | | | | | | | | | | | | |
| 18-24 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 |
| 25-34 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.10 | 0.10 | 0.09 | 0.09 |
| 35-44 | 0.09 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.09 | 0.09 | 0.12 | 0.12 | 0.10 | 0.10 |
| 45-54 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 | 0.12 | 0.12 | 0.10 | 0.10 | 0.10 | 0.10 |
| 55-64 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.09 | 0.09 | 0.07 | 0.07 | 0.09 | 0.09 |
| 65+ | 0.07 | 0.07 | 0.06 | 0.06 | 0.07 | 0.06 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 |
| Female | | | | | | | | | | | | |
| 18-24 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 |
| 25-34 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 |
| 35-44 | 0.09 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.09 | 0.09 | 0.12 | 0.12 | 0.09 | 0.09 |
| 45-54 | 0.10 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.10 | 0.10 | 0.10 | 0.10 |
| 55-64 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.09 | 0.09 | 0.08 | 0.08 | 0.09 | 0.09 |
| 65+ | 0.07 | 0.07 | 0.07 | 0.07 | 0.06 | 0.06 | 0.08 | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 |
| Education | | | | | | | | | | | | |
| Low | 0.25 | 0.21 | 0.09 | 0.06 | 0.12 | 0.08 | 0.13 | 0.13 | 0.41 | 0.30 | 0.22 | 0.22 |
| Moderate | 0.37 | 0.40 | 0.35 | 0.38 | 0.46 | 0.50 | 0.58 | 0.58 | 0.23 | 0.32 | 0.43 | 0.43 |
| High | 0.37 | 0.40 | 0.35 | 0.38 | 0.46 | 0.50 | 0.58 | 0.58 | 0.23 | 0.32 | 0.43 | 0.43 |
| N | | 2,000 | | 2,001 | | 2,000 | | 2,000 | | 2,000 | | 2,000 |

