

Reward or Punish? Understanding Preferences toward Economic or Regulatory Instruments in a Cross-National Perspective

Niklas Harring

University of Gothenburg

This study is interested in cross-national differences in public preferences toward different forms of political steering. Using data from the International Social Survey Programme it was found that there is quite substantial variation between countries in policy preferences. It is suggested that this variation can be explained by the variation in the quality of public institutions (i.e. Quality of Government, QoG). Low QoG is associated with a preference for coercive regulatory instruments and an aversion toward reward-based instruments. The explanation provided is that low QoG is correlated with low social trust, which produces suspicion of defection and an urge to punish free-riders with strong or coercive instruments. Meanwhile, the aversion toward reward-based instruments decreases as the level of QoG increases. The public administration then has the bureaucratic capacity to deal with policies that demand bureaucratic discretion and actors are less likely to free-ride, generating a preference for reward-based incentives and less need for regulation.

Keywords: collective dilemmas; quality of government; environmental policy; regulatory instruments; economic instruments

Several recent studies (Aghion *et al.*, 2010; Di Tella and MacCulloch, 2009; Dimitrova-Grajzl *et al.*, 2011; Pinotti, 2011) find that there is strong public demand for government regulation in countries with corrupt and inefficient public institutions, which the researchers find rather counter-intuitive. Aghion *et al.* (2010, p. 1018) ask, 'why do people in countries with bad governments want more government intervention?' To answer this question, they suggest the hypothesis that distrust in other actors generates a demand for regulation. According to Aghion *et al.* (2010), the explanation is that government failure and market failure correlate. In societies where governments are not able to provide common or public goods, the market also fails to provide such goods, and the levels of trust are generally low in such societies. People trust neither public institutions nor others such as business actors and citizens in general. There is a common conception that business actors cheat; as a result, there is a demand for more control. The urge to punish free-riders with strong or coercive regulation outweighs concerns about corrupt and inefficient political institutions. Consequently, the general public demands more regulation of business, even though they have little trust in the institutions charged with enforcing those regulations.

There are advanced theories to explain why this trade-off between government failure and market failure generates a demand for regulation (e.g. Acemoglu and Verdier, 2000; Aghion *et al.*, 2010), and some studies have investigated whether the trade-off actually affects citizens' attitudes toward regulation. These studies also find that low trust in business actors explains why people in corrupt societies demand more regulation (Aghion *et al.*,

2010; Di Tella and MacCulloch, 2009; Dimitrova-Grajzl *et al.*, 2011; Pinotti, 2011). Building on these results, this article examines whether the quality of public institutions and trust also influences the choice of policy instrument, such as the choice between economic incentives and stricter regulation. For example, when faced with ecologically unsustainable consumption patterns, the state can use different pro-environmental policy instruments in an effort to change activities or behaviours that have negative environmental consequences. It can use taxes or subsidies, for instance, so that externalities are reflected in prices, or redistribute resources to those whose behaviour is environmentally friendly, or it can impose regulations to limit or prohibit certain actions. It is plausible that people could want both more taxation and more regulation in order to punish defection in areas such as environmental pollution. However, previous research has shown substantial cross-country variation in preferences for different pro-environmental policy instrument options, with corrupt political institutions generating aversion toward economic incentives (Harring, 2014). Based on that result and the understanding that the maintenance of pro-environmental policy instruments contains free-riding risks, this study tests whether the level of Quality of Government (QoG) in a country affects policy preferences, and whether economic incentives (such as taxes) are distinct from regulation (such as heavier fines).

This inquiry is developed further in the next section, which considers the effects of social and political trust on policy preferences and then derives testable hypotheses. This is followed by a discussion of the data from the International Social Survey Programme (2012) and the methodology – a multinomial hierarchical model. Subsequently, the hypotheses are tested, and the results and concluding remarks are presented.

Understanding Preferences for Different Policy Instruments

A baseline assumption in this article is that the level of QoG affects people's perceptions about the potential of the state. Higher levels of QoG imply a greater potential to deliver goods in terms of social welfare and environmental health. Yet, as Aghion *et al.* (2010), for example, have shown, the demand for state intervention in terms of regulation is higher in countries with low QoG than in countries with high QoG. In low QoG countries free-riding risks are high, which generates a demand for regulation, while in high QoG countries free-riding risks are low and hence there is less need for regulation. With economic incentives, there are good reasons to believe that the level of QoG has another effect on the demand for political steering. Taxes and subsidies imply money transfers with a high risk of corrupt behaviour, and in countries with low QoG, the state has severe difficulties in collecting taxes and actually delivering services. Hence, people are not likely to demand more economic instruments, such as taxes or other economic incentives, in countries with low levels of QoG. The literature on welfare policy, for instance, indicates that countries with impartial, uncorrupted and effective public institutions have more generous welfare programmes (Holmberg *et al.*, 2009; Rothstein *et al.*, 2012) and are more likely to implement social policies that demand bureaucratic discretion (Dahlström *et al.*, 2013). People in such countries are also generally more in favour of generous subsidies and higher taxation (Svallfors, 2013; see also Rothstein, 2009; Rothstein and Stolle, 2008; Svallfors, 1997; 2003). Moreover, a recent study finds that corruption, both as a

cross-country variable and as an individual-level perception, is negatively correlated with the perceived effectiveness of economic pro-environmental instruments compared to other instruments. Based on the argument that low QoG generates an aversion to bigger government in terms of money transfers, it is concluded that corruption affects people's preferences for pro-environmental policy instruments (Harring, 2014). Furthermore, a number of studies show that political trust, as a perception of the quality of political institutions, is important when explaining support for environmental taxes (Hammar and Jagers, 2006; Harring and Jagers, 2013). Hence, the first hypothesis:

H1: When QoG is low, people have a preference for regulation and an aversion toward taxation, and as the level of QoG increases, the aversion toward taxation decreases and the preference for regulation decreases.

However, the previously suggested causal link between low QoG and demand for more regulation is not through perceptions of the government or the public administration, but rather through perceptions of other actors (Aghion *et al.*, 2010; Di Tella and MacCulloch, 2009; Dimitrova-Grajzl *et al.*, 2011; Pinotti, 2011). In countries with ineffective and corrupt political institutions, trust in business actors and citizens in general is low. Consequently, people want to punish polluters with more regulation, and by doing so also prevent the entrance of even more polluters or free-riders. Perceptions of other actors are, arguably, also important when explaining the choice between different kinds of policies since some policies contain elements of free-riding risks. Hence, imposing pro-environmental policy instruments implies moving from the collective action dilemma of pro-environmental action to a new collective action dilemma. A similar argument is often made in the literature on collective management of common pool resources, where studies highlight these risks. When communities try to deal with problems of collective action, they may end up in second-order collective action problems (Dietz *et al.*, 2002; see also Heckathorn, 1989; Olivier, 1980; Ostrom, 1998). Surveillance of the principles for maintenance is costly so it is yet another collective action dilemma, where people have incentives to free-ride and obtain the full benefits from the sanctioning scheme but not pay the costs. We can also think of governmental instruments or institutions that involve such characteristics. As John Scholz and Mark Lubell (1998) argue, a well-functioning tax system is a collective action dilemma where the perceptions of government and trust in fellow citizens both affect tax compliance:

Compliance involves a ... risky relationship; citizens undertake some immediate costly effort like paying taxes, and face some risk that future collective benefits expected in return for compliance ... may not materialize unless the government and other citizens maintain their side of the bargain (Scholz and Lubell, 1998, p. 400).

Simply stated, for people to pay taxes willingly they have to trust that other people will also pay taxes and that the government can provide public goods such as social welfare and environmental protection.¹ In order for environmental taxes or pro-environmental subsidies to be efficient, people and companies have to actually pay their taxes and/or not claim subsidies to which they are not entitled. Hence, for people to prefer such policies, they have to trust their fellow citizens and politicians. Scholz and Lubell make another

important point: if people do not pay their taxes, compliance must be achieved by stricter enforcement mechanisms, such as stronger regulation.

Without trust, the potential benefits of collective action must depend either on altruism or on enforcement mechanisms capable of ensuring that the benefits of free-riding are overshadowed by the expected punishments for not fulfilling obligations (Scholz and Lubell, 1998, p. 400).

