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Environmental Concerns and Individual Trade Policy Preferences in Developing Countries

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Abstract

Many political leaders of the Global South oppose linkages between trade liberalization and environmental protection. We examine whether citizens in developing countries share this position. Whereas a recent study finds that, in industrialized countries, environmental concerns are associated with protectionist sentiments, we hypothesize that citizens in poorer countries are likely to view the trade-environment nexus in a more positive light. We fielded a combination of surveys and conjoint experiments in Costa Rica, Nicaragua, and Vietnam to test this argument. The results show that citizens are concerned about negative environmental implications of trade. Yet, individuals with greener preferences are also more supportive of trade liberalization. Furthermore, and in contrast to prevailing government rhetoric, the majority of citizens support environmental clauses in trade agreements. These findings suggest that there might be room for more ambitious efforts to include environmental standards in international trade agreements.

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Introduction

Concerns about the impact of free trade and investment on the natural environment are playing an increasingly important role in political debates about economic globalization. Environmental activists in particular fear that economic globalization contributes to the worsening of environmental conditions in developing countries. These concerns have contributed to a significant political backlash against free trade in many Western countries. Much of the literature on trade policy tends to regard such concerns as protectionism in disguise. Yet more recent studies find that individuals may express opposition to or discomfort with free trade because they are sincerely concerned about the potential negative effects of trade on environmental conditions (Ehrlich 2010, Hearn 2014). In many industrialized countries, these concerns have not only increased demand for more environmental protection (Franzen and Meyer 2010). They have also led to demands for the inclusion of environmental protection standards in international trade agreements.

In response, many political leaders from advanced industrialized countries have tried to link environmental protection issues with trade liberalization within the World Trade Organization (WTO) and beyond. But many political leaders from the Global South have voiced their opposition to linking trade liberalization with environmental protection and have condemned what they consider green protectionism by industrialized countries. For example, at the preparatory meeting of the UN Conference on Sustainable Development in May 2010 in New York, the Chinese delegation stressed that “(...) the international community (...) should resolutely oppose the practice of erecting “green barriers” and engaging in trade protectionism under the pretext of environmental protection”.¹

Many environmental activists interpret such reluctance to include environmental provisions in trade agreements as evidence for a transnational capitalist collusion at the expense of citizens. They assume that leaders from developing countries tend to profit personally from attracting “dirty” foreign investment, but pass on negative environmental consequences to (usually poorer parts of) their population. The inclusion of environmental clauses in trade agreements would thus undermine their competitiveness in the production of pollution-intensive goods and would reduce their rents. Advocates of this view have repeatedly demanded that citizens of poor countries be protected from such abuse by conditioning trade liberalization on environmental standards.

¹ Third World Network. 2002. “The ‘green economy’ debate unfolds in the UN.” May 22, 2010, <http://www.twinside.org.sg/title2/sdc2012/sdc2012.100502.htm>, accessed: January 5, 2014.

This is where an interesting question about potential differences between elite preferences and ordinary citizen preferences arises. Focusing on the effect of environmental concerns on attitudes towards trade liberalization among citizens in an advanced industrialized country, Switzerland, Bechtel et al. (2012) find that concerns about the environment significantly decrease public support for free trade. The authors interpret their results as evidence for a shift from material to post-material values as societies develop and prosper, as theorized by Inglehart (1995, 1997). Following this argument, we should then expect citizens in less affluent countries to be less concerned about the environment and to prioritize economic growth (and thus also free trade) over environmental quality.

The empirical findings presented in this paper suggest, however, that there is a disparity between elite and mass public preferences in developing countries with respect to the trade-environment nexus. In particular, we find that, in contrast to the post-material values argument, citizens in developing countries are strongly concerned about negative effects of free trade on the environment. Yet, unlike their wealthy counterparts in industrialized countries, their environmental concerns do not translate into reduced support for free trade. Rather, environmental concerns and public support for international trade are positively correlated. This finding is in line with a recent study by Vincent et al. (2014), which observes that public demand for forest conservation in developing countries has increased, whereas forest protection policies of governments have lagged behind citizen demands. Furthermore, our results indicate that there is strong support for the inclusion of environmental clauses in PTAs, and that individuals prefer PTAs with countries that have higher environmental standards. In light of our results, the refusal by many developing country leaders to link environmental protection to trade liberalization should be reassessed. It appears that there is some room for more ambitious efforts to incorporate environmental standards in international trade agreements.

The empirical strategy for this study relies on a combination of standard surveys and conjoint experiments in three developing countries that differ in their economic and political system characteristics as well as in their environmental protection records: Costa Rica (mature democracy, upper-income developing country, high environmental standards), Nicaragua (partly democratic, low-income developing country, low environmental standards), and Vietnam (autocracy, low-income developing country, low environmental standards).

Our contribution to the literature on the trade-environment nexus is threefold: First, while most research on environmental preferences and other post-material values has focused

primarily on advanced industrialized countries, we examine preferences in developing countries. Second, we provide theoretical arguments for why citizens' perceptions of the trade-environment nexus are likely to differ between industrialized and developing countries. Third, we rely on original survey data and data from a conjoint experiment to test our theoretical arguments.

The remainder of the paper is structured as follows. We first review arguments on the potential effects of trade liberalization on the environment. In the next section we present our theoretical argument with regards to how the trade-environment linkage is likely to be perceived by citizens from industrialized and developing countries. The following sections present the research design and data, the empirical findings, and discuss their implications.

Trade-Environment Linkages: From the Macro- to the Micro-Level

In this section we start with a brief look at (contradictory) macro-level arguments about the trade-environment nexus. We then move to the micro-level, first focusing on industrialized countries and then discussing what to expect in developing countries.

Contradictory Macro-Level Arguments

International trade is seen by many as promoting economic growth, but there is widespread controversy about its impact on the natural environment. Globalization optimists typically concede that economic integration may have short-term negative implications for the environment. However, in the medium to long run, trade is believed to contribute to environmental improvement. This view is based on the so-called Environmental Kuznets Curve (EKC) (Grossman and Krueger 1995, Selden and Song 1994). The EKC hypothesis holds that per capita pollution intensifies at the early stages of economic development, but then levels off and decreases once a country and its citizens have reached higher income levels. The EKC hypothesis thus posits an inverted-U relationship between income levels and environmental pressure. In the takeoff stage of industrialization, pollution hikes up as resource depletion and waste generation increase in quantity and toxicity. In addition, there is low public demand for environmental conservation because people are more concerned about jobs and income (Dasgupta et al. 2002, Dinda 2004). Similarly, on the supply side, political entities (e.g. states) do not have sufficient funds to pay for pollution abatement, and environmental regulations are, correspondingly, weak. When the shift towards less pollution-intensive industrial sectors and services sets in at higher levels of economic development and

income moves beyond the EKC turning point, pollution levels start to fall. This transition is accompanied by growing environmental awareness among the general public, greater willingness and capacity to pay for environmental quality, and more effective environmental policies. Therefore, to the extent that international trade provides a stimulus for economic growth, proponents of the EKC argument assert that economic integration, including more trade, will eventually have a positive impact on the environment.

Critics claim, however, that environmental quality is likely to decline as increasing trade (and especially exports) contributes to expanding the size of the economy, which aggravates pollution. In addition to the size effect, trade may also create more competitive pressure, especially between developed and developing countries with different environmental standards. In search for lower production costs and higher returns, firms that engage in the production of pollution-intensive goods may have an incentive to relocate to “pollution havens”, i.e., countries with weaker environmental regulations (see Cole 2004, Mani and Wheeler 1998). Pessimists believe that, as a result, international investment is driven towards countries with lower environmental standards (typically poor, developing countries), while the threat of relocation creates pressure on policymakers in wealthy industrialized countries to relax existing high environmental standards.

In sum, existing theory on trade-income-environmental linkages yields contradictory arguments. On the one hand, more trade can have a pollution increasing effect. On the other hand, trade can also contribute to pollution reductions. However, interesting presumptions about individual level preferences can be derived from these macro-level mechanisms connecting trade, economic development, and environmental protection standards.

Micro-Level Implications

How do individual-level preferences concerning trade and environmental protection relate? According to the EKC argument, much of the presumed beneficial effect of trade for the environment depends on the economic gains accrued from the process of trade liberalization. Only once income levels move beyond a specific point, improvements of environmental quality are likely to be realized. At that turning point, citizens have reached a certain level of economic wellbeing and, presumably, become more willing to forgo further economic gains in favor of more environmental protection. This greater willingness to pay for environmental quality can be attributed to three interrelated factors: 1) income elasticity of demand for environmental quality, 2) societal value change, and 3) general perception of international trade.

First, numerous models of the EKC argument have emphasized the role of income elasticity of environmental quality demand as an important determinant of the shape of the (pollution-type specific) EKC (Beckerman 1992, Carson et al. 1997, Chaudhuri and Pfaff 1998, McConnell 1997). Accordingly, when a society achieves a sufficiently high standard of living, its citizens' willingness to pay for environmental protection rises by a greater proportion than income (Roca 2003, Selden and Song 1994). Empirical manifestations include increased voluntary contributions to environmental organizations and greater expenditures for environmentally friendly products. In addition, higher income levels do not only result in greater willingness to spend more for green products, but also promote greater public demand for environmental protection standards. For example, using household-level data from Pakistan, Chaudhuri and Pfaff (1998) find improvements of indoor air quality (through the purchase of environmental quality enhancing goods) among higher-earning households. Testing the existence of an emission-income relation for the United States, Kahn (1998) shows that richer households are likely to own more vehicles and to drive more, but they are also more likely to invest in more expensive, newer and cleaner cars.

