

RESEARCH NOTE

Economic Considerations and Public Support for Environment Policy in East and Southeast Asia

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Abstract

The “environment–economy trade-off” is a key question in research on public opinion on environmental policies. While evidence from Western economies suggests that individuals are more supportive of environmental initiatives when the macroeconomic situation is favorable, little is known about how environmental policy preferences are shaped by economic factors in East and Southeast Asian countries. Using a survey dataset consisting of 12 countries based on the fourth wave of the Asian Barometer Survey (ABS), we investigate how environmental policy preferences are associated with multiple aspects of economic consideration. In a pooled multilevel analysis, we find that personal economic conditions and perceptions are more consistently associated with greater support for environmental initiatives than objective and subjective national economic conditions. However, an analysis of the heterogeneous effect shows that the effect of individual economic situations is only partially identifiable among lower-middle or upper-income countries in our sample, signaling the complexity of qualifying the relationship between economic considerations and environmental attitudes in a cross-country context.

Keywords: East and Southeast Asia; environment–economy trade-off; environmental attitudes; pocketbook and sociotropic economic considerations

Introduction

A key question in the research on public opinion on environmental policies concerns the so-called “environment–economy trade-off,” which hypothesizes that individuals’ support for public initiatives addressing environmental problems is conditioned by economic considerations (Elliott, Seldon, and Regens 1997; Kahn and Kotchen 2011; Kenny 2020; Scruggs and Benegal 2012; Shum 2012). Such economic concerns may stem from individual economic situations or the macroeconomic conditions of a country. The existing evidence suggests that individuals are more tolerant of the economic cost of environmental policies when their country’s macroeconomic situation, indicated by indexes such as economic growth and unemployment, is favorable

(Carmichael and Brulle 2017; Elliott, Seldon, and Regens 1997; Shum 2012). However, the effects of individual-level economic well-being indicators, such as income and employment status, on support for environmental policies were revealed by extant research to be less conclusive (Kachi, Bernauer, and Gampfer 2015; Kenny 2020; Mildemberger and Leiserowitz 2017).

Despite the extensive research on public support for environmental policy in Europe and North America, little is known about how environmental policy preferences are shaped by economic considerations in East and Southeast Asian countries. Asian countries have displayed considerable economic and developmental heterogeneity, and many face the dual challenge of imperative development needs and pressing environmental challenges. Exploring the determinants of individual attitudes toward environmental policy in East and Southeast Asia thus gives us a unique opportunity to broaden our understanding of the interaction between economic considerations and environmental concerns in shaping public opinion.

In this article, we investigate how individual attitudes toward environmental policy are associated with multiple aspects of economic considerations in East and Southeast Asian countries. Specifically, we test for the effect of both *individual* and *sociotropic* economic considerations; the former emphasizes individual economic well-being, whereas the latter prioritizes national economic situations in shaping environmental policy preferences. In the meantime, we distinguish the objective and subjective aspects of the two economic considerations. We hypothesize that individuals are more supportive of environmental policies when objective and subjective personal economic situations are favorable. We also expect objective and subjective national economic situations to be positively associated with environmental policy preferences in East and Southeast Asian countries.

We test these hypotheses in an analysis of a survey dataset consisting of 12 East and Southeast Asian countries based on the fourth wave of the Asian Barometer Survey (ABS). While a multi-level analysis of the pooled sample suggests a strong association between individual material well-being and environmental policy preferences, an extension analysis based on split samples reveals considerable heterogeneity in this effect, signaling the complexity in qualifying the relationship between economic considerations and environmental attitudes in a cross-country context. We find in the pooled multi-level analysis that objective and subjective conditions of individuals' material well-being are positively associated with their support for environmental protection policies. Specifically, individuals who assess their personal economic conditions more positively (subjective) or have higher incomes (objective) are more likely to support prioritizing environmental initiatives relative to economic objectives.

In comparison, national economic conditions and *sociotropic* considerations display a less uniform impact on environmental policy preferences in the pooled analysis. We operationalize the objective national economic condition with the national-level unemployment rate and GDP growth rate, and measure the subjective sociotropic consideration with individuals' perception of national economic conditions. While we find a positive and significant association between GDP growth and support for environmental policies, the unemployment rate and the subjective assessment of the national economic condition show no significant effect on environmental policy preferences.

Given the economic diversity among the countries in our sample, we further investigated potential heterogeneity in the findings from the pooled analysis across countries falling into different income groups. We find that the significant effect of individual well-being, albeit strong in the pooled analysis, is only partially identifiable among lower-middle or upper-middle-income countries in our sample. This heterogeneous effect hints that individual material conditions and considerations may have a greater impact on environmental attitudes in economies with a low or moderate level of development. It also highlights the complexity in assessing the impact of economic factors on environmental policy preferences in a multi-national context.