This argument is in line with that of Aghion *et al.* (2010) – namely, that people in low-trust countries prefer or demand more government intervention. A regulation scheme can of course also evolve into a collective action dilemma, where people enjoy the benefits of the scheme but break the rules, for example, because of lax law enforcement. However, in theory such situations generate a demand for even stricter regulations or at least stricter enforcement of regulations – that is, more punishment. Nevertheless, violations of a subsidy scheme or tax system will not generate a demand for more rewards such as subsidies nor for higher taxes. This is important, since this study is not concerned with explaining compliance as such, but rather preferences for different policies. Trust is thus a key component in preference formation. People will not support a system that they fear will be cheated and abused. Therefore, those who have little trust that their fellow citizens (or other actors) are complying are not likely to prefer economic incentive rewards, but rather to prefer regulatory punishments because people want to punish defectors (e.g. Fehr and Gächter, 2002; Herrmann *et al.*, 2008). If people trust others, because free-riding risks are lower, there is less need for punishment and regulation.

H2: Low social trust generates a preference for regulation and an aversion toward taxation, and as social trust increases, the aversion toward taxation decreases and the preference for regulation decreases.

The effects of social trust on policy preference could be seen as an indirect effect of QoG, as QoG is argued to generate social trust. Different causal paths have been suggested. One suggestion is that defecting or non-cooperative behaviour becomes a costly strategy for actors in countries with high QoG because effective institutions can find and punish those who do not fulfill contracts or who cheat in other ways. Therefore, social trust increases as the risk of being cheated is reduced. Another suggestion is that people infer from the behaviour of public officials and draw conclusions regarding whether their fellow citizens can be trusted or not. Hence, in high QoG countries people keep their promises and social trust increases (e.g. Levi, 1998; Rothstein and Stolle, 2008). There are those who challenge this claim, arguing that it is the other way around – that social trust generates well-functioning democratic institutions (e.g. Knack, 2002; Putnam, 1993). It is far beyond the scope of this article to determine the causal direction between these entities. However, they are clearly correlated and are most likely to reinforce each other. Yet, the assumption in this article is that QoG generates social trust – an assumption for which there is plenty of empirical support (e.g. Delhey and Newton, 2005; Dinesen, 2012; 2013; Dinesen and Hooghe, 2010; Herreros, 2009; Nannestad *et al.*, 2013; Newton, 1999; 2007; Rothstein and Stolle, 2008; compare Bjørnskov, 2007; Robbins, 2012).

So far in this article political steering has been discussed in terms of regulation versus economic incentives. However, political steering of consumption or production patterns is an act of power, which can take different forms and be categorised in several ways. One distinction is between punishment, reward and persuasion (e.g. Vedung, 1998). Regulation and economic incentives could be seen as various forms of punishment and reward, respectively. The third category – persuasion – would then be a softer kind of public steering, for example, in the form of information or communication. Low levels of social trust and QoG could theoretically both generate a preference for and an aversion toward information as a policy tool. On the one hand, in line with what Aghion *et al.* (2010) and others have argued, if people have little trust in their fellow citizens or business actors, and they have little trust that they will do what is right for the environment, then information is not considered coercive enough. If environmental protection in such societies has evolved into a collective action dilemma, soft policy tools such as information would not be an efficient choice. People want regulation and punishment not because they trust or believe that the state can solve the problem of environmental degradation, but because they have very little trust that other actors will cooperate and act in an environmentally friendly manner. On the other hand, information does not imply as much bureaucratic discretion and it does not increase the risk of more corruption as do, for example, new tax policies or regulations (Damania, 2002). To sum up, the effects of QoG on having information as a policy preference can go either way.

Pro-environmental policy instruments can target average citizens *and* business actors, and this study is interested in both. Presumably, there could be differences in policy preferences among citizens because people are less likely to support a coercive instrument that in the end would have an effect on themselves. On the other hand, there are not necessarily any major differences in policy preferences between instruments targeting people in general and instruments targeting business actors. If trust in general is low, people want to punish free-riding behaviour among business actors and among their fellow citizens by harsher regulation. For example, experimental designs have shown that people who participate in public goods experiments have a tendency to punish those who cheat or defect, even if it is costly to do so (Fehr and Gächter, 2002). If trust is high, however, people trust business actors, citizens and political institutions and are therefore more positive toward economic incentives, regardless of whether these instruments reward business actors or citizens in general.

Method and Material

As mentioned in the introduction, some studies find that low levels of QoG have a negative effect on preference for economic pro-environmental policy instruments, while other studies find that low levels of QoG generate a demand for regulation in general (e.g. Aghion *et al.*, 2010; Harring, 2014). This article does not study one particular policy tool, but rather the choice between different policy instruments. Using a dataset from the International Social Survey Programme: Environment III – ISSP 2010, there is also an opportunity to study cross-country variation further by dissecting individual-level relationships: specifically, whether social and/or political trust generate preferences for taxes and whether low social trust generates a preference for harsher regulation.

Table 1: Preferences toward Different Pro-Environmental Policy Instruments

<i>Which of these approaches do you think would be the best way of getting people and their families in [COUNTRY] to protect the environment?</i>	
Heavy fines for people who damage the environment	26%
Use the tax system to reward people who protect the environment	29%
More information and education for people about the advantages of protecting the environment	45%
<i>Which of these approaches do you think would be the best way of getting business and industry in [COUNTRY] to protect the environment?</i>	
Heavy fines for businesses that damage the environment	40%
Use the tax system to reward businesses that protect the environment	33%
More information and education for businesses about the advantages for protecting the environment	27%

Notes: Percentage in each category. The alternative 'Can't choose' and missing cases are excluded.

Source: Data International Social Survey Programme (2010).

The data cover 30 countries and 45,199 respondents. The mode of data collection, as well as the respondent rate, differs across countries. Face-to-face interviews were used in some countries, and postal self-completion questionnaires in others.² The data were collected during 2010 and 2011. An advantage of this dataset is that it is possible to make a distinction between (a) preferences for policy instruments aiming to steer business actors and (b) preferences for policy instruments aiming to steer average citizens. Therefore, there will be two separate analyses with different outcome variables. The first analysis concerns the steering of citizens, and the following question is used: 'Which of these approaches do you think would be the best way of getting people and their families in [COUNTRY] to protect the environment?' Respondents are given the following options: (1) 'Heavy fines for people who damage the environment'; (2) 'Use the tax system to reward people who protect the environment'; and (3) 'More information and education for people about the advantages of protecting the environment.' The other analysis concerns business and uses a very similar question, except that 'people and their families' is replaced by 'business and industry'.³ The response variables are categorical. The respondents can choose from different kinds of policy tools that are not ranked or ordered in any way, and therefore a multinomial logistic estimation technique is used to study the probability of having a certain policy preference. Table 1 shows the percentage of the total population choosing each alternative.

It is quite clear that people are much more likely to prefer punishment via fines when targeting the behaviour of business actors (40 per cent) compared to people in general (26 per cent). For information, it is the complete opposite; people are much more positive toward information when it targets people in general (45 per cent) compared to business actors (27 per cent). In the case of using the tax system to reward actors, the figures are similar for business actors (33 per cent) and people in general (29 per cent). The explanation may of course be that people perceive business actors to be conceptually different

from people in general and therefore different kinds of policies are needed. Nevertheless, to some extent this confirms the assumption that people are less likely to prefer policies designed to punish if such policies might affect them directly.

One may argue that there is no actual difference between paying a fine and paying taxes; that in the end, anyone who behaves or consumes in a way that has negative environmental consequences must pay. However, previous studies show that in a cross-national perspective, populations that view taxes as effective policy instruments also view other economic incentives (such as subsidies) as effective, while they are less likely to view regulatory measures (such as heavier fines and stricter regulation) as effective instruments (Harring, 2014). Theoretically, there is also a difference between punishing defectors by making them pay heavier fines and rewarding environmentally friendly behaviour by modifying taxes. As the questions are framed, it is also very clear that fines are for punishing people who do not cooperate, while taxes are for rewarding people who cooperate.

As this research departs from cross-country studies and aims to study whether the level of QoG affects policy preference, its main focus is on cross-national variance. However, individual-level variables are also tested in order to grasp whether individual-level mechanisms can be confirmed, if social trust and/or political trust matter. Accordingly, the study combines analysis on both contextual (country) and individual (citizen) levels. The assumption that people's attitudes are to some extent formed by country context violates a central assumption in regression analysis. Observations would then not be independent and there would be a risk of biased standard errors and estimates if the hierarchical structure of the data were not considered. To deal with this risk, a multilevel technique is applied, with a two-level random intercept model, where citizens are assumed to be nested within countries.