Second, following Inglehart's (1995, 1997) work on value change in modern societies, some authors argue that public concern for the environment stems from the emergence of post-materialist values. Such a shift in fundamental values takes place as societies develop and prosper, and their members start prioritizing non-economic values, including environmental protection, over economic welfare. In particular, this process is facilitated by unprecedented economic affluence in industrialized nations in the postwar era. Since the emergence of post-materialist values is viewed as dependent on widespread affluence, this suggests that citizens from less affluent countries will be less concerned about environmental problems and less supportive of environmental protection than their counterparts in wealthy nations.

Third, several studies on individual trade preferences have shown that trade is a complex policy issue in which most citizens take rather little interest and about which they know quite little (Cobb and Nance 2012, Guisinger 2009, Hiscox 2006). Thus, individuals' views and perceptions about international trade are likely to be influenced by cues provided by media coverage and political campaign rhetoric (Mutz and Mansfield 2013). In their content analysis of newspapers and television, Mutz and Mansfield (2013), for instance, find that coverage in US media of economic globalization's negative consequences dominates over reports about potential benefits. In particular, news about job losses dominates the content of media coverage on international trade. Such a shift in the public perception of the

impact of economic globalization is also prevalent in other industrialized nations. As results from a multinational survey by the Pew Research Center (2014) show, skepticism towards international trade is particularly high in France, Italy and Japan.

Taken together, these arguments and corresponding empirical evidence suggest that in wealthy, advanced industrialized countries citizens are likely to view economic globalization in general, and international trade in particular, as having negative implications for environmental quality. While most globalization critics do not deny that trade tends to have positive effects on economic growth, they are worried about negative implications of economic growth and trade on environmental quality and sustainable development more generally. Consequently, they tend to regard the trade-environment linkage in terms of a tradeoff, with more trade leading to worse environmental quality, and vice versa. Empirically, we should thus observe a negative relationship between green preferences and public support for international trade. Indeed Bechtel, Bernauer, and Meyer (2012) argue that environmental concerns help us understand how individuals evaluate the costs and benefits of economic integration. Using survey data from a high-income country, Switzerland, the authors in fact find that respondents' reported concerns for the environment correlate positively with protectionist sentiment.

What about Citizens in the Global South?

How is the trade-environment nexus likely to be perceived by citizens in developing countries? Following the arguments discussed above, we submit that, at first glance, one should expect no association between individuals' environmental attitudes and their trade policy preferences. We argue, however, that this presumption needs to be qualified, and that developing country citizens' perceptions of the trade-environment linkage are unlikely to simply be the opposite of preferences of citizens in industrialized countries.

To begin with, according to the EKC argument, greater demand for environmental quality is viewed as dependent on widespread affluence. This suggests that citizens from less prosperous countries will be less concerned about environmental problems and less supportive of environmental protection than their counterparts from wealthy nations. Yet, as many authors argue, concern for the environment and appreciation for environmental protection are related not only to income, but also to people's direct experiences with local environmental degradation, which is often more visible and severe in poor than in rich countries (Brechin and Kempton 1994, Dunlap and Mertig 1995, Grossman and Krueger 1995). Inglehart (1995, 1997) notes that while individuals in affluent societies endorse pro-

environmental attitudes in the process of adopting post-materialist values, citizens in poorer countries develop concern for the environment when facing pressing environmental problems. Consequently, environmental quality and the protection thereof are increasingly seen as part of a broader effort to secure human survival worldwide, rather than simply a post-materialist “higher order” value in specific (rich) countries (Ladd 1982). Therefore, environmental awareness and concern are, presumably, present not only among citizens of affluent societies, but also among citizens of poor, developing countries.

As noted above, however, higher average incomes in industrialized countries tend to contribute to greater willingness to forego further economic gains in order to protect the environment. In contrast, for people in developing countries, who have lower incomes on average, income and job creation are likely to be greater priorities, relative to health and other costs of pollution. From the perspective of developing country citizens, trade liberalization is likely to be viewed as an important policy tool that a developing country can use to advance its economic growth and development objectives. For example, a statement by Zambia’s foreign minister illustrates the significance of foreign direct investment (FDI) for advancing a country’s development: “There is no country that has fought poverty without attracting FDI, (...) so let us not resist and discourage FDI since it is good for us as capital for job creation and technology transfer.”² This positive view of economic globalization also seems to be shared by the wider public. While public support for international economic integration appears to be waning in many industrialized nations, publics in developing countries overwhelmingly view international trade and global business ties as beneficial for their country (Pew Research Center 2014). In particular, there seems to be widespread belief that growing international business ties generate jobs and increase wages in the local economy.

In addition to generally positive views on the income-increasing effect of trade, citizens in developing countries are likely to be more positive about the environmental benefits from economic integration compared to their counterparts in rich nations. As argued above, such optimism does not imply a lack of awareness concerning adverse environmental effects of international trade. However, while the trade-environment relationship tends to be viewed as a tradeoff in wealthy, developed countries, international trade is likely to be perceived as having both economic and environmental benefits, at least in the medium to long run.

First, economic openness can facilitate the international diffusion of environmental standards. According to the “California effect”, major economic powers can internationalize

² The Post (Zambia), August 9, 2009.

their environmental standards by imposing product standards on imports (Vogel 1995). As Vogel explains: “when rich nations with large domestic markets enact stricter product standards, their trading partners are forced to meet those standards in order to maintain their export markets.” (1995: 6). Since industrialized countries with higher environmental standards absorb the bulk of developing country exports, free trade can contribute to increasing environmental standards in developing countries (for empirical studies supporting this argument see Birdsall and Wheeler (1993) and Prakash and Potoski (2006)).

Second, most developing countries rely on foreign direct investment from rich countries, where innovations have generated significantly cleaner technologies, as the primary means of technology acquisition. Dasgupta et al. (2002) note that even in countries with low environmental standards, many firms have adopted these cleaner technologies because they are more profitable. Increased economic openness allows firms from developing countries to acquire cleaner technologies at lower cost and increases the competitive pressure to adopt them if they are also more efficient (Reppelin-Hill 1999, Wheeler and Martin 1993). Thus, firms in economically open developing countries tend to adopt cleaner technologies more quickly (Birdsall and Wheeler 1993, Wheeler and Martin 1993).

Based on these arguments, we hypothesize that, in contrast to what has been observed for rich, industrialized countries, *in developing countries the association between green attitudes and public support for trade liberalization is likely to be positive. By implication, deriving from the above argument on technology diffusion and trading-up, we also expect citizens in developing countries to prefer trade relations with countries that have higher environmental standards.*

Empirical Design

To test our hypothesis, we use two empirical strategies. First, we analyze original observational data from population-based surveys to find out whether the relationship between environmental concerns and attitudes towards international trade is in fact positive, as hypothesized. Second, based on the survey and a conjoint-experiment, we examine whether, as hypothesized, citizens in developing countries prefer trade relations with countries that have higher environmental standards.

The empirical analysis focuses on Costa Rica, Nicaragua, and Vietnam – three countries that differ strongly in their levels of development, political system characteristics, and environmental protection standards. We are interested in whether the hypothesized effects

hold across very different types of developing countries, or whether they are moderated by country characteristics. Costa Rica is clearly the richest of the three countries. Nicaragua and Vietnam's per capita income level is about one quarter of the income in Costa Rica. In contrast, the trade to GDP ratio is much higher in Vietnam than in Costa Rica, with Nicaragua located in the middle between the two. The three countries also differ in their environmental standards, according to the Environmental Performance Index (EPI).³ Environmental standards are far lower in Vietnam than in Costa Rica, with Nicaragua again located in the middle. Table A1 in the Appendix summarizes the main differences in key socio-economic characteristics between the three countries.

Comparing results across many countries would, of course, be useful. However, none of the existing survey datasets includes the information necessary for an analysis such as the one presented in this paper; and implementing such surveys in many countries is, financially, far beyond the means of a single research team. The fact that our results are consistent across a set of three very different developing countries provides at least some confidence that these results are relevant to quite different socio-economic and political contexts.

Survey Design and Data

We start by describing the survey and sampling design and then identify the key variables in the empirical models, as well as the methods used for data analysis. The design of the conjoint experiment will be described further below in the section where we discuss the experimental findings.

The surveys were carried out between August 2013 and February 2014. The data was collected by means of face-to-face interviews. Sample sizes were 820 in Costa Rica, 800 in Nicaragua, and 1400 in Vietnam. The samples for Costa Rica and Nicaragua are from the entire country. In Vietnam we restricted the sampling to five key areas: Hai Phong, Hanoi, Da Nang, Ho Chi Minh City, and Can Tho. The surveys in Costa Rica and Nicaragua included all items and the conjoint experiment. For logistical reasons, the conjoint experiment in Vietnam had to be implemented separately.