Our study makes several contributions. First, it enriches the existing literature on the environment–economic trade-off by examining the impact of economic considerations on individual attitudes toward environmental policy in East and Southeast Asia, contributing to the generalizability of the trade-off beyond the European and North Americans. Second, our study considers both economic conditions and perceptions in environmental public opinion. Existing research has shown that personal and national economic conditions affect public opinion on environmental protection. With only a few exceptions such as Kenny (2018), the existing studies have yet to systematically examine how economic perceptions determine individual attitudes toward environmental policies. Considering the economic perceptions is equally important to explore determinants of individual attitudes since citizens have a limited ability to process the information about objective economic conditions shown in the economic voting literature. Echoing the findings of Kenny (2018), the results of our research demonstrate that economic conditions and perceptions are equally important in shaping environmental policy preferences.

Economic concerns and environmental policy preferences: A review of extant literature

Conventional wisdom posits that public support for environmental initiatives is undergirded by the ability to tolerate the economic costs of these initiatives. An “environment–economy trade-off” exists where the public is more willing to bear the cost and support environmental policies when the economic situation is favorable (Singer 2011). The existing research has documented the effects of different levels of economic considerations on attitudes toward the government’s environmental initiatives. First, individuals may form their environmental attitudes based on the assessment of aggregated macroeconomic conditions or individual-level economic and material conditions. In the context of advanced economies, evidence is ample that the national or local economy’s objective macroeconomic situations are significantly associated with environmental attitudes. Elliott, Seldon, and Regens (1997) found, in a study of US public opinion between 1974 and 1991, that economic growth positively affects public support for environmental spending by the government, while unemployment has a negative effect. Shum (2012) obtained a similar finding in Western Europe, suggesting that the national-level economic situation correlates with support for policies tackling climate change. Some of the recent evidence on the effect of macroeconomic conditions on environmental attitudes come from Carmichael and Brulle (2017) and Duijndam and van Beukering (2021). Carmichael and Brulle (2017) found

that “structural economic factors” such as GDP growth and national unemployment are “essential” causes of environmental and climate attitudes between 2002 and 2013. Duijndam and van Beukering (2021) similarly found that GDP per capita and unemployment rate strongly condition individuals’ concern about climate change.

Compared to the relatively strong evidence on the effect of macroeconomic factors, findings on the effect of individual or household-level material conditions on environmental attitudes are less clear overall. While some works, such as Elliott, Seldon, and Regens (1997), find that individual employment status and income positively shape support for environmental policies, more recent works produced contrary findings on the significance of personal economic conditions and perceptions in shaping environmental attitudes (Kachi, Bernauer, and Gampfer 2015; Kenny 2018, 2020). Using surveys in the US and Germany, Kachi, Bernauer, and Gampfer (2015) find that perception of the personal economic situation has no consistent effect on individual support for environmental policies. Relatedly, Kenny (2020) finds in a cross-national study based on the World Value Survey around the 2008 recession that individual wealth does not explain the variation in prioritizing environmental objectives among the respondents. Mildemberger and Leiserowitz (2017) similarly find no weakening effect of deteriorating personal material conditions after the 2008 recession on support for environmental policy initiatives at the individual level.

Most studies on economic determinants of environmental attitudes have focused on industrialized economies in North America and Western Europe. Relatively less is known in the literature about the presence and structure of the environment–economy trade-off in other parts of the world. Comparatively, the conflict between economic and environmental objectives may be less pronounced in high-income industrialized economies, as the empirical literature on the environmental Kuznet curve (EKC) suggests (Grossman and Krueger 1991; Selden and Song 1994). There are reasons to believe the pattern of the economic determinants of support for environmental policies could be different in less developed regions where developmental and technological constraints on addressing environmental challenges are sterner. Besides, relevant studies have shown that political and socioeconomic institutions, which vary considerably between advanced Western industrial democracies and countries in other parts of the world, constitute a significant factor shaping the environmental attitude and environment–economy trade-off (Franzen and Meyer 2010).

East and Southeast Asia provide a particularly relevant context for comparative inquiries in this regard. Many East and Southeast Asian economies have experienced rapid economic growth post-World War II. The economic context of these economies has both changed drastically and continued to display considerable diversity in terms of development levels. Measured by dispersions in the material standard of living and income, countries in Asia have displayed a greater diversity than countries on other continents.¹ East and Southeast Asian countries could, therefore, provide a rich context for understanding environmental policy preferences in various developmental backgrounds.