Independent Variables

To measure QoG, data are used from the International Country Risk Guide (ICRG) produced by the PRS Group. The objective of the PRS Group is to provide information about investment risk in foreign countries, based on expert analysis using both quantitative and qualitative data. The measure contains three parts: political risk, financial risk and economic risk. Political risk contains information, for example, about 'ethnic tensions' and 'external conflict'. A slimmer version of this measure is used based on three components in order to find a measure of QoG: the components are 'Corruption,' 'Law and order' and 'Bureaucracy'.⁴ The ICRG index is often used as a measure in cross-country comparisons, and is also highly correlated with other similar measures, such as the Corruption Perceptions Index from Transparency International (Svensson, 2005). Low scores indicate that political institutions are corrupt and inefficient, and high scores indicate that the institutions are based on principles such as the rule of law, impartiality, and meritocracy. The measure is rescaled to fit the sample and ranges from 0 (Bulgaria and Russia) to 1 (Finland) (see Table 2).

In order to test the hypotheses and make comparisons in a cross-national perspective, a set of other variables has to be considered. Economic inequality is one important aspect. Even though it is disputed whether economic pro-environmental instruments, such as taxes, have regressive effects (Dresner and Ekins, 2004; Sterner, 2012), the argument that such instruments disproportionately affect poor people is widespread (Sterner, 2012).

Table 2: Descriptive Statistics

<i>Variable</i>	<i>Construct</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Source</i>
Policy instruments: Business actors	'Heavier fines', 'Rewarding taxes', 'More information'				
Policy instruments: People	'Heavier fines', 'Rewarding taxes', 'More information'				
Social trust	Two items ($\alpha = 0.70$)	2.88	1	5	
Political trust		2.35	1	5	
Income (deciles)		5.13	1	10	
Affected by environmental degradation	'Agree', 'Disagree', 'Neither'				
Ideology/party affiliation	'Far left', 'Centre left', 'Centre Liberal', 'Conservative right', 'Far right', 'Other', 'No party affiliation'				
Gender	'Male', 'Female'				
Age	'15–30', '31–45', '46+'				
Quality of government	Rescaled measure	0.52	0	1	International Country RiskGuide (PRS Group)
Economic inequality	Rescaled income Gini	0.44	0	1	World Income Inequality Database (World Institute for Development Economics Research)
GDP per capita	Gross domestic product (PPP) per capita	27,523	3,920	52,178	World Economic Outlook Database (International Monetary Fund)

Furthermore, perceptions of unfairness are argued to trigger free-riding tendencies (Eek and Biel, 2003; Wilke, 1991) and thus more tax evasion which, plausibly, affects attitudes toward such policy tools. Moreover, studies find that economic inequality has a negative effect on preferences for economic instruments (e.g. Harring, 2014). Economic inequality is based on a measure of income Gini coefficient obtained from the World Income Inequality Database of the World Institute for Development Economics Research.⁵ The

income Gini coefficient ranges from 0 to 1. The end points are hypothetical, where 0 indicates no income differences at all, and 1 indicates that one person in that country receives all its income. In the analysis, the scale is recalibrated so the country with the highest level of economic inequality has a rating of 1 (South Africa) and the country with the lowest score has a rating of 0 (Slovenia).

Pro-environmental policy instruments might be perceived to imply higher costs or even to dampen economic growth, which might be less attractive in societies that have not reached a certain level of economic development, which in the end might affect policy preferences. Furthermore, in the literature on cross-country differences in attitudes toward the environment in general, the main discussion revolves around the effects of economic development (Dunlap and York, 2008; Franzen and Meyer, 2010; Franzen and Vogl, 2013). In order to measure economic development, gross domestic product (purchasing power parity) per capita from the International Monetary Fund's World Economic Outlook Database is used.⁶ Several of the countries in the study with ineffective public institutions are post-communist states that have a certain legacy of control and state intervention, which may affect policy preferences. Therefore, a dummy for communist legacy is also included in the analysis.

Regarding the individual-level variables, both political trust and social trust are hard to capture and measure. Even though the origins of social trust are disputed, social trust is clearly correlated with well-functioning political institutions. To measure social trust, an index is built out of two questions (Cronbach's $\alpha = 0.70$): 'Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?' with responses rated on a scale from 1 ('can't be too careful') to 5 ('most people can be trusted'); and 'Generally speaking, do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?' with responses rated on a scale from 1 ('most people would try to take advantage of you') to 5 ('most people would try to be fair').⁷ The correlation between QoG and social trust (collapsed to country level) is strong (0.78).

Political trust has also been defined in different ways and argued to have various origins. In this article, it is perceived to be based on the assessment of political institutions, and hence generated in response to the actual performance of these institutions. Two statements in ISSP 2010 measure political trust: 'Most of the time we can trust people in government to do what is right' (trust in government); and 'Most politicians are in politics only for what they can get out of it personally' (trust in politicians). Studying the correlation between the two measures of political trust (aggregated to country) and QoG, trust in politicians (0.81) is much more highly correlated with QoG than trust in government (0.17). Why the latter correlation is so weak is not perfectly clear. Even though ISSP tries to capture the regime with 'trust in government' and not a particular government, it is plausible that the perceptions are based on whether one supports the incumbents or not, while trust in politicians is more based on an overall assessment of political representatives. Hence, 'trust in politicians' is used as an indicator of political trust.

It is important to include personal income in an analysis of preference of pro-environmental policy instruments since income is found to affect the support or preference for economic incentives (Hammar and Jagers, 2006; Harring, 2014; Harring and Jagers,

2013). The assumption is that people with higher incomes are less averse to economic incentives because they feel that they can afford the increased costs. In the survey, the respondents are asked to state their income in national currencies. Personal income is divided into deciles, generating a comparative measure of relative income in each country. The effect is expected to diminish at higher levels of income and therefore a logarithmic measure is used.

Another important control variable is ideology or party affiliation. Attitudes toward government steering are typically affected by ideology. Some studies find that both people ideologically to the left and those ideologically to the right are more positive toward economic incentives compared to people without a distinct left or right position. It is possible that people to the left have a more positive attitude toward taxation and subsidies in general, while people to the right (at least if right is seen as market-oriented) are more positive toward market-based mechanisms involved in economic incentives (Harring, 2014). Ideological position is determined based on a question about party affiliation (far left, centre-left, centre-liberal, right-conservative, far right, other and no party affiliation).⁸