In all three countries, we used a stratified random sampling approach that is based on a multi-stage probability sampling design. We made adjustments according to the ruling governance structure and administrative subdivision of each country. We illustrate the sampling procedure by focusing on Vietnam. First, the sample size was spread out in

³ <http://epi.yale.edu/>, accessed: January 5, 2014.

proportion to the population of the selected cities. Next, the sample was further distributed in proportion to the population of rural and urban areas in each municipality. Table A2 in the Appendix reports the sample size coverage by rural and urban areas for all three countries. For each city, we then listed all urban and rural districts. The study covered all of those districts. To ensure diversity and representativeness of the sample size, ten interviews were fixed for each secondary sampling unit (SSU). With the sample size of 1400, a total of 140 SSUs were selected from all of the districts of Hanoi and HCMC.⁴ The wards were selected from each district by using the probability proportional to size (PPS) sampling technique. This ensured that units with greater population have a greater chance to get selected than others. In each selected SSU, field supervisors randomly picked two starting points.⁵ Five interviews were conducted from each starting point. Only one eligible person (a man or a woman aged 18-64) was interviewed from each household. In addition to the age range, a gender quota (50% male, 50% female) was applied as an additional selection criterion.

As in virtually all survey research on political phenomena in rich and poor countries, researchers face the challenge that “ordinary citizens” often do not know much about the issues the respective survey focuses on (in our case trade and environmental protection). To make our questionnaire and the conjoint experiment as easy to understand as possible, we carried out multiple pilot tests in which we assessed, both for rural and urban areas and for respondents from different socio-demographic backgrounds, the clarity and logic of our questionnaire and the experiment. Furthermore, we used backward translations starting with an English version of the questionnaire and, after translation into Spanish and Vietnamese, used backward translation again to make sure that questions were clearly understood and the information obtained were comparable across countries. To ensure comparability of the interview process, our research team personally conducted the interviewer-training sessions in each country and was in the field during the survey implementation.

Dependent and Explanatory Variables

Trade is a multi-faceted phenomenon, and so are preferences concerning trade. We went beyond the standard approach in the existing literature of measuring trade preferences with a single survey item, and used a composite measure based on twelve survey items instead. This

⁴ The number of wards was selected in proportion to the district’s population and therefore differed from district to district.

⁵ Since a list of households was often not available, the starting points were selected based on some fixed positions such as the people committee’s building, the central health station of the selected unit, the starting point of the main road, etc.

composite measure was constructed based on confirmatory factor analysis. The first set of items tapped into respondents' spontaneous associations with international trade. We confronted respondents with six word pairs and asked them to indicate which of these words in a given pair they associated international trade more strongly with. In each pair, one word had a positive and the other word had a negative connotation. This approach is somewhat reminiscent of (but much simpler than) an Implicit Association Test. The second set of items asked respondents to evaluate the consequences of international trade from an egotropic, sociotropic, and consumer perspective.

Table 1 Dependent variable: Trade Preferences

	Country	Obs	Mean	Sd	Min	Max	Description
Trade preference	CR	816	0.686	0.198	0	1	Composite measure based on 12 survey items. For question wording, see Table A3 of the Appendix.
	NIC	800	0.752	0.203	0	1	
	VN	1386	0.753	0.138	0	1	

Table 1 provides summary statistics for the composite measure of trade preferences. Its values are standardized on a 0-1 scale, with higher values indicating more support for free trade. Respondents in all three samples express rather strong support for free trade. In Vietnam and Nicaragua, more than 75% of the respondents express favorable attitudes towards international trade. In Costa Rica, enthusiasm for free trade is somewhat lower (69%).

Our measure for environmental concern is based on three survey items. The first two items differentiate between individuals' "willingness to pay" (WTP) for environmental protection in both private life and at the collective level (see Table 2). Both items are worded so as to induce a tradeoff and avoid "cheap talk" bias. Respondents are asked to indicate whether they would be willing to make a sacrifice to protect the environment. We chose to focus on the widely debated tradeoff between job protection and environmental protection and the tradeoff between living standards and environmental protection. The third item captures policy-oriented environmental preferences. We asked whether respondents prefer government spending for environmental protection to be increased, stay the same, or to be decreased. Higher values on the three variables indicate stronger pro-environmental attitudes.

Table 2 Independent variables: Environmental attitudes

	Country	Obs	Mean	Sd	Min	Max	Description
WTP1: Accept Job Loss	CR	819	2.493	1.079	1	4	<i>"Measures to protect the natural environment should be implemented, even if they cause some job losses."</i>
	NIC	800	2.953	1.010	1	4	
	VN	1400	2.571	0.839	1	4	

WTP2: Restrict Living Standard	CR	820	3.313	0.912	1	4	<i>“In order to protect the natural environment, we all should be willing to restrict our current standard of living.”</i>	
	NIC	800	3.370	0.812	1	4		
	VN	1400	2.961	0.800	1	4		
Increase government spending	CR	819	2.534	0.670	1	3		<i>“Should government spending for protecting the natural environment in VN/CR/NIC be increased, decreased, or kept about the same?”</i>
	NIC	800	2.671	0.567	1	3		
	VN	1400	2.769	0.443	1	3		

On a first pass through the data, we find that in all three countries respondents express relatively strong environmental concerns and a high willingness to protect the environment. We observe the lowest willingness among Costa Ricans to increase government spending for environmental protection. Similarly, Costa Rican respondents seem relatively less willing to implement measures to protect the environment if this leads to job losses. Both in Nicaragua and Costa Rica, people are more willing to restrict their living standards in order to protect the environment, compared to the Vietnamese sample.

Results

In this section we first present the findings for the first part of our argument, where we hypothesize that citizens in poor countries are likely to hold positive views on the trade-environment nexus, rather than viewing it as a (negative) tradeoff. We then discuss the findings for the second part of the argument, where we hypothesize that citizens in poor countries support trade relations with countries that have higher environmental standards and do not mind richer countries imposing environmental standards on developing nations via trade agreements.

Public Perceptions of the Environment-Trade Nexus

To examine how respondents perceive the relationship between trade and the environment, we asked them to evaluate the impact of international trade on the environment. This item was placed towards the end of the survey to avoid any priming of respondents when trying to gauge trade preferences and environmental attitudes independently. Table 3 presents this variable’s descriptive statistics.

Table 3 Environmental Effects of Trade

	Country	Obs	Mean	Sd	Min	Max	Description
Trade impact*	CR	819	0.575	0.495	0	1	<i>Do you think</i>

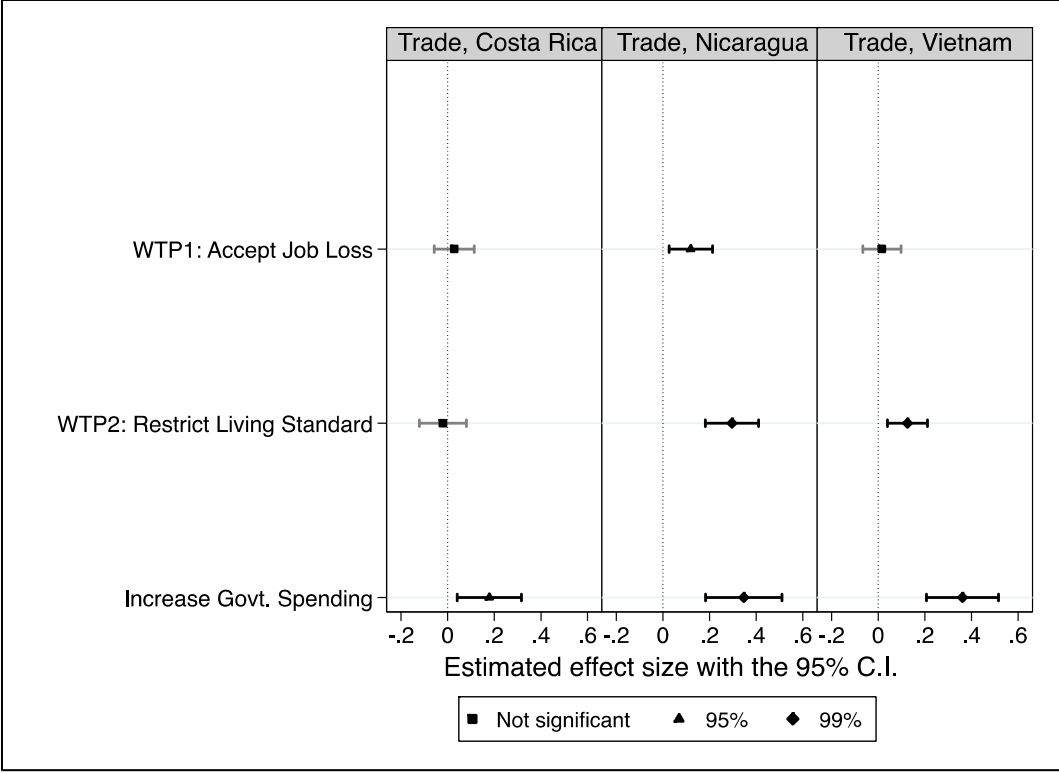
	NIC	800	0.530	0.499	0	1	<i>international trade has improved (0) or damaged (1) the environment?</i>
	VN	1386	0.615	0.487	0	1	
* We collapsed the original four-point scale into a binary variable. If respondents answered that trade has damaged the environment, we recoded this response as 1. Other responses were coded as 0.							