Moreover, the tension between economic-developmental objectives and environmental conservation has stayed tight in Asian economies and turned out very differently from that in advanced economies (Bhattarai and Hammig 2001). From 1996 to 2016, Asian economies achieved an average GDP growth rate of 3 percent, the second

highest among all continents. During the same period, the average share of deaths due to outdoor air pollution in Asian economies is the highest among all continents, reaching 7.8 percent, per the Global Burden of Disease Study (Institute for Health Metrics and Evaluation 2019).²

These statistics suggest an incompatibility between development and the environment in East and Southeast Asia, which likely stems from the industrial structure and predominant production technologies available to these economies. The evolution of production technology and its environmental impact is a key premise in the environmental Kuznets curve theory, whose effect has been documented in Asian countries and elsewhere (see, e.g., Apergis and Ozturk (2015), Katsoulakos et al. (2016), and Pasche (2002)). The limited availability of productive technologies that minimize the production of harmful byproducts to developing economies constitutes a technological constraint in balancing development objectives and environmental conservation. The economic opportunity cost of environmental policies may be more substantial in many medium or low-income developing economies in East and Southeast Asia that are experiencing sustained growth. This situation could be expected to both affect and interact with environmental awareness among citizens in shaping the way they weigh economic and developmental needs relative to long-term environmental objectives. In this context, examining how macroeconomic situations and personal material conditions shape environmental attitudes in Asian economies provides evidence of the environment–economy trade-off on new samples.

Economic determinants of the support for environmental policies

Personal economic conditions and perceptions

Public-objectives-motivated government policies generate broad and diverse socioeconomic consequences. As a result, these policies tend to receive variegated public opinion support from citizens. Initiatives that motivate public resources to address environmental challenges constitute a prominent type of such policy. It is postulated that self-interested individuals would evaluate policies' favorability by their impact on their particularistic interests and material conditions. Individuals may be more supportive if they expect to benefit from a policy initiative. At the political level, the economic voting literature suggests a pocketbook motivation underlying policy attitudes where individuals condition their support for policies or candidates based on their perception of their personal economic interests (Kiewiet and Lewis-Beck 2011). Extant studies have documented the pocketbook motivation in shaping policy preferences in domains including taxation and redistribution (Dallinger 2010), monetary policy (Bearce and Tuxhorn 2017), and trade liberalization (Mansfield and Mutz 2009).

In the area of environmental policy, pocketbook-type motivation could also be at work in shaping individuals' support for proposed policies. While the challenges posed by environmental degradation and climate change are increasingly pressing, as public opinion shows (Tyson and Kennedy 2020), mobilizing government power and resources to address environmental challenges incurs high economic costs on the nation (Morgenstern, Pizer, and Shih 2001). Some of these costs have direct short-term impact on an individual's material well-being, such as increases in consumer

prices (Conrad and Shröder 1991) and tax payments (Marsiliani and Renstrom 2000). Individuals in satisfying material conditions may be more tolerant of the economic costs of environmental initiatives than those in less satisfying conditions (Kachi, Bernauer, and Gampfer 2015; Kenny 2020).

In the context of East and Southeast Asian economies, attitudes toward environmental policies may particularly be shaped by the material conditions of the individuals. According to a standard theorization of the environmental Kuznets curve (Grossman and Krueger 1991; Shafik and Bandyopadhyay 1992), the economic opportunity cost of environment conservation is likely to be particularly pronounced in fast-growing, low-to-medium-income level economies, which includes many East and Southeast Asian countries. Tackling environmental problems caused by economic activities in low and middle-income economies would likely incur significant opportunity costs for personal material condition improvement (Apergis and Ozturk 2015; Aung, Saboori, and Rasoulinezhad 2017; Li, Wang, and Zhao 2016; Taguchi 2013).

Furthermore, the sensitivity of individuals in East Asian countries to the personal economic cost of environmental policies varies by their economic situation, probably to a greater extent. According to Maslow's theory of the hierarchy of human needs, environmental needs are situated above materialistic needs. The existing evidence has supported the proposition that materialistic values and economic conditions significantly shape individuals' environmental attitudes (Hurst et al. 2013; Kaiser et al. 2007). Individuals and households with higher incomes are located in the upper section of the hierarchy of needs and are likely to value environment conservation relatively more than further economic improvements. They are consequently more willing to trade further accumulation of economic gains to protect and repair the environment. Individuals and households with lower incomes have the opposite preferences and weigh economic opportunity costs heavier than environmental imperatives.

There are two different aspects of individual material conditions: subjective and objective conditions when shaping environmental policy attitudes. Objective individual material conditions can be captured by standardized absolute indicators such as income and wealth. In comparison, subjective material conditions are individuals' perceptions of material and economic well-being. In the case of support for environmental policies, the impact of personal material conditions may be reflected both in individuals' objective economic conditions and their subjective evaluation of their material conditions relative to their peers or their desired standard of living. These discussions lead to the following hypotheses:

Hypothesis 1: Higher-income individuals in East and Southeast Asian countries are more likely to support environmental protection policies.

Hypothesis 2: Individuals in East and Southeast Asian countries who evaluate their personal economic conditions positively are more likely to support environmental protection policies.