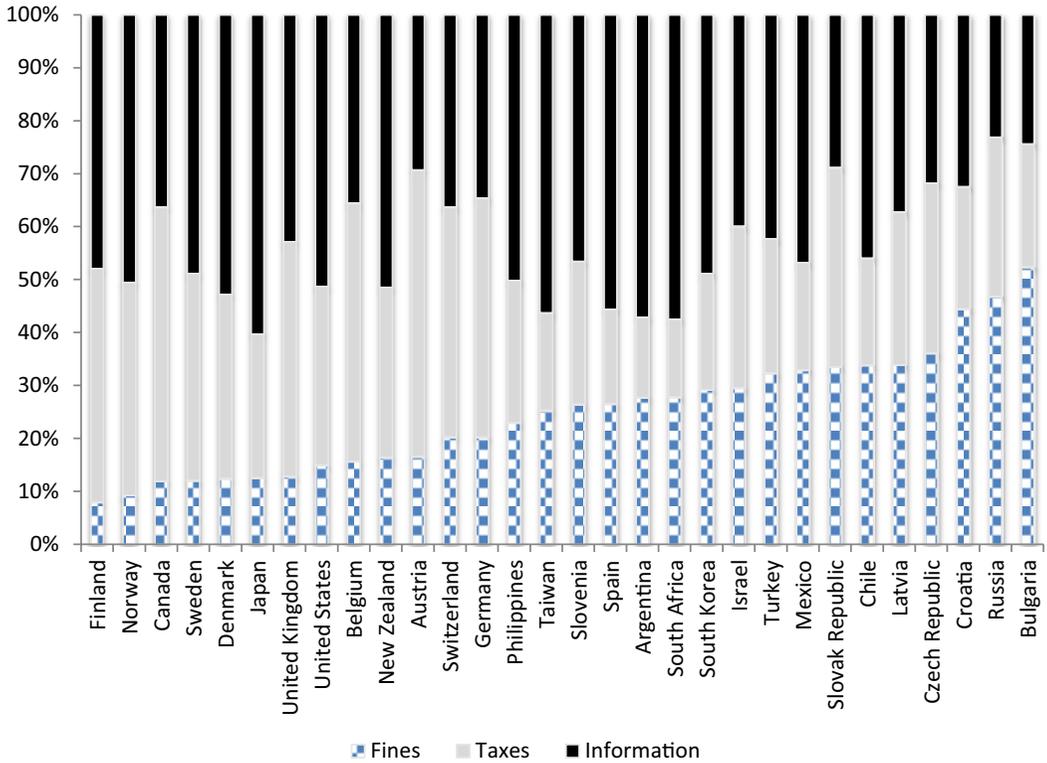
Presumably, people are more supportive of coercive policies if they perceive themselves to be affected by environmental degradation. From the statement 'Environmental problems have a direct effect on my everyday life', three different categories are created: people who agree, people who disagree, and people who neither agree nor disagree with the statement. Furthermore, age and gender are included in the analyses. These two demographic variables are argued to matter for people's attitudes toward the environment and environmental protection policies, where young people and women are more positive toward environmental protection in general (Hornback, 1974; Van Liere and Dunlap, 1980).⁹ In the analysis of preferences toward different policy instruments targeting 'business and industry', a control for whether the respondent is an employer, employee or self-employed is also included. Employers, as business owners, may potentially have different preferences from employees as they are more directly affected.

Results

In Figure 1 we see a substantial variation in policy preference across countries. The 'use [of] the tax system to reward people who protect the environment' is the most favoured tool in Austria, Belgium and Canada, and least favoured in South Africa, Argentina and Spain. More than 50 per cent of Austrians think that tax is the best policy tool, while only 15 per cent of South Africans think so – a result that supports the hypothesis. Austria scores high on the QoG index while South Africa scores very low. Furthermore, in other countries that score rather low on the QoG index, like Bulgaria, Croatia and Russia, about 50 per cent of the populations prefer heavier fines, while in countries with high levels of QoG, such as Sweden, Finland and Norway, these tools are not favoured.

Testing the hypotheses more formally required a multilevel regression analysis.¹⁰ Table 3 shows preferences for various pro-environmental policy instruments to steer ordinary citizens to act in a more environmentally friendly manner. The results show support for H1: when QoG is low, people have a preference for regulation, and as the level of QoG increases, the aversion toward taxes decreases and the preference for regulation decreases. Model 1 shows odds ratios.¹¹ As an odds ratio below 1 indicates a lower probability, we see

Figure 1: Preferences for Pro-environmental Policy Instruments, Country Aggregates



Source: International Social Survey Programme: Environment III – ISSP 2010. ‘Which of these approaches do you think would be the best way of getting people and their families in [COUNTRY] to protect the environment?’ with the options (1) Heavy fines for people who damage the environment, (2) Use the tax system to reward people who protect the environment, and (3) More information and education for people about the advantages of protecting the environment.

Note: Those choosing no response are left out of the analysis.

that, on a contextual level, QoG has a significant positive effect on preference for taxation as a policy option: as QoG in a country increases, people are more likely to choose taxes as a policy option (2.45) and less likely to choose fines (0.40).

Figure 2 illustrates the predicted probability of choosing a certain policy tool at different levels of QoG. As is clear, information is always the most favoured option regardless of QoG. There is a small effect in the analysis that indicates that information as a policy tool is less preferred in countries with high QoG scores. However, it does not change much as the level of QoG changes. Why the preferences for information are high regardless of level of QoG is hard to say. There could, as suggested above, be competing effects. On the one hand, information demands less bureaucratic capacity and might for that reason be the most favoured policy tool in countries with ineffective and corrupt public institutions. On the other hand, information is not coercive enough if people have low levels of trust in their fellow citizens, while it could be a more attractive choice in countries with high trust.

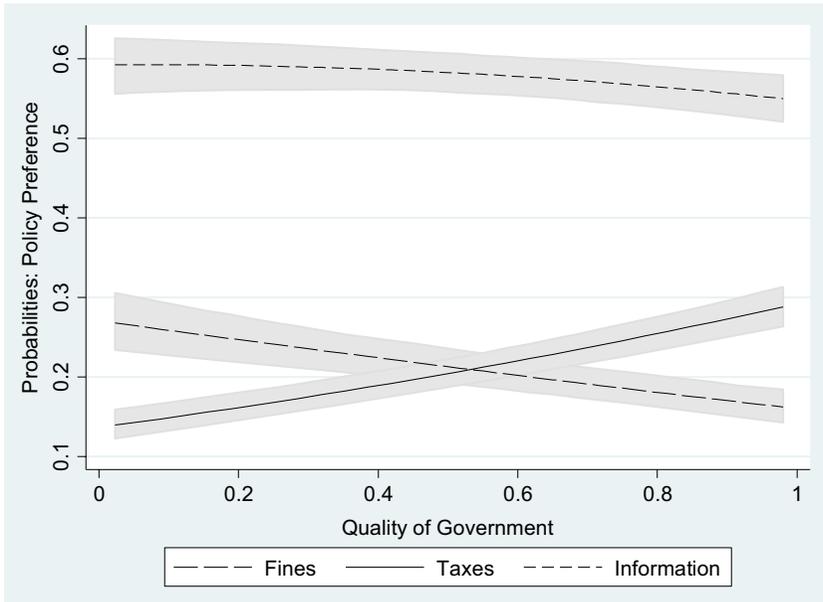
Table 3: Impact of QoG and Trust on Pro-Environmental Policy Instrument Preferences Targeting Average Citizens, Multinomial Logistic Regression