As shown in Table 3, across all three samples, the majority of respondents believe that trade has damaged the environment. In Vietnam, 62% of the respondents share this view. In Costa Rica and Nicaragua, these shares are 58% and 53%, respectively. The results suggest that respondents do link trade liberalization to environmental degradation. However, as the following section demonstrates, this awareness does not lead to negative evaluations of trade per se or to demands for trade restrictions.

To statistically examine the relationship between environmental attitudes and trade preferences we estimate two OLS regression models for each of the three explanatory variables (Table 4). First, we examine the bivariate association between the respective explanatory variable and trade preferences. We then add a battery of control variables to find out whether the association of interest here upholds.

As shown in Figure 1, the results for citizens in the three developing countries differ quite strongly from what other research has observed for citizens in advanced industrialized countries. It seems that individuals with stronger environmental attitudes do not hold more negative trade preferences. To the contrary, in six out of nine models, there is a significant positive association between environmental attitudes and trade preferences (see also Table 4, Column 1). That is, individuals with stronger pro-environmental attitudes are also more in favor of trade liberalization. In two out of three models for the Costa Rica sample, the effect is non-significant. This finding is plausible because Costa Rica is, by a wide margin, the richest of the three developing countries covered by our study. Hence we regard the finding for Costa Rica as indirect support for our argument about changes in public views on the trade-environment nexus as income levels grow. The insignificant effect in two of the three models for the first environmental attitudes item is probably due to the fact that this item confronts respondents with the most severe tradeoff between economic development (referring to jobs) and environmental protection. The descriptive statistics for the three items, as shown in Table 2 above, in fact show that environmental attitudes measured by this item are weaker than for the other two items.

Figure 1 Bivariate Regression Results



Note: (1) Dots indicate the estimated effects of the explanatory variables. (2) Whiskers indicate the 95% confidence intervals around the means. (3) The outcome measure, *Trade Preference*, is a composite index tapping respondents' intuitive associations with international trade as well as subjective evaluations of economic openness from an egotropic, sociotropic and consumer perspective. *Trade Preference* is semi-continuous and ranges from 0 to 1. (4) The model is estimated using an OLS estimator. (5) For illustration purposes we multiplied the coefficients and the values of their corresponding lower and upper boundaries of the confidence intervals by 10.

Previous studies have examined a wide range of factors that may explain variation in public support for trade liberalization. We include a number of these factors in the regression models to control for potential confounding factors of individual trade preferences. The results are reported in Table 4, Column 2.

First, we control for gender differences. The existing literature suggests that women hold less favorable views on free trade, but are more concerned about the environment (Beaulieu and Napier 2008, Burgoon and Hiscox 2008, Kaltenthaler et al. 2004, Mayda and Rodrik 2005, O'Rourke and Sinnott 2001). Gender effects are only found for the Vietnamese sample, where females seem to be more protectionist than their male counterparts. In contrast, in the Costa Rica and Nicaragua samples, there is no statistically significant association between gender and individual trade preferences. In addition, we control for age, since several studies have found that older people are less supportive of free trade (Kaltenthaler et al. 2004, Mansfield and Mutz 2009, Mayda and Rodrik 2005, O'Rourke and Sinnott 2001). As our results show, this is only the case for Vietnam.

Education levels are yet another frequently tested determinant of individual trade preferences. The existing literature is divided over the mechanism through which education affects the way individuals think about international trade. For example, some studies use educational attainment as a measure of skill level, arguing more skills implicate better labor market prospects in a more open economy, which in turn leads to more positive attitudes vis-à-vis trade (Kaltenthaler et al. 2004, Mansfield and Mutz 2009, Mayda and Rodrik 2005, O'Rourke and Sinnott 2001). Hainmueller and Hiscox (2006), on the other hand, argue that the educational attainment effect may also reflect an ideological impact (more education leads to more awareness that trade can be beneficial, and to more cosmopolitan attitudes), rather than reflecting the standard factor endowments effect derived from trade theory. We are agnostic about the underlying theoretical logic or causal mechanism, but control for education levels of respondents. The lowest level on this variable (1) indicates that the respondent has no formal education, while the highest level (7) indicates a postgraduate degree. The results show that while education does not seem to have a significant effect on individuals' trade attitudes in Costa Rica and Nicaragua, among Vietnamese respondents higher levels of education are likely to decrease support for international trade.

Table 4: Regression Results for Environmental Attitudes and Trade Preferences

VARIABLES	VIETNAM		COSTA RICA		NICARAGUA	
	Individual Trade Preference		Individual Trade Preference		Individual Trade Preference	
WTP1: Accept Job Loss	0.005 (0.004)	0.005 (0.004)	0.004 (0.006)	0.001 (0.006)	0.017** (0.007)	0.014** (0.007)
Gender		-0.016** (0.00756)		-0.012 (0.015)		0.018 (0.015)
Age		-0.009*** (0.003)		-0.001 (0.006)		0.008 (0.007)
Education		-0.007** (0.003)		-0.002 (0.005)		0.002 (0.005)
Employment		0.009* (0.004)		0.015 (0.01)		0.011 (0.009)
Income Satisfaction		-0.005 (0.00566)		0.027*** (0.009)		0.029*** (0.01)
Urban		0.018** (0.008)		-0.02 (0.016)		-0.016 (0.016)
Constant	0.741*** (0.012)	0.789*** (0.027)	0.676*** (0.018)	0.632*** (0.038)	0.702*** (0.022)	0.614*** (0.041)
Observations	1,386	1,385	815	815	800	800
R-squared	0.001	0.017	0.000	0.021	0.007	0.024

VARIABLES	VIETNAM		COSTA RICA		NICARAGUA	
	Individual Trade Preference		Individual Trade Preference		Individual Trade Preference	
WTP2: Restrict Living Standard	0.013*** (0.005)	0.013*** (0.005)	-0.004 (0.008)	-0.005 (0.008)	0.044*** (0.009)	0.043*** (0.009)
Female		-0.015** (0.008)		-0.012 (0.015)		0.018 (0.015)
Age		-0.009*** (0.003)		-0.001 (0.006)		0.007 (0.007)
Education		-0.006* (0.003)		-0.002 (0.005)		0.001 (0.005)
Employment		0.008* (0.004)		0.015 (0.01)		0.009 (0.009)
Income Satisfaction		-0.005 (0.006)		0.027*** (0.009)		0.031*** (0.009)
Urban		0.018** (0.008)		-0.021 (0.016)		-0.017 (0.016)
Constant	0.713*** (0.014)	0.762*** (0.028)	0.698*** (0.026)	0.654*** (0.043)	0.605*** (0.03)	0.514*** (0.046)
Observations	1,386	1,385	816	816	800	800
R-squared	0.006	0.022	0.000	0.021	0.030	0.048

VARIABLES	VIETNAM		COSTA RICA		NICARAGUA	
	Individual Trade Preference		Individual Trade Preference		Individual Trade Preference	
Increase Govt. Spending	0.039*** (0.008)	0.04*** (0.008)	0.025** (0.01)	0.023** (0.01)	0.049*** (0.013)	0.05*** (0.013)
Female		-0.017** (0.00751)		-0.012 (0.014)		0.019 (0.015)
Age		-0.009*** (0.003)		-0.001 (0.006)		0.007 (0.007)
Education		-0.007** (0.003)		-0.003 (0.005)		-0.001 (0.005)
Employment		0.009** (0.004)		0.014 (0.01)		0.01 (0.009)
Income Satisfaction		-0.005 (0.006)		0.026*** (0.009)		0.032*** (0.01)
Urban		0.019** (0.008)		-0.021 (0.016)		-0.016 (0.016)
Constant	0.647*** (0.023)	0.69*** (0.034)	0.623*** (0.027)	0.585*** (0.041)	0.621*** (0.034)	0.525*** (0.048)
Observations	1,386	1,385	815	815	800	800
R-squared	0.015	0.032	0.007	0.026	0.019	0.038

Note: (1) The outcome measure, *Trade Preference*, is a composite index tapping respondents' intuitive associations with international trade as well as subjective evaluations of economic openness from an egotropic, sociotropic and consumer perspective. *Trade Preference* is semi-continuous and ranges from 0 to 1. (2) Standard errors in parentheses. (3) *** p<0.01, ** p<0.05, * p<0.1

We also control for respondents' reported employment status and household income. To this end, we asked respondents to indicate whether they currently have paid employment (1), are self-employed (2) or are currently not working (0). Results from the regression analysis suggest that employment status only seems to be significantly associated with individual attitudes towards trade in Vietnam, with employed respondents being more supportive of trade.

To capture household income levels, respondents were asked to indicate their income range on a ten-point scale. However, descriptive statistics revealed that the distribution of responses to this question differs considerably from the population distribution (based on national census data⁶). Many people did not respond and many appear to have understated

⁶ Vietnam Census: 2009, Costa Rica: 2011, Nicaragua: 2005.

their income. We therefore use income satisfaction in our main analysis, relying on a four-point scale, with higher values indicating greater satisfaction. In the two Central American states, respondents reporting greater satisfaction with their income also seem to be more favorable toward trade openness. In Vietnam, income satisfaction does not have a statistically significant effect on the way citizens think about trade liberalization.