National economic conditions and sociotropic considerations

Individuals' attitudes towards environmental policy can also be motivated by economic considerations at the national level. The existing scholarships have well-documented sociotropic economic situations as determinants of individual political behavior and policy preferences (Lewis-Beck and Paldam 2000; Lewis-Beck and Stegmaier 2000). According to the sociotropic voting behavior model, voters are more concerned about the economic well-being of the nation as a whole than their financial conditions, which serve as the best indicator of individual-level political behavior (e.g., vote choices) (Kinder and Kiewiet 1981). Moreover, voters' objective economic conditions enable them to have negative, positive, or neutral evaluations of the economy, ultimately determining their support or opposition to the incumbent government or political parties (Anderson 2006; Wlezien, Franklin, and Twiggs 1997).

The sociotropic economic voting model has been applied to the literature on the determinant of environmental policy preference that better macroeconomic conditions, such as high economic growth and low unemployment, tend to increase support for environmentally friendly policies in Europe and North America (Elliott, Seldon, and Regens 1997; Kahn and Kotchen 2011; Shum 2012; Scruggs and Benegal 2012). Environmental protection policies have economic consequences, such as an increase in doing business, price increases in products, and potential unemployment in affected sectors. When national economic conditions are better, citizens may be more willing to accept the economic costs that environmental protective measures may generate. Therefore, individuals in countries with good national economic conditions may be more likely to support environmental policies.

Furthermore, the impact of subjective perceptions of the national economy on public opinion cannot be overlooked. However, existing research on individual determinants of environmental policy has primarily focused on objective economic conditions (Elliott, Seldon, and Regens 1997; Kahn and Kotchen 2011; Scruggs and Benegal 2012; Shum 2012), which may have limited explanatory power due to the difficulty that citizens face in obtaining accurate and objective information about the economy. This can lead to a distorted perception of actual economic conditions in the country, as discussed in the economic voting literature (Gabel and Whitten 1997; Lewis-Beck and Stegmaier 2000). Therefore, subjective perceptions of the national economy are helpful indicators of individual opinion determinants. We expect that individuals who view their national economic conditions negatively are less likely to support environmental protection policies, as they may find it difficult to manage the economic costs associated with environmentally friendly policies. These discussions lead to the following hypotheses.

Hypothesis 3: Individuals in countries with better macroeconomic conditions are more likely to support environmental protection policies.

Hypothesis 4: Individuals who positively evaluate their national economic conditions are more likely to support environmental protection policies.

Research design

Dependent variable

To test our hypotheses, we utilized the fourth wave of the Asian Barometer survey data conducted between 2014 and 2016. This data includes a wide range of countries with varying levels of economic development and demographics, enabling us to investigate the effects of individual and country-level factors on public opinion. The sample covers 12 countries: Cambodia, China, Indonesia, Japan, Korea, Malaysia, Mongolia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The sample size ranges from 1081 to 4068 respondents, and the number of respondents in each country is reported in Table A1 in the appendix.

To measure a respondent's pro-environment policy preference, we use the question, "Which of these statements comes closer to your view?" We coded 1 if a respondent answered, 'Protecting the environment should be given priority,' and 0 for 'Economic growth and creating jobs should be the top priority.' This survey question is suitable for testing hypotheses on the "environment–economy trade-off" by capturing respondents' support for environmental protection relative to economic considerations. Similar survey questions on relative environmental–economic policy preferences are also used to empirically examine the trade-off (Kenny 2020).

Figure 1 displays the variation in the likelihood of supporting environmental protection policy across countries. As Figure 1 shows, 35 percent of respondents in Korea are pro-environmental policy supporters, compared to 62 percent in China. Less than 50 percent of respondents favor environmental protection in countries such as Thailand and Cambodia, while more than 60 percent of respondents in Vietnam and Mongolia support environmental protection.

Individual- and country-level predictors

Our first two hypotheses examine how individuals' objective and subjective economic considerations of their financial situations affect their opinion formation over environmental protection policy. To test these hypotheses, we use two independent variables. The first is an individual's objective economic condition, indicated by their income (Kenny 2020). We measure income by asking respondents to select a group on a scale of household incomes: "Here is a scale of household incomes. We would like to know what group your household on average is, counting all wages, salaries, pensions, dividends, and other incomes that come in before taxes and other deductions. Just give the letter of the group your household falls into: (1) the fifth quantile, i.e., lowest 20 percent, (2) the fourth quantile 20 percent, (3) the third quantile, (4) the second quantile, (5) the first quantile, i.e., top 20 percent." Responses declining to answer are coded as missing values.³ A higher value indicates a higher earner. The second independent variable is a respondent's subjective evaluation of their personal economic condition. To capture a respondent's *pocketbook concern*, the question asks: "As for your own family, how do you rate the economic situation of your family today?" The answers are (1) very good (2) good (3) So so (not good nor bad) (4) bad (5) Very bad." Other answers, such as can't