	Model 1						Model 2					
	Taxes/fines		Fines/taxes		Fines/information		Taxes/fines		Fines/taxes		Fines/information	
<i>Fixed effects</i>												
Level 1												
Social trust							1.17***	0.16***	0.84***	-0.17***	0.90**	-0.10**
							[1.09,1.26]	(0.04)	[0.77,0.91]	(0.04)	[0.85,0.96]	(0.03)
Political trust							1.06*	0.06*	0.94*	-0.06*	0.93**	-0.07**
							[1.01,1.12]	(0.03)	[0.89,0.98]	(0.03)	[0.88,0.98]	(0.03)
Income(log)	1.12*	0.11*	0.89**	-0.12**	1.05*	0.05*	1.10*	0.09*	0.90**	-0.10**	1.06*	0.06*
	[1.03,1.22]	(0.04)	[0.82,0.96]	(0.04)	[1.00,1.10]	(0.02)	[1.01,1.19]	(0.04)	[0.84,0.97]	(0.04)	[1.00,1.11]	(0.03)
Age ^a												
15-30	1.40***	0.34***	0.70***	-0.35***	1.10	0.10	1.39***	0.33***	0.72***	-0.33***	1.11	0.11
	[1.21,1.62]	(0.07)	[0.61,0.81]	(0.07)	[0.96,1.27]	(0.07)	[1.20,1.61]	(0.07)	[0.62,0.83]	(0.07)	[0.97,1.28]	(0.07)
31-45	1.45***	0.37***	0.68***	-0.39***	1.11	0.10	1.45***	0.37***	0.68***	-0.39***	1.11	0.10
	[1.26,1.68]	(0.07)	[0.59,0.78]	(0.07)	[0.98,1.25]	(0.06)	[1.26,1.68]	(0.07)	[0.59,0.78]	(0.07)	[0.98,1.25]	(0.06)
Gender(female)	0.99	-0.01	1.02	0.02	1.05	0.05	0.99	-0.01	1.01	0.01	1.05	0.05
	[0.90,1.09]	(0.05)	[0.93,1.11]	(0.04)	[0.96,1.16]	(0.05)	[0.90,1.09]	(0.05)	[0.93,1.10]	(0.04)	[0.96,1.15]	(0.05)
Political affiliation ^b												
Far left	1.04	0.04	1.01	0.01	1.01	0.01	1.08	0.08	1.02	0.02	1.03	0.03
	[0.77,1.40]	(0.15)	[0.74,1.38]	(0.16)	[0.73,1.38]	(0.16)	[0.84,1.39]	(0.13)	[0.76,1.36]	(0.15)	[0.78,1.35]	(0.14)
Centre left	1.00	0.00	1.12	0.11	1.12	0.11	0.99	-0.01	1.15	0.14	1.14	0.13
	[0.87,1.16]	(0.07)	[0.97,1.28]	(0.07)	[0.95,1.33]	(0.09)	[0.86,1.15]	(0.07)	[1.00,1.34]	(0.07)	[1.00,1.30]	(0.07)
Centre liberal	1.24	0.21	0.78**	-0.25**	0.89	-0.11	1.27*	0.24*	0.80**	-0.23**	0.86	-0.15
	[0.97,1.57]	(0.12)	[0.65,0.93]	(0.09)	[0.72,1.12]	(0.11)	[1.01,1.58]	(0.11)	[0.67,0.95]	(0.09)	[0.70,1.06]	(0.10)
Conservative	1.14	0.13	0.98	-0.02	1.02	0.02	1.13	0.12	1.00	0.00	1.06	0.05
	[0.98,1.33]	(0.08)	[0.85,1.12]	(0.07)	[0.79,1.32]	(0.13)	[0.96,1.33]	(0.08)	[0.86,1.16]	(0.08)	[0.84,1.33]	(0.12)
Far right	0.95	-0.05	1.33*	0.28*	1.18	0.17	1.06	0.05	1.34**	0.29**	1.20	0.18
	[0.64,1.42]	(0.20)	[1.06,1.68]	(0.12)	[0.81,1.73]	(0.19)	[0.72,1.55]	(0.20)	[1.08,1.66]	(0.11)	[0.80,1.79]	(0.21)
Affected by environmental degradation ^c												
Agree	0.85**	-0.16**	1.14**	0.13**	1.06	0.06	0.86**	-0.16**	1.13*	0.12*	1.05	0.05
	[0.76,0.95]	(0.06)	[1.04,1.26]	(0.05)	[0.93,1.21]	(0.07)	[0.77,0.96]	(0.06)	[1.03,1.24]	(0.05)	[0.92,1.21]	(0.07)
Disagree	0.99	-0.01	1.00	0.00	0.93	-0.08	1.00	-0.00	1.02	0.02	0.93	-0.07
	[0.87,1.13]	(0.07)	[0.89,1.13]	(0.06)	[0.82,1.04]	(0.06)	[0.88,1.13]	(0.06)	[0.90,1.15]	(0.06)	[0.82,1.05]	(0.06)
Level 2												
Quality of Government	5.65***	1.73***	0.14***	-1.94***	0.40*	-0.92*	2.45**	0.90**	0.40**	-0.91**	0.82	-0.20
	[2.92,10.93]	(0.34)	[0.06,0.32]	(0.41)	[0.17,0.93]	(0.43)	[1.32,4.53]	(0.31)	[0.22,0.72]	(0.30)	[0.45,1.47]	(0.30)
Economic equality	0.65	-0.42	1.66	0.51	0.91	-0.10	0.36**	-1.02**	2.37***	0.86***	1.81*	0.60*
	[0.34,1.25]	(0.33)	[0.80,3.45]	(0.37)	[0.40,2.07]	(0.42)	[0.20,0.67]	(0.31)	[1.46,3.85]	(0.25)	[1.05,3.12]	(0.28)
GDP per capita (log)	0.93	-0.08	0.95	-0.05	1.16	0.15	0.85*	-0.16*	0.97	-0.03	1.07	0.07
	[0.80,1.07]	(0.07)	[0.78,1.15]	(0.10)	[0.93,1.45]	(0.11)	[0.74,0.98]	(0.07)	[0.81,1.17]	(0.09)	[0.89,1.28]	(0.09)
Post-communist country	0.75	-0.29	1.38	0.32	2.66***	0.98**	0.59*	-0.53*	2.01***	0.70***	3.90***	1.36***
	[0.46,1.20]	(0.24)	[1.00,1.92]	(0.17)	[1.80,3.93]	(0.20)	[0.38,0.93]	(0.23)	[1.51,2.69]	(0.15)	[2.75,5.54]	(0.18)
<i>Random effects</i>												
Constant		0.42***		0.44***		0.26***			0.37***		0.34***	0.42***
		(0.03)		(0.02)		(0.02)			(0.03)		(0.02)	(0.02)
Log likelihood		-22,302.76		-22,137.02		-22,200.66					-22,258.66	-22,080.37
AIC		44,659.52		44,330.03		44,455.32					44,573.32	44,214.73
N (Level 1)		21,978		21,978		21,978		21,978		21,978	21,978	21,978
N (Level 2)		28		28		28		28		28	28	28

Notes: The entries to the left are odds ratios and the entries to the right are logistic coefficients. For the odds ratios, the parentheses show confidence intervals. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. For the coefficients, the parentheses show robust standard errors. An odds ratio greater than 1.00 indicates an increased probability, and an odds ratio below 1.00 indicates a decreased probability of choosing a certain pro-environmental policy instrument as an independent variable increases by one unit. ^aThe reference category is people aged '46+'. ^bThe reference category is people with 'no party affiliation' and 'other'. ^cThe reference category is can neither agree nor disagree with the statement that 'Environmental problems have a direct effect on my everyday life'.

Source: International Social Survey Programme: Environment III – ISSP 2010.

Figure 2: Probabilities for Support for Different Pro-Environmental Policy Instruments (EPI) at Different Levels of Quality of Government



Source: *International Social Survey Programme 2010. Unweighted estimates. 95% confidence intervals.*

For taxation and regulation however, QoG is important, and there are quite substantial differences. The probability of choosing fines decreases substantially as QoG increases, and the reverse is true for taxation, even under control for other country-level variables, such as economic development, economic inequality and communist legacy.¹² Examining the other country variables as such, we see that people living in economically unequal societies tend to be more likely to choose fines as a policy tool, which is also the case for people in post-communist countries. The effect of economic development is less stable, with non-significant effects on preferences for fines.

Examining the individual-level hypotheses, political trust makes people more likely to choose taxes and less likely to choose fines. To some extent this confirms a direct effect of QoG on policy preference; bureaucratic capacity is important for attitude formation. If people do not have political trust, they are less likely to prefer taxation.¹³ Studying the other main individual-level variable – social trust – which could be conceptualised more as an indirect causal link between QoG and policy preferences, the results confirm H2: low social trust generates a preference for regulation and an aversion toward taxation, and as social trust increases, the aversion toward taxation decreases and the preference for regulation decreases. People choose coercive punitive policies because they distrust their fellow citizens, and they are more positive toward economic instruments as social trust increases.

Comparing models 1 and 2, there are indications that the trust variables to some extent also moderate the effect of QoG on policy choice since when they are introduced the effect of QoG is less strong.¹⁴

Furthermore, an increase in income generates a higher probability of choosing taxes. Regarding ideology, it is hard to draw any general conclusion. People who state that they sympathise with a party defined as liberal or at the centre are more positive toward taxes and less positive toward fines, while people to the political left are more likely to choose fines. However, few of the estimated parameters are significant. Those affected by environmental degradation seem to be more willing to punish those who pollute, and less positive toward taxes. Yet again, few of the estimated parameters are statistically significant. Gender does not seem to have any effect at all, while the other demographic variable – age – does to some extent. Young people are more likely to choose taxes and less likely to choose fines.

As argued above, it is important to study whether there are any differences in preferences regarding instruments that target citizens or instruments that target business actors. For the main variables no important differences were found. Low QoG generates a preference for regulation and an aversion toward taxation, including for instruments targeting business actors. Social and political trust, as individual-level indicators, make people more likely to choose taxes and less likely to prefer fines. When the policy instrument targets business actors, economic inequality has a more stable effect. People in economically equal societies are less averse to taxes, while people in unequal societies want stricter regulation. Presumably, the level of conflict in unequal societies is higher, which also generates distrust between business actors and regular citizens and generates a preference for punishment tools (see Table 4).

There are no major differences between policies that target individual citizens and policies that target business actors for the other individual-level variables; for gender, age and political affiliation, few of the estimates are significant. In the models investigating policy preferences when the instruments target business actors, yet another control variable is included in terms of whether the respondent is self-employed, an employer or an employee. There are significant effects: employers tend to choose taxes whereas employees are more likely to choose fines.