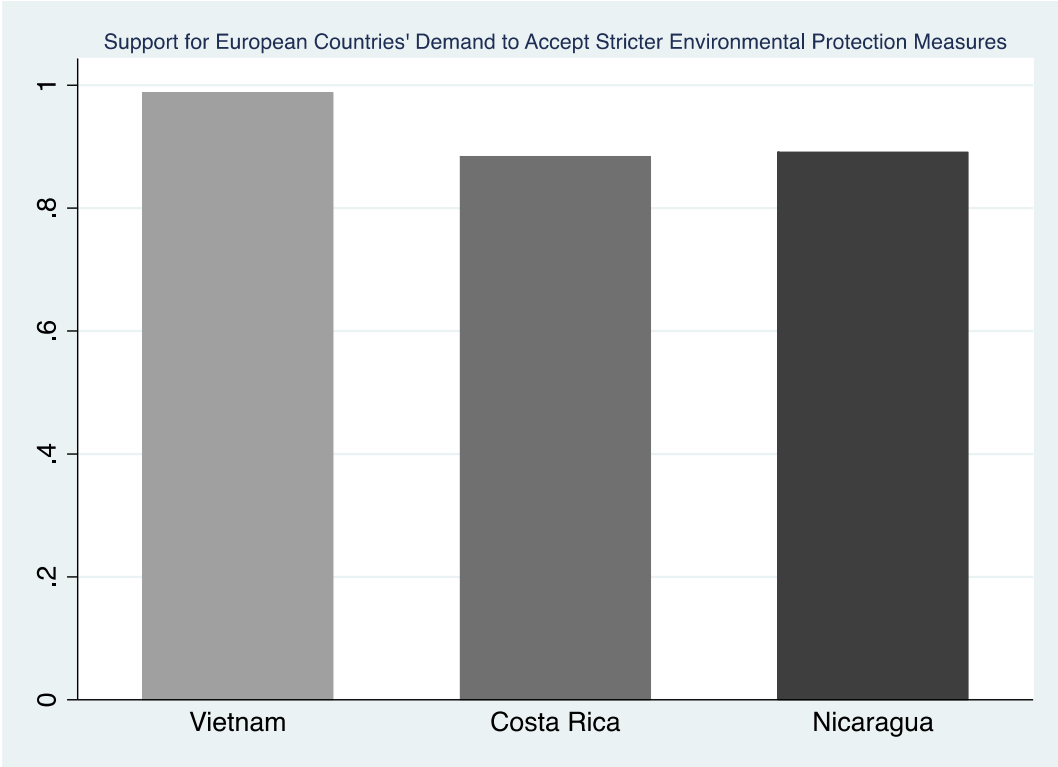
Finally, we include a variable that indicates whether the respondent lives in an urban or rural area. While the effect is insignificant for the Costa Rica and Nicaragua sample, regional differences seem to be at play in the Vietnamese case. In particular, the regression results indicate that respondents from urban areas are more likely to endorse trade openness than their counterparts living in rural areas.

Overall, the results of the regression analysis indicate that the positive relationship between environmental attitudes and individual trade preferences remains robust after including standard control variables from the literature on individual trade preferences.

Environmental Standards and Trade Partner Choice

We start by looking at data from a survey item that gauges public support for the inclusion of environmental standards in trade agreements. This survey item was also placed towards the end of the survey (after the conjoint experiment discussed below, to avoid priming before the experiment). It asks respondents whether their government should oppose or accept European demands to include environmental protection rules in a trade agreement. Figure 2 shows very high levels of support among the respondents for accepting such rules. In Vietnam, almost all respondents (99%) welcome environmental clauses. In the two Central American countries, approval is around 89%. This result is in stark contrast to the rhetoric of many governments from the Global South that strongly oppose trade-environment linkages. It offers strong support for our argument that citizens in poor countries, possibly motivated by expectations of technology diffusion and trading-up, support trade as one mechanism for raising environmental standards domestically. In essence, they want free trade with industrialized countries and do not mind the imposition of environmental standards on their home country via a trade agreement.

Figure 2 Support for Environmental Standards in Trade Agreements



Note: (1) The original question wording asks: The [COUNTRY] government is currently discussing international agreements that would make it easier for producers from European countries to export their goods to [COUNTRY], and for [COUNTRY] producers to export their goods to European countries. European countries have made several demands. One of these demands is that [COUNTRY] producers exporting goods to Europe accept stricter measures to protect the natural environment against pollution in [COUNTRY]. In your view, should the government of [COUNTRY] accept or oppose this demand? (2) Whiskers indicate the 95% confidence intervals around the means.

We now move to the results of the conjoint experiment. Due to logistical challenges in Vietnam, we had to carry out the conjoint experiment separately there. However, this has no implications for our findings. The sample size was reduced to 700 participants and the geographical coverage was restricted to the Hanoi and Ho Chi Minh City areas, which also include large rural districts.⁷ For reasons of limited internet access and security, we used the Strezhnev et al.’s (2013) design tool to generate our choice-based conjoint experiment for face-to-face application (see Appendix B for further description).

In a conjoint experiment, respondents are typically asked to rank or rate two hypothetical profiles. These profiles are generated through combining a set of randomized attributes. For our experiment we generated the profiles of potential trading partner countries that vary with respect to several characteristics, for instance size of the economy, cultural characteristics, proximity, etc. (see Appendix, Table B1 for a complete list of attributes).

⁷ The survey and sampling procedures were exactly the same as the ones employed for the survey that generated the data for testing the first part of the argument. Also, the same group of enumerators administered the conjoint experiment in the field.

Asking respondents to express preferences for potential trade partners that differ with respect to multiple characteristics (attributes) makes the experiment more realistic compared to a simple vignette experiment with one survey item where a potential trade partner country is characterized with one attribute only. Moreover, a conjoint experiment allows for causal inferences, whereas a simple survey item asking respondents whether they prefer trade with a country that has lower, the same, or higher environmental standards would probably suffer from serious social desirability bias and would not allow for any causal inferences.

The conjoint experiment started with a short introductory text⁸ and instructions. Attribute values were generated using a completely independent randomization approach. We focus on the effect of the attribute that describes the potential trade partner's environmental protection standards. We refrained from including a detailed definition of environmental protection standards, but instead used the following brief description of this attribute: "*The environmental protection standards in partner countries may be stronger, similar, or weaker, compared to the standards in [respondent's country].*" The randomized attribute values were stronger, similar, or weaker. We are interested in whether respondents favor trade partner countries that have lower, similar, or higher environmental standards, relative to their own country's standards – and based on exposure to country profiles that combine different types of country attributes.

Our pilot surveys and conjoint experiments in the three countries showed that respondents from different socio-economic backgrounds do understand what is meant by environmental protection standards in their home country. We do not expect them to fully understand the stringency of environmental standards in other countries. However, since we used a relative attribute – other country's standards compared to home country environmental standards – we found that participants had a good understanding of what they were asked to evaluate and compare.

The preferences for trade partner countries, as characterized by specific attributes, were captured both in binary terms (i.e., whether the respondent prefers country A over country B) and on a seven-point scale indicating how much the respondent prefers (or opposes) each of the two countries. We rescaled these two measures to range from 0 ("never

⁸ The introduction reads as follows: "[COUNTRY] is currently negotiating international trade agreements with other countries. The purpose of such trade agreements is to make it easier for producers from other countries to sell their goods and services in [COUNTRY] (imports), and to make it easier for producers based in [country] to sell their goods and services in other countries (exports). [COUNTRY] is considering different partner countries for such trade agreements. These partner countries may differ with respect to their characteristics. For a start, please look at the following table very carefully. It describes some basic characteristics partner countries for international trade agreements with [COUNTRY] may have."

support”) to 1 (“always support”). Each respondent was asked to complete five choice tasks. In each choice task the respondent was confronted with two country profiles. Thus, the unit of analysis is the country profile per choice task, which generates ten observations per respondent.⁹ The analysis of the data thus generated allows us to identify the Average Marginal Component Effect (ACME) of country attributes on the probability that a particular country is preferred, or on how positively (or negatively) the potential trade partner country was rated (Hainmueller et al. 2014). Because the attribute values are randomly assigned, this analysis can tell us to what extent trade preferences with respect to a particular country are driven by the (potential) partner country’s efforts to protect the environment (besides other partner country characteristics).