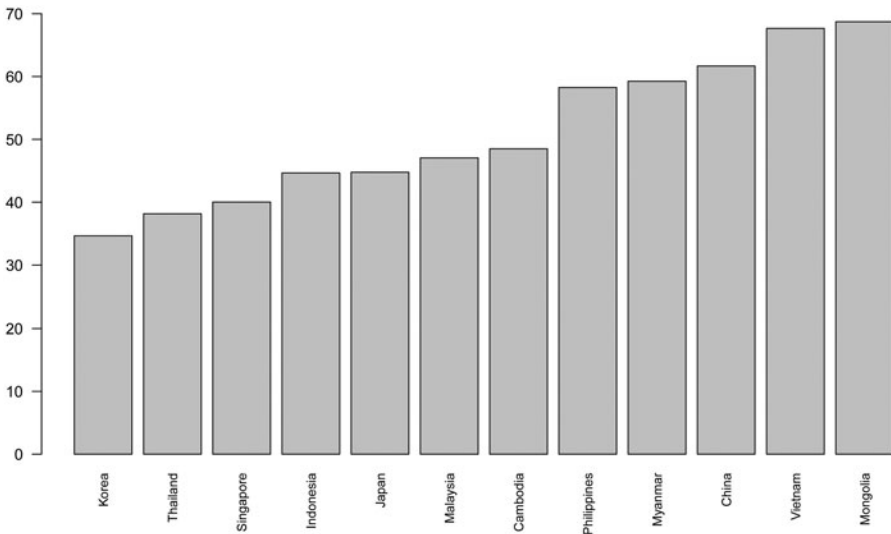


Figure 1. Public support for environmental protection policy across countries.
Source: Asian Barometer Survey Wave 4 (2014–2016).

choose and decline to answer, are coded as missing values. A higher value of the *pocketbook concern* variable indicates that a respondent evaluates their household economic condition more negatively.

We also include two other types of independent variables, namely objective national economic indicators and subjective assessments of the national economy, to test our other two hypotheses. To capture the objective national economic situation, we use national-level data on the unemployment rate and GDP growth rate, which are commonly included economic covariates in existing studies on the environmental–economic trade-off (Carmichael and Brulle 2017; Kahn and Kotchen 2011; Kenny 2020). We collect these national-level economic data from the World Development Indicator database of the World Bank. To capture individuals’ subjective assessment of their national economy, we use the following *sociotropic concern* question: “How would you rate the overall economic condition of our country today? Is it... (1) very good (2) good (3). So so (not good nor bad) (4) bad (5) very bad.” Can’t choose and decline to answer are coded as missing values. A higher value of the *sociotropic concern* variable means that a respondent has a more negative view of the state of the national economy.

Following the existing research (Carmichael and Brulle 2017; Kahn and Kotchen 2011; Kenny 2020), we include several individual and national-level covariates as control variables. These covariates cover individual characteristics such as gender (female), age, current employment status, residence, marital status, education, and national development status (i.e., GDP per capita). *Gender* is a binary variable, with 1 indicating female and 0 indicating male. *Age* is an ordinal variable indicating the respondent’s age in years. *Employment status* is also binary, with 1 indicating employed and 0 indicating unemployed.⁴ *Rural–urban residence* is a binary variable,

with 1 indicating rural and 2 indicating urban. *Marital status* is measured by asking respondents to identify their marriage status, with options including single, married, widowed, separated, and divorced. *Education* is an ordinal variable ranging from 1 to 10, with higher values indicating a more educated respondent. Finally, we include *GDP per capita* as a measure of a country's developmental status, as the average attitudes toward environmental policies may differ among economies with different levels of development.

Statistical methods

Since the dependent variable is dichotomous and the data we use from Wave 4 of the Asian Barometer survey has a prominent cross-section and hierarchical nested-by-country structure, we employ a multi-level logistic regression model accounting for country heterogeneity as it allows for varying intercepts across countries as a way to model unobserved heterogeneity (Steenbergen and Jones 2002).⁵ We also run logistic regression models with country dummies to account for the impact of unobserved country-level confounders on the effect of individual-level covariates. The main results on individual-level predictors sustain in models specifying country dummies.

Results and discussion

Multi-level models

Table 1 reports the empirical results.⁶ Model 1 includes all individual-level covariates, and Model 2 includes both individual-level attributes and macroeconomic indicators—unemployment and growth rate. Models 1–2 are estimated via multi-level logistic regression models accounting for country heterogeneity. Models 3–4 replicate Models 1–2 using logistic regression models with country dummies to account for the unobserved country-level effects. As Table 1 shows, the coefficient for *income* is positive and statistically significant across all models. The result suggests that higher-income individuals are more likely to support environmental protection. While similar results suggesting a positive effect of the individual material condition have been documented in a few existing studies (e.g., Elliott, Seldon, and Regens 1997 and Kahn and Kotchen 2011), our finding contrasts with more recent research that did not find such an effect (Kachi, Bernauer, and Gampfer 2015; Kenny 2020; Mildemberger and Leiserowitz 2017; Scruggs and Benegal 2012). Regarding individuals' perception of their financial situations, the pocketbook concern's coefficient is negative and statistically significant across all models. It suggests that those who negatively evaluate their financial situations are less likely to support environmental protection. Thus, our findings show that both individuals' subjective and objective economic conditions affect their opinion on environmental policy, preliminarily supporting our first two hypotheses.