The finding that there are no major differences in how levels of QoG and trust affect policy preferences whether the policy targets citizens in general or business actors confirms the assumption that people are more likely to prefer reward-based policies in some contexts and more likely to prefer punitive policies in others. People do not trust a corrupt and ineffective government to manage a tax system, neither do they trust actors to comply with it; they therefore prefer regulation and punishment. The findings are interesting in light of previous results showing that coercive regulations in corrupt contexts also have a negative effect on the creation of trust and civic attitudes (Aghion *et al.*, 2010). Countries or societies may be stuck in a negative trend, where distrust generates a preference for coercive regulatory policies, and coercive policies generate uncivic behaviour and values, as well as lower levels of social trust. That dynamic, however, could not be confirmed in this analysis. The best way to study such trends would be by using time-series data. In the final section, the contributions of this study and future research suggestions are further discussed.

Table 4: Impact of QoG and Trust on Pro-Environmental Policy Instrument Preferences Targeting Business Actors, Multinomial Logistic Regression

	Model 1						Model 2					
	Taxes/fines		Fines/taxes		Fines/information		Taxes/fines		Fines/taxes		Fines/information	
<i>Fixed effects</i>												
Level 1												
Social trust							1.16***	0.15***	0.84***	-0.17***	0.93**	-0.07**
							[1.11,1.22]	(0.03)	[0.80,0.89]	(0.03)	[0.89,0.97]	(0.02)
Political trust							1.13***	0.13***	0.88***	-0.13***	0.92***	-0.08***
							[1.09,1.18]	(0.02)	[0.84,0.91]	(0.02)	[0.88,0.96]	(0.02)
Income(log)	1.20***	0.18***	0.82***	-0.19***	1.07**	0.06**	1.15***	0.14***	0.85***	-0.16***	1.08**	0.08**
	[1.11,1.30]	(0.04)	[0.76,0.89]	(0.04)	[1.02,1.12]	(0.02)	[1.06,1.25]	(0.04)	[0.79,0.91]	(0.04)	[1.03,1.14]	(0.03)
Age^a												
15-30	1.17***	0.15***	0.84***	-0.18***	1.07	0.07	1.16**	0.15**	0.84**	-0.17**	1.07	0.07
	[1.07,1.28]	(0.05)	[0.76,0.92]	(0.05)	[0.93,1.23]	(0.07)	[1.05,1.28]	(0.05)	[0.76,0.93]	(0.05)	[0.93,1.23]	(0.07)
31-45	1.25***	0.22***	0.78***	-0.25***	1.10	0.09	1.25***	0.22***	0.77***	-0.26***	1.10	0.09
	[1.13,1.37]	(0.05)	[0.70,0.86]	(0.05)	[0.97,1.24]	(0.06)	[1.13,1.38]	(0.05)	[0.70,0.86]	(0.05)	[0.97,1.23]	(0.06)
Gender(female)	1.06	0.06	0.94	-0.06	1.08	0.08	1.08	0.08	0.92	-0.08	1.07	0.07
	[0.96,1.18]	(0.05)	[0.86,1.04]	(0.05)	[0.98,1.19]	(0.05)	[0.98,1.20]	(0.05)	[0.84,1.02]	(0.05)	[0.98,1.17]	(0.05)
Occupation^b												
Employed	0.81**	-0.22**	1.23*	0.21*	1.13	0.13	0.80**	-0.22**	1.25*	0.22*	1.14*	0.13*
	[0.69,0.94]	(0.08)	[1.02,1.47]	(0.09)	[1.00,1.29]	(0.07)	[0.70,0.93]	(0.07)	[1.05,1.49]	(0.09)	[1.00,1.30]	(0.07)
Employer	1.19	0.18	0.79	-0.23	0.73**	-0.31**	1.21	0.19	0.80	-0.22	0.73**	-0.31**
	[0.97,1.47]	(0.11)	[0.62,1.01]	(0.12)	[0.60,0.90]	(0.10)	[0.99,1.49]	(0.10)	[0.64,1.01]	(0.12)	[0.60,0.90]	(0.11)
Political affiliation^c												
Far left	0.84	-0.17	1.23	0.21	1.41*	0.34*	0.77**	-0.26**	1.34**	0.29**	1.47**	0.38**
	[0.71,1.01]	(0.09)	[0.98,1.54]	(0.11)	[1.09,1.83]	(0.13)	[0.65,0.92]	(0.09)	[1.10,1.62]	(0.10)	[1.12,1.93]	(0.14)
Centre left	1.08	0.08	1.04	0.04	1.17***	0.16***	0.97	-0.03	1.11	0.11	1.22***	0.20***
	[0.94,1.26]	(0.08)	[0.87,1.24]	(0.09)	[1.07,1.29]	(0.05)	[0.82,1.15]	(0.09)	[0.94,1.31]	(0.09)	[1.11,1.34]	(0.05)
Centre liberal	1.26*	0.23*	0.80**	-0.23**	1.05	0.05	1.13	0.12	0.88	-0.12	1.10	0.10
	[1.05,1.52]	(0.09)	[0.68,0.94]	(0.08)	[0.91,1.21]	(0.07)	[0.93,1.36]	(0.10)	[0.75,1.05]	(0.09)	[0.97,1.26]	(0.07)
Conservative	1.20**	0.18**	0.90	-0.10	1.08	0.08	1.08	0.08	0.96	-0.04	1.11	0.11
	[1.06,1.36]	(0.06)	[0.79,1.03]	(0.07)	[0.95,1.22]	(0.06)	[0.95,1.24]	(0.07)	[0.83,1.11]	(0.07)	[0.98,1.26]	(0.06)
Far right	0.78	-0.24	1.49***	0.40***	1.16	0.15	0.77	-0.26	1.45**	0.37**	1.14	0.13
	[0.57,1.07]	(0.16)	[1.20,1.83]	(0.11)	[0.79,1.70]	(0.19)	[0.56,1.06]	(0.16)	[1.15,1.84]	(0.12)	[0.75,1.72]	(0.21)
Affected by environmental degradation^d												
Agree	0.90*	-0.11*	1.08	0.07	1.10	0.09	0.91	-0.09	1.09*	0.08*	1.09	0.08
	[0.82,0.98]	(0.05)	[0.99,1.16]	(0.04)	[0.97,1.24]	(0.06)	[0.83,1.00]	(0.05)	[1.00,1.18]	(0.04)	[0.96,1.24]	(0.06)
Disagree	1.01	0.01	0.99	-0.01	0.93	-0.07	1.02	0.02	1.00	-0.00	0.93	-0.08
	[0.92,1.10]	(0.05)	[0.91,1.08]	(0.05)	[0.82,1.05]	(0.06)	[0.92,1.12]	(0.05)	[0.91,1.09]	(0.05)	[0.82,1.04]	(0.06)
Level 2												
Quality of Government	2.43***	0.89***	0.34***	-1.07***	1.26	0.23	1.29	0.26	0.40***	-0.93***	1.45*	0.37*
	[1.66,3.57]	(0.20)	[0.22,0.54]	(0.24)	[0.89,1.78]	(0.18)	[0.89,1.87]	(0.19)	[0.28,0.57]	(0.18)	[1.03,2.03]	(0.17)
Economic equality	0.21***	-1.56***	2.21***	0.79***	1.29	0.26	0.33***	-1.12***	1.81***	0.59***	1.29	0.25
	[0.13,0.33]	(0.23)	[1.42,3.45]	(0.23)	[0.89,1.87]	(0.19)	[0.21,0.51]	(0.22)	[1.31,2.50]	(0.16)	[0.94,1.75]	(0.16)
GDP per capita (log)	0.94	-0.06	1.14*	0.13*	1.27***	0.24***	0.91*	-0.10*	1.02	0.02	1.27***	0.24***
	[0.86,1.02]	(0.04)	[1.01,1.30]	(0.07)	[1.16,1.40]	(0.05)	[0.84,0.98]	(0.04)	[0.90,1.16]	(0.07)	[1.18,1.37]	(0.04)
Post-communist country	0.63**	-0.47**	1.28*	0.25*	3.13***	1.14***	0.79	-0.24	0.91	-0.09	3.11***	1.13***
	[0.45,0.86]	(0.16)	[1.01,1.63]	(0.12)	[2.37,4.15]	(0.14)	[0.57,1.10]	(0.17)	[0.75,1.11]	(0.10)	[2.42,3.98]	(0.13)
Random effects												
Constant		0.34***		0.32***		0.30***		0.42***		0.36***		0.30***
		(0.01)		(0.02)		(0.01)		(0.03)		(0.04)		(0.01)
Log likelihood		-19,429.02		-19,454.14		-19,448.77		-19,350.24		-19,360.42		-19,332.95
AIC		38,912.03		38,964.29		38,953.54		38,754.48		38,774.84		38,719.90
N		18,892		18,892		18,892		18,892		18,892		18,892
N (Level 2)		28		28		28		28		28		28