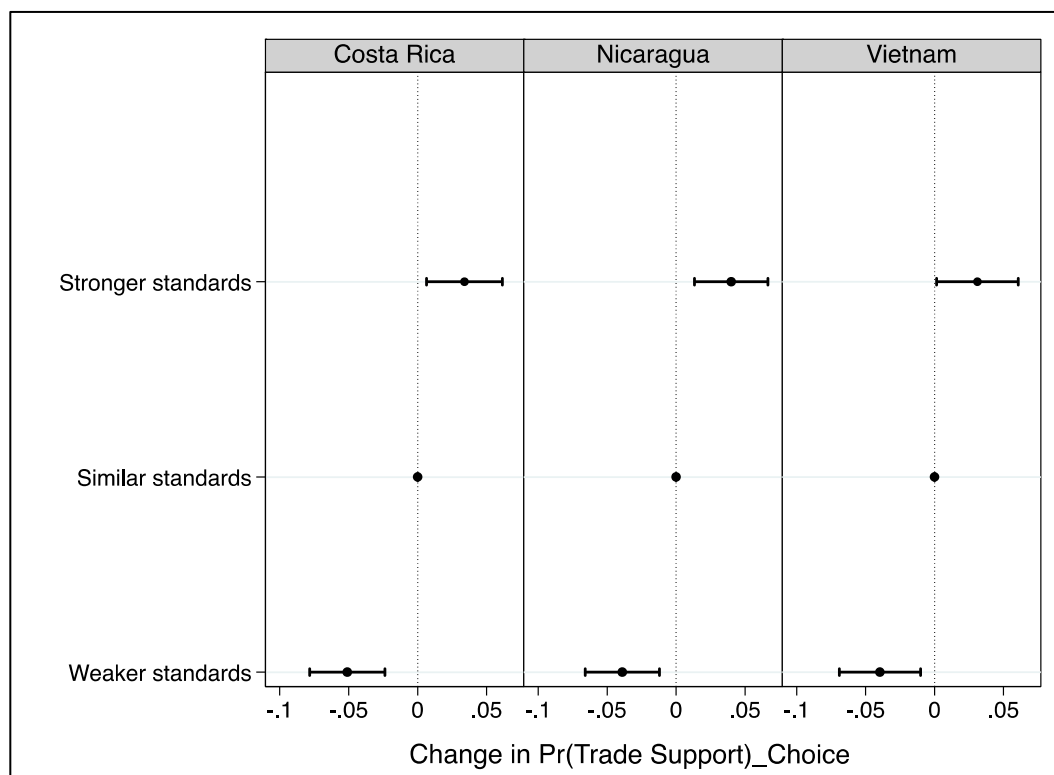
Figure 3¹⁰ shows the estimates for the model in which the dependent variable is binary and captures whether or not the respondent has opted for a given country type. To estimate the impact of a given trade partner’s environmental protection standards relative to the respondent’s own country’s protection efforts, we regress the outcome (response) measures on the values of the country attributes. Changes are measured against a baseline category, which in our case is defined as the potential partner country having similar environmental standards as compared to the respondent’s home country. To account for the fact that the ratings from the same respondent might not be independent, we cluster the standard errors by respondents.

The results support the second part of our theoretical argument. Respondents prefer trade agreements with countries that have higher environmental standards, and they dislike trade agreements with countries that have lower environmental standards. The effects are in the order of four to eight percentage points in all three countries. In substantive terms (rather than mere significance level), these effects are somewhat smaller than the effects of some other partner country attributes. For instance, all else equal, partner countries with a predominantly Christian heritage (as compared to Islamic heritage) attract around 12 to 17 percentage points more support among respondents in Costa Rica and Nicaragua (Umana et al. 2014).

⁹ Number of observations = 2 (country profiles)*5 (choice tasks)*number of respondents. This results in a maximum of 8200 observations for Costa Rica, 8000 for Nicaragua, and 7000 for Vietnam.

¹⁰ We do not examine the effects of other trade partner country characteristics (e.g., economic size, political system) in this paper. We are doing so in other research that focuses more generally on identifying a larger set of criteria for trade partner country choices from macro-level trade theories and testing these hypotheses with a conjoint design at the micro level (Umana et al. 2014).

Figure 3 Effect of Partner Country’s Environmental Protection Standards on Trade Support, Binary Choice



Note: (1) Dots indicate the estimated effects of the partner country’s environmental protection standards on respondents’ choice of a trading partner for a preferential trade agreement. (2) Estimates are based on the regression estimators with clustered standard errors (errors clustered on respondent). (3) Whiskers indicate the 95% confidence intervals around the means. (4) Our dependent variable is a binary measure. (4) The dot on the 0-bar is the reference category.

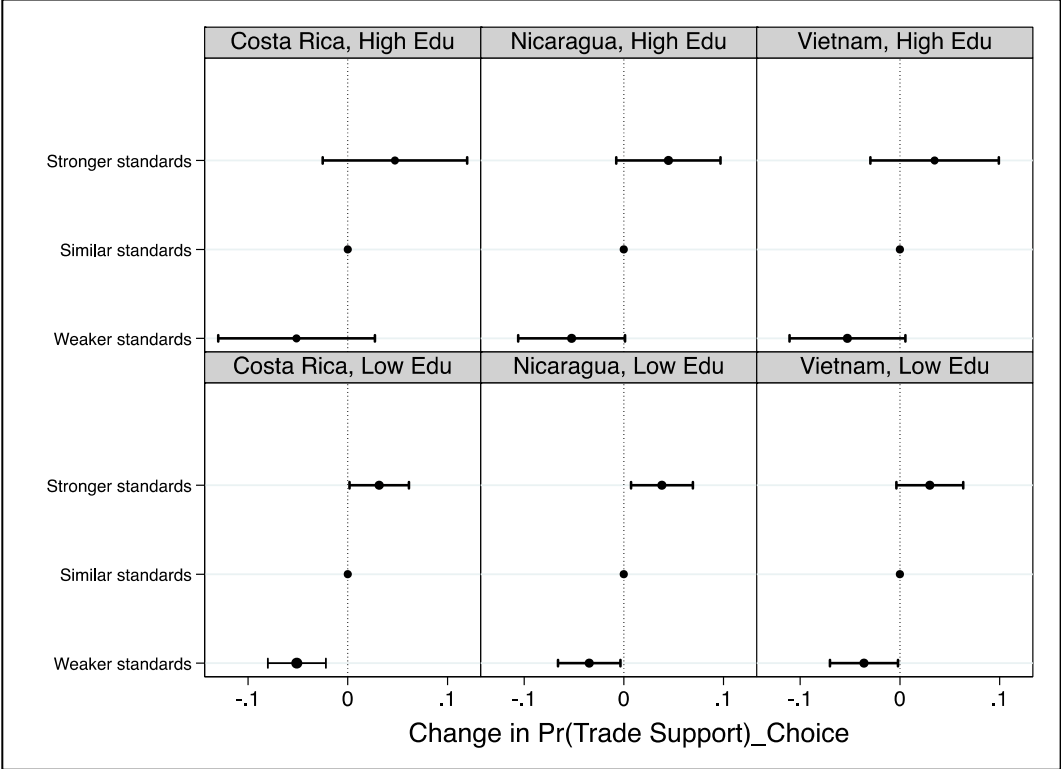
To examine whether the effects of environmental standards on trade partner country preferences are contingent on respondents’ levels of education, we split the samples by education level and re-examine the effects of interest.¹¹ This robustness check addresses a common concern that respondents know rather little about the issues of interest to researchers, and that when exposed to a survey or experiment they may simply express “gut feelings” (Donsbach and Traugott 2008, Fowler 2008).

The results, summarized in Figure 4, indicate that the estimated effects are consistent with our hypothesis. Yet, there are some differences between highly educated respondents and those with lower levels of education. These differences pertain to statistical significance levels. The results for highly educated respondents are not statistically significant, whereas those for less educated respondents are. This finding cuts against methodological concerns that people with less education, who presumably know less about trade and environmental

¹¹ For the seven-point scale of educational attainment we chose the cutoff point between those respondents who have attended high school and have earned higher degrees (coded as “high education”) and those who have obtained lower levels of education (coded as “low education”).

issues, are likely to respond more or less at random because they are not able to understand the issues of interest here and provide consistent answers. If less educated persons responded at random, we would probably not find any significant effects of any country attributes.

Figure 4 Effect of Partner Country’s Environmental Protection Standards on Trade Support, By Respondents with High and Low Levels of Education



Note: (1)

Dots indicate the estimated effects of the partner country’s environmental protection standards on respondents’ choice of a trading partner for a PTA. (2) Estimates are based on the regression estimators with clustered standard errors (clustered on respondent). (3) Whiskers indicate the 95% confidence intervals around the means. (4) Our dependent variable is a binary measure. (4) The dot on the 0-bar is the reference category.

Why respondents with more education seem to hold more heterogeneous preferences with respect to environmental standards in potential partner countries, or why they might pay less attention to this attribute, relative to other attributes, should be addressed in further research. One reason could be that more educated respondents hold more heterogeneous preferences over whether trading with countries that have higher environmental standards is economically beneficial. Some may think that doing so may allow their home country to compete on lower environmental standards by attracting polluting investment and exporting to the country with higher environmental standards. Others may be afraid that doing so will result in environmental trading up and increased production costs in developing countries – a concern that is apparent in the political rhetoric of many political leaders from the Global South.

The results for the second measure for the dependent variable (ratings on a 1-7 scale) are shown in the Appendix (Figure A1 and A2). They are very similar. The comparison of

results from the binary choice and the rating task also serves to check the attentiveness of respondents. We find no substantial inconsistencies in responses to the binary choice and the rating task (e.g., in the sense of a respondent favoring country A in the binary choice task and then giving country B a higher score in the rating task).

Conclusion

Overall, the empirical analysis offers robust support for our arguments on how citizens in the Global South are likely to evaluate the trade-environment nexus. In contrast to recent findings for advanced industrialized countries, we observe that citizens in the three countries examined prefer both trade liberalization and environmental protection – even though they are aware that trade may have negative effects on the natural environment. They prefer trade partners with higher environmental standards, and they strongly prefer their government to accept demands by industrialized countries for including environmental standards in trade agreements.