To assess the substantive effects of an individual's objective economic condition measured as income on the likelihood of supporting environmental protection, we calculated predicted probabilities for supporting environmental protection under different income levels keeping all other variables at their mean values based on Model 2

Table 1. Effects of economic conditions and perceptions on pro-environment policy

	Model 1	Model 2	Model 3	Model 4
(Intercept)	-0.07 (0.20)	-0.63 (0.37)	-0.23 (0.15)	6.93 (5.63)
Female	-0.08* (0.04)	-0.08* (0.04)	-0.08* (0.04)	-0.08* (0.04)
Education	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
Age	-0.09 (0.15)	-0.07 (0.15)	-0.08 (0.15)	-0.08 (0.15)
Income	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)
Employment	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)
Sociotropic Concern	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Pocketbook Concern	-0.07* (0.03)	-0.07* (0.03)	-0.07* (0.03)	-0.07* (0.03)
Residence	0.02 (0.04)	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)
Marriage	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)
Unemployment		0.02 (0.04)		-0.18 (0.52)
GDP per capita		-0.04 (0.07)		0.66 (0.79)
Growth rate		0.11* (0.05)		-1.12 (0.92)
AIC	17,295.22	17,294.30	17,255.94	17,257.70
BIC	17,377.64	17,399.21	17,413.30	17,430.05
Log Likelihood	-8,636.61	-8,633.15	-8,606.97	-8,605.85
Num. obs.	13,270	13,270	13,270	13,270
Num. groups: country	12	12		
Var: country (Intercept)	0.20	0.11		
Deviance			17,213.94	17,211.70

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

Note 1. Model 1 and 2 are estimated using via multi-level logistic regression models accounting for country heterogeneity, and Model 3 and 4 are estimated using fixed-effects model accounting for country effect. Country dummies are not reported in Models 3–4. Standard errors are in parentheses.

Note 2. Higher values of the *Sociotropic Concern* and *Pocketbook Concern* indicate that a respondent evaluates their household or the national economic condition more negatively.

Table 2. Predicted probabilities of supporting environmental protection under different income levels

	Predictive Prob.	Lower bound 95%	Upper bound 95%
Income = 1	0.5842461	0.5476726	0.6189623 3,588
Income = 2	0.5939175	0.5592655	0.62704
Income = 3	0.6035189	0.5695968	0.638053
Income = 4	0.6130438	0.578004	0.648298
Income = 5	0.6224856	0.5848742	0.661016

Note. To measure income, we use a question: “Here is a scale of household incomes. We would like to know in what group your household on average is, counting all wages, salaries, pensions, dividends, and other incomes that come in before taxes and other deductions. Just give the letter of the group your household falls into. (1) the fifth quintile, i.e., lowest 20 percent, (2) the fourth quintile 20 percent, (3) the third quintile, (4) the second quintile, (5) the first quintile, i.e., top 20 percent.” Other answers -decline to answer- are coded as missing values. The higher value indicates a higher income.

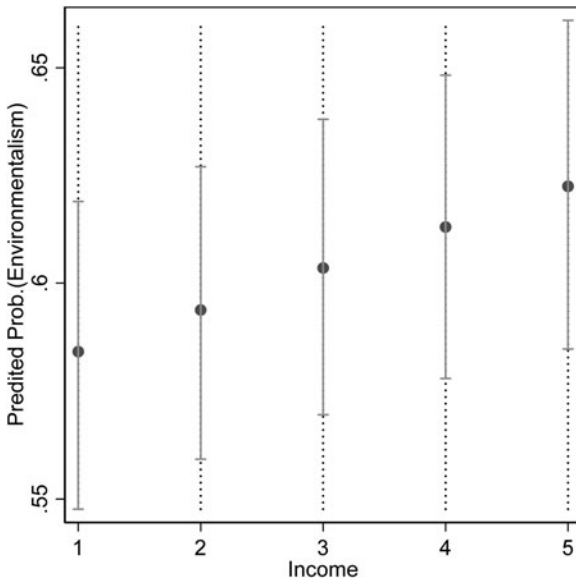


Figure 2. Predicted probabilities of supporting environmental protection under different income levels.

reported in Table 1. Table 2 and Figure 2 report and visualizes the results.⁷ As individuals’ income increases, their support for environmental policy is more likely to increase, supporting the first set of hypotheses. When individuals’ income is the lowest (i.e., lowest 20 percent), their probability of prioritizing environmental protection is 58.4 percent. The probability of prioritizing environmental protection is 62.2 percent when individuals’ income is the highest (i.e., top 20 percent).