Notes: The entries to the left are odds ratios and the entries to the right are logistic coefficients. For the odds ratios, the parentheses show confidence intervals. *p < 0.05; **p < 0.01; ***p < 0.001. For the coefficients, the parentheses show robust standard errors. An odds ratio greater than 1.00 indicates an increased probability, and an odds ratio below 1.00 indicates a decreased probability of choosing a certain pro-environmental policy instrument as an independent variable increases by one unit. ^aThe reference category is people aged '46+'. ^bThe reference category is 'self-employed'. ^cThe reference category is people with 'no party affiliation' and 'other'. ^dThe reference category is can neither agree nor disagree with the statement that 'Environmental problems have a direct effect on my everyday life'.

Source: International Social Survey Programme: Environment III – ISSP 2010.

Concluding Remarks

This study makes four major contributions to the research. First, it discusses the trade-off between government failure and market failure and finds that it generates preferences for different kinds of policy instruments. As stated at the beginning of the article, people living in societies with low QoG may want more steering in general in terms of both regulation and economic incentives since they have low levels of social trust. However, when they have to make a choice, people in countries with corrupt and ineffective institutions are more likely to choose stronger regulatory instruments, while people living in societies with high QoG are more likely to choose economic incentives. Accordingly, the conclusions drawn from previous research that low QoG generates a demand for regulation are both confirmed and somewhat revised in this report. There is a preference for regulation in societies with low QoG, explained by low trust in other citizens and a willingness to punish, while people must have a high level of social trust in order to support instruments that reward. In this context, it is important to emphasise the individual-level effect of political trust indicating that bureaucratic discretion is also important for people's policy choices. People with little trust in political institutions do not prefer taxation that entails a redistribution of resources and increases the risk of corruption.

Second, the analysis includes attitudes toward the steering of business actors and the steering of citizens. The results indicate that people are more likely to choose punitive instruments when targeting the behaviour of business actors, but there are no major differences regarding the effects of QoG and trust on preferences for type of steering. The mechanisms are similar. People prefer to punish actors independently of whether they are citizens or business actors, and they choose economic incentive rewards, both for business actors and citizens, in societies where trust in general is high. So, independent of whether citizens are affected by the policy, they want to punish defectors.

Third, in this study, environmental policy is chosen to illustrate the distinction between regulatory and economic incentives, and by doing so, it contributes to the literature on attitudes toward environmental policy in general, which has mostly used national data or experimental designs (e.g. Cherry *et al.*, 2012; De Groot and Schuitema, 2012; Hammar and Jagers, 2006; Lubell *et al.*, 2007; Steg *et al.*, 2005). In a comparative perspective, there are numerous studies on country differences in citizens' degree of environmental concern, environmental behaviour and willingness to make economic sacrifices for environmental protection (Abramson, 1997; Brechin and Kempton, 1994; 1997; Diekmann and Franzen, 1999; Duit, 2011; Dunlap and Mertig, 1997; Dunlap and York, 2008; Franzen, 2003; Franzen and Meyer, 2010; Franzen and Vogl, 2013; Harring, 2013; Kimmelmeier *et al.*, 2002). Nevertheless, there are few cross-country studies on individuals' preference for different kinds of pro-environmental policy instruments (Harring, 2014).

Finally, there are several experimental studies advancing intricate explanations as to why people cooperate or choose to reward and punish each other, where trust and perceptions of free-riding are important factors (e.g. Berg *et al.*, 1995; Fehr and Gächter, 2002; Hilbe and Sigmund, 2010; Ostrom, 2000). This study has shown how these concepts can be applied to a problem on a much larger scale; the conclusion is that people with little trust are also more likely to prefer punishment tools in such settings. As Aghion *et al.* (2010)

show, distrust generates a demand for regulation, while regulation generates even more distrust. Future research can, based on the results in this article, further develop this argument and study whether certain policies can also build trust. Hence, the dynamics between trust and state intervention can be further explored.

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Appendix

<i>Country</i>	<i>Data collection</i>
Argentina	Face-to-face interviews
Austria	Face-to-face interviews
Belgium	Mixed mode
Bulgaria	Face-to-face interviews
Canada	Self-completion questionnaire
Chile	Face-to-face interviews
Croatia	Face-to-face interviews
Czech Republic	Face-to-face interviews
Denmark	Mixed mode
Finland	Mixed mode
France	Self-completion questionnaire
Germany	Mixed mode
Great Britain	Mixed mode
Israel	Face-to-face interviews
Japan	Self-completion questionnaire
Korea	Face-to-face interviews
Latvia	Face-to-face interviews
Lithuania	Face-to-face interviews
Mexico	Face-to-face interviews
New Zealand	Self-completion questionnaire
Norway	Mixed mode
Philippines	Face-to-face interviews
Russian Federation	Face-to-face interviews
Slovakia	Face-to-face interviews
Slovenia	Face-to-face interviews
South Africa	Face-to-face interviews
Spain	Face-to-face interviews
Sweden	Self-completion questionnaire
Switzerland	Face-to-face interviews
Taiwan	Face-to-face interviews
Turkey	Face-to-face interviews
United States	Mixed mode

Notes

- 1 It is important to note that Scholz and Lubell discuss tax compliance in general – and not compliance with environmental taxes.
- 2 See the Appendix.
- 3 ‘Which of these approaches do you think would be the best way of getting business and industry in [COUNTRY] to protect the environment?’
- 4 Obtained from the Quality of Government Institute (Teorell *et al.*, 2011). <http://www.qog.pol.gu.se>
- 5 Obtained from the Quality of Government Institute (Teorell *et al.*, 2011). <http://www.qog.pol.gu.se>
- 6 The World Economic Outlook Database: <http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx>
- 7 In connection to this, it is important to mention that, unfortunately, the survey does not include a question on trust in business actors.
- 8 Two countries in the study – Taiwan and Israel – do not have this item in the survey; hence they are excluded from the analysis.
- 9 Furthermore, there are other demographic or socio-economic variables that could have been included in the models such as marital status and whether one has children. However, in some countries these questions are not included in the survey. Yet models with these variables have been tested and there are small or insignificant effects.
- 10 Estimated by using the GLLAMM command (with the mlogit link) in Stata (Grilli and Rampichini, 2006; Rabe-Hesketh *et al.*, 2004).
- 11 The ISSP provides design weights to calculate for survey sampling biases, and the analyses have been performed using scaled design weights (Carle, 2009), except in Figure 2, which is based on unweighted estimates.
- 12 These are correlated. However, the variance inflation factor (VIF) indicates an acceptable level of correlation and there are no severe problems of multicollinearity. The mean VIF is 1.51 and for QoG it is 3.58.
- 13 It can also be noted that there was another indicator of political trust: ‘trust in government’, which has been tested and showed no significant effects. To some extent this was expected, as ‘trust in government’ is less correlated with QoG.
- 14 The correlation between social trust and political trust is 0.32. Several specifications have been tested for robustness checks – e.g. with QoG as the only cross-national variable and models excluding social trust but not political trust and vice versa. The different analyses show similar results. The effects are significant.