The policy implications of these findings are twofold. First, there appears to be very little public support in developing countries for serving as the receiving end in processes of relocation of dirty industries away from advanced industrialized countries. Second, the results are orthogonal to the rhetoric of many policymakers from developing countries who object to trade-environment linkages and to demands by industrialized countries for the inclusion of environmental protection standards in trade agreements.

Our results are also interesting in light of recent findings by Vincent et al. (2014) with respect to one particular area of environmental policy in developing countries, namely forest conservation. They offer several interpretations for the observed gap between citizens' perceptions and demands concerning forest conservation and their respective government's supply of such policies. One interpretation is that governments do not really know what their citizens want. In fact there is very little public opinion research on this discrepancy in developing countries.

A closely related interpretation concerns the relationship between political systems and the provision of environmental public goods. The relative lack of voice and accountability in non-democratic systems may explain parts of the gap between public and political elite preferences. For example, among the three countries analyzed in our study, we find that in Vietnam, the least democratic of the three, this gap is most apparent. While the country ranks

as one of the worst in terms of its environmental protection standards, respondents in the Vietnamese sample are very strongly aware of environmental problems and exhibit the strongest support for conditioning trade liberalization on environmental protection measures.

Whatever the exact reasons for the gap between public preferences and developing country governments' policy decisions and rhetoric may be, our findings imply that there probably is considerable room for more ambitious efforts to condition further trade liberalization on measures for preventing trade-related environmental degradation. Possible actions by the international community may, for instance, include funding population-based survey projects to reduce the information gap and supporting programs to improve environmental governance through intensified cooperation between trade and environmental ministries in developing countries.

Methodologically, one limitation of our study is that testing of the first part of the theoretical argument relies on a correlational approach, as the very large majority of other studies on trade preferences do. Further research could try and develop an experimental design that would allow for effective manipulation of environmental attitudes and preferences, and thus for a causal analysis of the argument. In addition, the mechanisms underlying the identified positive relationship between individuals' environmental concern and support for free trade deserves further analysis. The same holds for the reasons that may have led to less significant effects of environmental protection standards of potential trade partners on partner country preferences in the subsample of respondents with higher education levels.

Finally, we hope that the research presented in this paper will motivate other researchers to pay greater attention to the implications of macro-level policy debates for individual citizens. We believe that such research is important not only for normative reasons – governments should do what their citizens want. It is also important because one of the key challenges in achieving sustainable development lies in designing trade liberalization in ways that avoid environmental degradation. And doing so requires public support from citizens.

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Appendix A

Socio-economic Differences of Selected Country Cases

Our empirical analysis focuses on Costa Rica, Nicaragua, and Vietnam. Table A1 summarizes the main differences in key socio-economic characteristics between the three countries. The table shows that these countries differ strongly in their levels of development, political system characteristics, and environmental protection standards. We can thus test whether the hypothesized effects hold across very different developing country settings.

Table A1 Key Socio-Economic Differences between Costa Rica, Nicaragua, and Vietnam

	Costa Rica	Nicaragua	Vietnam
Level of economic development			
Human Development Index	62	129	127
Gross National Income per capita (2005 constant PPP terms) 2012	\$10,863	\$2,551	\$2,970
Economic openness / trade policy			
GATT/WTO Membership	GATT: 1991 WTO: 1995	GATT: 1950 WTO: 1995	WTO: 2005
PTAs	CACM, CARICOM, EU, DR-CAFTA, EFTA, Chile, Colombia, Peru, Canada, Mexico, China, Singapore,	CACM, DR-CAFTA, EU, Chinese Taipei	ASEAN, TPP, China, Japan, Korea, India
Average tariff rate	3.1%	2.6%	5.7%
Trade of goods and services (% of GDP) Source: WDI, 2014	79	106	156
Environmental standards			
Environmental Performance Index 2014	54	90	136

Sample Distribution

Table A2 reports the sample size coverage categorized rural and urban areas for Costa Rica, Nicaragua and Vietnam. The samples for Costa Rica and Nicaragua are from the entire country. For logistical reasons, we restricted the sampling to five key areas in Vietnam (Hai Phong, Hanoi, Da Nang, Ho Chi Minh City, and Can Tho). The sample sizes of urban and rural respondents to be surveyed were determined in such a way that they are in proportion to the distribution of rural and urban residents of each country. In Vietnam, the sample size was first spread out in proportion to the population of the selected cities.

Table A2: Sample Distribution by Stratification of Urbanity

	Population			Proportion		Estimated SS		Final SS	
	Total	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Costa Rica	4 726 575	3 055 438	1 671 137	64.64	35.36	530	290	600	220
Nicaragua	5 869 860	3 378 480	2 491 380	57.56	42.44	460	339	530	270
Hanoi	6 451 909	2 644 536	3 807 373	40.99	59.01	211	303	180	260
HCMC	7 162 864	5 968 384	1 194 480	83.32	16.68	476	95	400	80
Can Tho	1 188 435	783 122	405 313	65.90	34.10	105	55	105	55
Hai Phong	1 837 173	846 191	990 982	46.06	53.94	68	79	74	86
Da Nang	887 435	770 911	116 524	86.87	13.13	139	21	139	21
TOTAL								2028	992

Note: (1) The samples for Costa Rica and Nicaragua are from the entire country. In Vietnam we restricted the sampling to the listed five key areas. (2) We used booster sampling in Can Tho and Da Nang to make the samples large enough for analysis.

Question Wording of Outcome Measure Items

To measure respondents' stated trade preferences we generated a composite index using confirmatory factor analysis (CFA) based on 12 survey items. Table A3 lists the exact question wording for each item as they were presented in the original key questionnaire (prior to back translations into Spanish and Vietnamese).

Table A3: Question Wording of Items for Dependent Variable

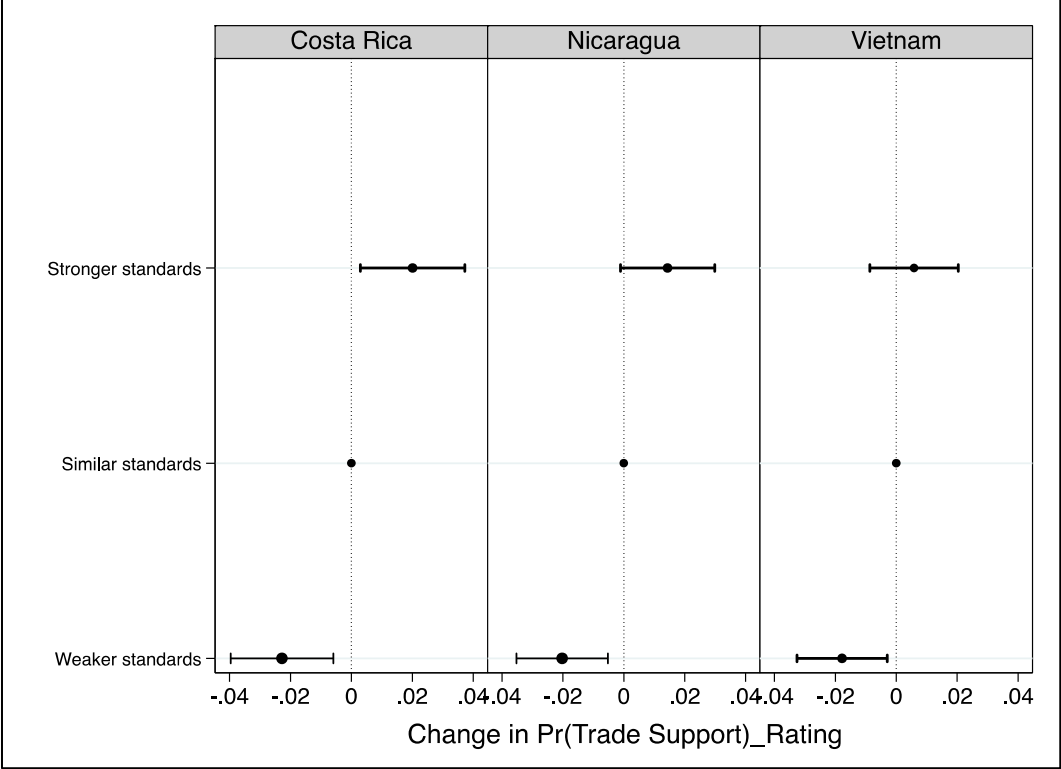
Item 1-6 Generally, what is your feeling when you think about international trade? (6 word pairs to capture intuitive trade association): GOOD-BAD, THREAT-OPPORTUNITY, FEAR-HOPE, UNEMPLOYMENT-JOBS, POVERTY-WEALTH, FAIR-UNFAIR
Item 7 Overall, do you think that international trade is good or bad for VN/CR/NIC?
Item 8 Overall, do you think that you personally are currently benefiting or not benefiting from international trade?
Item 9 Do you think that international trade has increased or decreased the choices you have between different goods when you want to buy something?
Item 10 Do you think that international trade has increased or decreased the quality of goods you buy?
Item 11 Do you think that international trade has increased or decreased the prices of goods you buy?
Item 12 Do you think that international trade has created more jobs or more unemployment in [COUNTRY]?