To test the second set of hypotheses, we estimated the effect of country-level attributes such as unemployment rate, GDP growth, and individual perceptions of the national economy on environmental attitudes. As the results in Table 1 show, the coefficients of the *sociotropic concern* variable evaluating their national economic

conditions are positive but not statistically significant. Furthermore, the unemployment rate has no significant impact on individual attitudes toward environmental policies. In contrast, GDP growth acquires a positive and significant coefficient, suggesting that individuals in countries with higher growth rates are more likely to prioritize environmental initiatives. The results only partially support our second set of hypotheses, contrasting existing findings based on North American and European samples (Carmichael and Brulle 2017; Elliott, Seldon, and Regens 1997; Kenny 2020; Shum 2012).

Why are the national economic conditions and considerations not as strong determinants of environmental policy preferences in these East and Southeast Asia countries as in their North American and European counterparts? One potential account may hinge on the developmental state tradition in many of the Asian economies, which are characterized by strong government intervention in economic development and growth (Haggard 2018; Johnson 1982). In such a tradition, social and environmental policies are viewed more as tools to pursue developmental objectives rather than autonomous policy agendas (Bruun 2020; Gilley 2012; Han 2017; Tang, Chen, and Wu 2018). This starkly contrasts Western countries, where environmental issues have developed into independent imperatives largely parallel to economic objectives and are heavily influenced by public opinion on the state of the national economy. The paramount importance of growth and development and the subsidiary role of environmental governance may desensitize environmental public opinion to the influence of national economic conditions in these states.

It is also worth discussing the results of the control variables. As seen in Table 1, the coefficients for education are positive and statistically significant across all models. The more educated people are more likely to support environmental protection. This finding is consistent with the existing literature (Kenny 2020). Moreover, women are less likely to support environmental protection than men, which is inconsistent with the existing literature (Kenny 2020). This finding differs from those in Europe and North America, where women are more supportive of environmental protection but resonate with a similar finding in African/Middle Eastern countries (UNDP and University of Oxford 2021). Similar findings on the negative association between Asian women and environmental policy preferences are also seen in previous research (Kim and Kim 2010). While this result merits future inquiry, one potential explanation for our finding might be that women's status in the labor market differs from those in other countries (especially Europe and North America). On average, their economic status is lower than men in Asia, and they would be less conscious of environmental challenges. Other individual attributes such as age, employment status, residence, and marital status have no significant impact on shaping individual attitudes toward environmental policy in East and Southeast Asia. Lastly, GDP per capita is not significantly associated with environmental policy preferences, suggesting there is no clear evidence that individual environmental policy preference is significantly determined by national development status.

Checks on robustness and heterogeneity

We perform several additional checks on robustness and heterogeneity in the multi-level analysis. First, we rerun the Model 1 and Model 2 reported in Table 1 using

logistic regression models specified with country dummies and report them (Models 3–4) in Table 1. Model 3 and 4, respectively, are specified with country dummies without and with country-level covariates. To estimate the effect of country-level covariates in Model 4, we merged Vietnam and Cambodia as the baseline for the effect of country dummies.⁸ The main results remain unchanged. Both individuals' subjective perception and objective economic conditions affect individuals, suggesting that individuals in higher-income groups and those who see their financial situations positively are more likely to support environmental protection policies. Yet, both objective and subjective national economic considerations have little impact on environmental public opinion.

Second, we also check whether our key findings may be heterogeneous across countries with different income levels. The countries in our sample fall into three income levels: lower-middle income (Cambodia, Indonesia, Mongolia, Myanmar, Philippines, Vietnam), upper-middle income (China, Malaysia, Thailand), and high income (Korea, Japan, Singapore) per the World Bank classification. We re-estimated the multi-level model with samples from each of the three income groups. The results are provided in Table A8 in the appendix.

The result shows the significant effect of the *income* and *pocketbook* variable identified in our previous analysis of the pooled sample is only partially sustained in the split samples: the *income* variable is positive and significant at the 1 percent level only among samples from upper-middle income countries; the *pocketbook concern* variable is negative and significant at the 5 percent level only among upper-middle-income countries. Also, neither of the two measures of individuals' material well-being gains statistical significance in samples from high-income economies. These results suggest the finding on the individual economic considerations probably stems more from samples from middle-income countries in East and Southeast Asia. These results also imply that the significant association between individual material conditions and support for environmental policies may be notable only in countries with a low or moderate level of development. While more dedicated studies are needed to assess this pattern more fully, we conjecture that this result signals that the development level of a country may shape the distribution of the cost and benefit of environmental initiatives in ways that affect how individuals evaluate their support for environmental policies.

Finally, we rerun the models reported in Table 1 using the sample dropping each country to check whether there are outlier countries and report the results in Table A3 in the appendix. As Table A3 shows, the *income* variable is no longer significant at the 5 percent level in Model 2, dropping China or Malaysia from the estimation, although the theoretical direction remains consistent. Findings on the effect of the *pocketbook* variable are consistent with the main model except for the sample dropping Cambodia, China, and Indonesia, respectively.⁹ These results show the statistical significance of some of the results from the pooled sample attenuates after excluding some of the outlier countries. This heterogeneity in the effect of economic considerations among countries in our sample points to the complexity in the effect of economic considerations on environmental attitudes in the cross-country context.

Conclusion

We have posited that individuals' economic conditions and perceptions play a crucial role in shaping public opinion on environmental policy in East and Southeast Asia. Our analysis based on the pooled sample suggests that favorable personal economic conditions and perceptions increase the likelihood of prioritizing environmental initiatives. We also find that the significant effect of individual well-being, albeit strong in the pooled analysis, is only partially identifiable among lower-middle or upper-middle-income countries in our sample. This heterogeneous effect hints that the impact of individual material conditions on environmental attitudes may only be noticeable in countries with moderate levels of development. It also highlights the challenge of qualifying the structure of the environment–economy trade-off in a cross-country context.

Our study leaves a number of future research agendas. First, the substantial cross-country heterogeneity in the effect of personal economic conditions and considerations on environmental policy attitudes merits further examination and theorization. Given the relative significance of personal economic conditions and considerations in middle-income economies hinted at in our analysis, one may conjecture that social and economic development has a critical impact on the nuanced structure of the environment–economy trade-off. Future inquiries could deepen the study by documenting more concrete dimensions of development that shape the extent to which citizens prioritize personal material well-being in forming environmental attitudes.

Second, while we have primarily examined the economic factors that influence environmental-economic policy preferences, another important factor is the impact of exposure to adverse environmental conditions on how individuals weigh environmental well-being against economic gains. Future research could incorporate covariates that capture individuals' exposure to environmental issues to further explore this aspect.

Finally, even setting aside its cross-country heterogeneity revealed in our analysis, the effect of personal economic conditions and considerations may also be interpreted with caution as it can be explained by various channels: richer people might have more cosmopolitan worldviews, which tend to be greener than poorer people; richer people might have more knowledge about environmental issues than poorer people. Future research is needed to investigate these underlying mechanisms behind the relationship between income and support for environmental protection.

Conflict of interest. The authors declare none.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/jea.2023.27>.

Notes

1. Between 1996 and 2016, the average cross-country dispersion in GDP per capita (log) is the greatest among Asian countries (1.36), followed by Europe (1.17) and Oceania (1.16). See Figure A7 in the appendix for details.
2. The number in East Asian economies is even higher at 10.6 percent.
3. Some might claim that this wording question measuring household income might be problematic. However, we use this measurement for two reasons. First, respondents were given the value of the amount

that falls into each bracket so that it could provide a useful comparable indicator across countries. Second, we have a practical reason to use this measurement as the Asian Barometer Survey offers no other alternative measurements capturing incomes of respondents.

4. It should be acknowledged that the inclusion of employment status as a dummy variable could potentially underestimate the effect of economic insecurity, as those who are not employed may include individuals in different life stages such as students, pensioners, and those engaged in home duties, as well as those actively seeking work. It is important to note that each of these groups has distinct characteristics and experiences related to economic insecurity. Moreover, since pensioners and voluntarily unemployed respondents are treated as unemployed in the survey, it would be ideal to gather information on the retirement and financial status of those who identify themselves as unemployed. However, unfortunately, there are no related questions in Wave 4 of the Asian Barometer that provide such information. Therefore, it is important to interpret the coefficient of the job status variable with caution. We would like to acknowledge the anonymous reviewer for highlighting this issue.

5. See the survey methods for the Asian Barometer Survey at www.asianbarometer.org/survey/survey-methods. The results from a multilevel logistic regression model were reported without weighting.

6. To adjust for the different sample size from the countries surveyed in Asian Barometer Survey, we have also included country weights in analyzing the data and reported the results in Table A5 in the online Appendix. The results from adjusting for country weights remain unchanged compared to those in Table 1.

7. We also reported the results of predicted probability of environmentalism by income level across countries in Figure A1 in the appendix.

8. Because the survey responses in two (China and Singapore) of the twelve countries are collected across multiple years, within-country variation in the country-level covariates exists in these two countries. This means only one of the perfectly collinear variables needs to be dropped from the estimation. Instead of dropping one of the three national-level covariates, we dropped a country dummy (Vietnam) to enable the estimation of all three country covariates. The baseline category for our specification in Model 4 is, therefore, Vietnam and Cambodia combined. Full estimation results with the coefficient of the country dummies in Model 3 and 4 can be found in Table A9 of the appendix.

9. We also reran the main model (Model 2) in Table 1 using each country sample to examine whether the main result of each country has a consistent outcome. The results are reported in Table A4 in the appendix. For the income variable, estimation results on samples of China, Malaysia, Myanmar, and Singapore returned positive and significant coefficient. The sociotropic concern variable acquires significance at 5% and above for subsamples of Thailand and Vietnam only (but the signs are opposite to each other). Finally, the pocketbook concern variable acquires significant coefficient only for Cambodia and Indonesia.

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