Effect of Environmental Standards on Partner Choice in Rating Task

Figure A1 shows the estimates for the model in which the dependent variable is captured on a seven-point scale indicating how much the respondent prefers (or opposes) each of the two countries. We included this rating task in addition to the binary choice in order to check the attentiveness of respondents (e.g., in the sense of a respondent favoring country A in the binary choice task and then giving country B a higher score in the rating task). As the findings

below indicate, the results for the binary choice and the rating task do not differ substantially from each other.

Figure A1 Effect of Partner Country’s Environmental Protection Standards on Trade Support, Rating Task

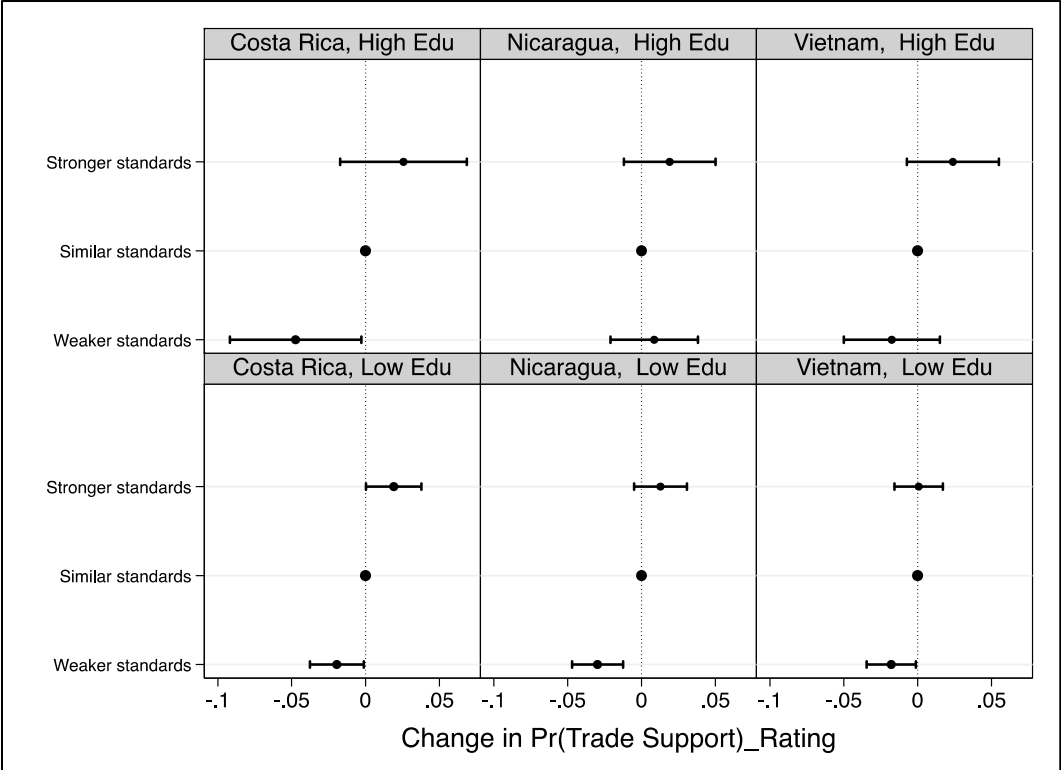


Note: (1) Dots indicate the estimated effects of the partner country’s environmental protection standards on respondents’ preference of a trading partner for a preferential trade agreement. (2) Estimates are based on the regression estimators with clustered standard errors (errors clustered on respondent). (3) Whiskers indicate the 95% confidence intervals around the means. (4) We collapsed the original seven-point scale of the dependent variable and rescaled the variable to range from 0 (“never support”) to 1 (“always support”). (4) The dot on the 0-bar is the reference category.

Effect of Environmental Standards on Partner Choice in Rating Task Across Education Levels

For both the binary choice and the rating task we split the samples by education level to examine whether the effects of environmental standards are contingent on respondents’ levels of education. The responses to the rating task shown in Figure A2 are similar to the results of the binary choice task and suggest that individuals answer consistently to our outcome measures.

Figure A2 Effect of Partner Country’s Environmental Protection Standards on Trade Support, Rating Task, Respondents with High and Low levels of Education



Note: (1) Dots indicate the estimated effects of the partner country’s environmental protection standards on respondents’ preference of a trading partner for a preferential trade agreement. (2) Estimates are based on the regression estimators with clustered standard errors (errors clustered on respondent). (3) Whiskers indicate the 95% confidence intervals around the means. (4) We collapsed the original seven-point scale of the dependent variable and rescaled the variable to range from 0 (“never support”) to 1 (“always support”). (4) The dot on the 0-bar is the reference category.

Appendix B

Design of Conjoint Experiment

In our conjoint experiment, respondents were asked to express their preferences with respect to potential partner countries for a preferential trade agreement (PTA). To avoid confounding effects that may result from naming specific countries, we presented countries in stylized form. Each participant was confronted with five choice tasks. In each choice task, she or he was shown a table with two potential trade partner countries and their characteristics (attributes). The order of attributes was randomly assigned to each participant, but then held fixed for the five choice tasks to reduce the complexity of the task. The attribute values were randomly inserted into the tables with the country profiles. Table B1 shows the list of attributes and attribute values.

Table B1 List of attributes and corresponding values

<i>Attribute</i>	<i>Description, attribute values</i>
Size of the economy, compared to [country]	Partner countries may be of different economic size. Their economy may be smaller, of similar size, or larger than the economy of [country]. Values: Larger, same size, smaller
Distance from [capital]	The distance in kilometers between [capital] and the partner country's capital. Values: 1 000 km, 5 000 km, 10 000 km
Spanish (Costa Rica and Nicaragua only)	Spanish may be widely spoken or not widely spoken in partner countries. Values: Spoken by everyone, spoken by many, spoken by few
Lunar New Year (Vietnam only)	This country celebrates or not the Lunar New Year Values: Yes, No
Religion (Costa Rica and Nicaragua only)	Partner countries may have a predominant religion like Christianity or Islam, or may be religiously diverse with several religions practiced. Values: Predominantly Christian, Predominantly Islam, Diverse
Political leaders	The political leaders of partner countries may be chosen by their citizens (voters) through general elections, partly chosen by their citizens (voters) through general elections, or chosen by the ruling political party on its own (no elections). Values: Chosen by citizens (voters) through general elections, Partly chosen by citizens (voters) through general elections, Chosen by the ruling political party on its own (no elections)
Security alliance with [country]	Partner countries may have or may not have a security alliance with [country]. Values: Yes, no
Environmental protection standards, compared to [country]	The environmental protection standards in partner countries may be stronger, similar, or weaker, compared to the standards in [country]. Values: Lower, similar, higher
Worker rights protection standards, compared to [country]	The worker rights protection standards in partner countries may be stronger, similar, or weaker, compared to the standards in [country]. Values: Lower, similar, higher

The conjoint experiment started with a short introductory text and instructions. We focused on the effect of the attribute that describes the potential trade partner's environmental protection standards. Table B2 illustrates our approach.

Table B2 Example of a Showcard for a Choice Set

INSTRUCTIONS:

We will now ask you to look at different types of partner countries Costa Rica is considering for international trade agreements. You will see two different types of countries side-by-side. Their characteristics differ and you will be asked to tell us which of the two countries you prefer Vietnam

to choose for a new trade agreement. Please compare these two countries carefully. They may appear similar but differ in one or more important characteristics.

Characteristic	Country 1	Country 2
Size of the economy, compared to Costa Rica	Larger	Same size
Religion	Predominantly Christian	Diverse
Environmental protection standards, compared to Costa Rica	Stronger	Similar
...
...
Which country would you prefer?	<input type="radio"/>	<input type="radio"/>

On a scale from 1 to 7, how much would you support a trade agreement between Costa Rica and COUNTRY 1? 1 means that you would not support at all the agreement, and 7 means that you would strongly support the agreement.

On a scale from 1 to 7, how much would you support a trade agreement between Costa Rica and COUNTRY 2? 1 means that you would not support at all the agreement, and 7 means that you would strongly support the agreement.

To estimate the effect of the hypothetical trade partner country’s environmental protection standards on respondents’ preferences, we follow the identification strategy suggested by Hainmueller et al. (2014). Under a set of assumptions the average treatment effect is identified as the expected difference in responses for two different sets of profiles. The method, however, goes further than simply comparing two different profiles of countries, which differ on various attributes (possibly in an arbitrary way). Instead, it allows us to isolate the attributes of a given potential trading partner that are more or less influential on respondents’ preferences by averaging over the potentially different marginal effects. This, then, gives us the average marginal component specific effect (AMCE). The ACME is equal to a difference-in-means estimator that can be obtained by regressing the stated outcome of respondent i for the j^{th} profile in the k^{th} trial on a set of dummy variables that correspond to the values of T_{ijkl} using a simple linear regression. One value of each attribute l needs to be

left out of the analysis as the baseline category. Standard errors are clustered by respondents to account for the fact that the ratings from the same respondent might not be independent. Under the assumption of complete random assignment of the treatments, the proposed nonparametric estimator does not require observations for every possible profile.