References

- Abramson, P. R. (1997) ‘Postmaterialism and Environmentalism: A Comment on an Analysis and a Reappraisal’, *Social Science Quarterly*, 78 (1), 21–3.
- Acemoglu, D. and Verdier, T. (2000) ‘The Choice between Market Failures and Corruption’, *American Economic Review*, 90 (1), 194–211.
- Aghion, P., Algan, Y., Cahuc, P. and Schleifer, A. (2010) ‘Regulation and Distrust’, *Quarterly Journal of Economics*, 125 (3), 1015–49.
- Berg, J., Dickhaut, J. and McCabe, K. (1995) ‘Trust, Reciprocity and Social History’, *Games and Economic Behavior*, 10 (1), 122–42.
- Bjørnskov, C. (2007) ‘Determinants of Generalized Trust: A Cross-Country Comparison’, *Public Choice*, 130 (1–2), 1–21.
- Brechin, S. R. and Kempton, W. (1994) ‘Global Environmentalism: A Challenge to the Postmaterialism Thesis?’, *Social Science Quarterly*, 75 (2), 245–69.
- Brechin, S. R. and Kempton, W. (1997) ‘Beyond Postmaterialist Values: National versus Individual Explanations of Global Environmentalism’, *Social Science Quarterly*, 78 (1), 16–20.
- Carle, A. C. (2009) ‘Fitting Multilevel Models in Complex Survey Data with Design Weights: Recommendations’, *BMC Medical Research Methodology*, 9 (49). doi: 10.1186/1471-2288-9-49
- Cherry, T. L., Kallbekken, S. and Kroll, S. (2012) ‘The Acceptability of Efficiency-Enhancing Environmental Taxes, Subsidies and Regulation: An Experimental Investigation’, *Environmental Science and Policy*, 16, 90–6.
- Dahlström, C., Lindvall, J. and Rothstein, B. (2013) ‘Corruption, Bureaucratic Failure and Social Policy Priorities’, *Political Studies*, 61, 523–42.
- Damania, R. (2002) ‘Environmental Controls with Corrupt Bureaucrats’, *Environment*, 7, 407–27.
- De Groot, J. I. M. and Schuitema, G. (2012) ‘How to Make the Unpopular Popular? Policy Characteristics, Social Norms and the Acceptability of Environmental Policies’, *Environmental Science & Policy*, 19–20, 100–7.
- Delhey, J. and Newton, K. (2005) ‘Predicting Cross-National Levels of Social Trust: Global Pattern or Nordic Exceptionalism?’, *European Sociological Review*, 21 (4), 311–27.
- Di Tella, R. and MacCulloch, R. (2009) ‘Why Doesn’t Capitalism Flow to Poor Countries?’, *Brookings Papers on Economic Activity* Spring 2009, 285–321.
- Diekmann, A. and Franzen, A. (1999) ‘The Wealth of Nations and Environmental Concern’, *Environment and Behavior*, 31 (4), 540–9.
- Dietz, T., Dolšák, N., Ostrom, E. and Stern, P. C. (2002) ‘The Drama of the Commons’, in E. Ostrom, *et al.* (ed.), *The Drama of the Commons*. Washington, DC: National Academy Press, pp. 3–35.
- Dimitrova-Grajzl, V., Grajzl, P. and Guse, J. A. (2011) ‘Trust, Perceptions of Corruption and Demand for Regulation: Evidence from Post-Socialist Countries’, *Journal of Socio-Economics*, 41 (3), 292–303.
- Dinesen, P. T. (2012) ‘Parental Transmission of Trust or Perceptions of Institutional Fairness: Generalized Trust of Non-Western Immigrants in a High-Trust Society’, *Comparative Politics*, 44 (3), 273–89.

- Dinesen, P. T. (2013) 'Where You Come From or Where You Live? Examining the Cultural and Institutional Explanation of Generalized Trust Using Migration as a Natural Experiment', *European Sociological Review*, 29 (1), 114–28.
- Dinesen, P. T. and Hooghe, M. (2010) 'When in Rome, Do as the Romans Do: The Acculturation of Generalized Trust among Immigrants in Western', *Europe. International Migration Review*, 44 (3), 697–727.
- Dresner, S. and Ekins, P. (2004) *Green Taxes and Charges: Reducing Their Impact on Low Income Households*. York: Joseph Rowntree Foundation.
- Duit, A. (2011) 'Patterns of Environmental Collective Action: Some Cross-National Findings', *Political Studies*, 59 (4), 900–20.
- Dunlap, R. E. and Mertig, A. G. (1997) 'Global Environmental Concern: An Anomaly for Postmaterialism', *Social Science Quarterly*, 78 (1), 24–9.
- Dunlap, R. E. and York, R. (2008) 'The Globalization of Environmental Concern and the Limits of the Postmaterialist Values Explanation: Evidence from Four Multinational Surveys', *Sociological Quarterly*, 49 (3), 529–63.
- Eek, D. and Biel, A. (2003) 'The Interplay between Greed, Efficiency and Fairness in Public-Goods Dilemmas', *Social Justice Research*, 16 (3), 195–215.
- Fehr, E. and Gächter, S. (2002) 'Altruistic Punishment in Humans', *Nature*, 415 (6868), 137–40.
- Franzen, A. and Meyer, R. (2010) 'Environmental Attitudes in Cross-National Perspective: A Multilevel Analysis of the ISSP 1993 and 2000', *European Sociological Review*, 26 (2), 219–34.
- Franzen, A. and Vogl, D. (2013) 'Two Decades of Measuring Environmental Attitudes: A Comparative Analysis of 33 Countries', *Global Environmental Change*, 23, 1001–08.
- Grilli, L. and Rampichini, C. (2006) 'A Review of Random Effects Modelling Using GLLAMM in Stata', *Software Reviews of Multilevel Analysis Packages*. Bristol: Centre for Multilevel Modelling: University of Bristol. Available from: <http://www.bristol.ac.uk/media-library/sites/cmm/migrated/documents/reviewgllamm.pdf> [Accessed 23 March 2015].
- Hammar, H. and Jagers, S. C. (2006) 'Can Trust in Politicians Explain Individuals' Support for Climate Policy? The Case of CO₂ Tax', *Climate Policy*, 5 (6), 613–25.
- Harring, N. (2013) 'Understanding the Effects of Corruption and Political Trust on Willingness to Make Economic Sacrifices for Environmental Protection in a Cross-National Perspective', *Social Science Quarterly*, 94 (3), 660–71.
- Harring, N. (2014) 'Corruption, Inequalities and the Perceived Effectiveness of Economic Pro-Environmental Policy Instruments: A European Cross-National Study', *Environmental Science and Policy*, 39, 119–28.
- Harring, N. and Jagers, S. C. (2013) 'Should We Trust in Values? Explaining Public Support for Pro-Environmental Taxes', *Sustainability*, 5 (1), 210–27.
- Heckathorn, D. D. (1989) 'Collective Action and the Second-Order Free-Rider Problem', *Rationality and Society*, 1 (1), 78–100.
- Herreros, F. (2009) 'The State', in G. T. Svendsen and G. L. H. Svendsen (eds), *Handbook of Social Capital: The Troika of Sociology, Political Science and Economics*. Cheltenham: Edward Elgar, pp. 179–96.
- Herrmann, B., Thöni, C. and Gächter, S. (2008) 'Antisocial Punishment across Societies', *Science*, 319 (5868), 1362–7.
- Hilbe, C. and Sigmund, K. (2010) 'Incentives and Opportunism: From the Carrot to the Stick', *Proceedings of the Royal Society B: Biological Sciences*, 277 (1693), 2427–33.
- Holmberg, S., Rothstein, B. and Nasiritousi, N. (2009) 'Quality of Government: What You Get', *Annual Review of Political Science*, 16, 135–61.
- Hornback, K. E. (1974) *Orbits of Opinion: The Role of Age in the Environmental Movement's Attentive Public*. Unpublished doctoral dissertation, Michigan State University.
- International Social Survey Programme (2012) International Social Survey Programme: Environment III – ISSP 2010 (Data file version 2.0.0.). Retrieved from GESIS Data Archive, Cologne (ZA5500). Available from: <https://dbk.gesis.org/dbksearch/sdesc2.asp?no=5500> [Accessed 5 August 2012].
- Kemmelmeier, M., Krol, G. and Kim, Y. H. (2002) 'Values, Economics and Proenvironmental Attitudes in 22 Societies', *Cross-Cultural Research*, 36 (3), 256–85.
- Knack, S. (2002) 'Social Capital and the Quality of Government: Evidence from the States', *American Journal of Political Science*, 46 (4), 772–85.
- Levi, M. (1998) 'A State of Trust', in V. Braithwaite and M. Levi (eds), *Trust and Governance*. New York: Russell Sage Foundation, pp. 77–101.
- Lubell, M., Zahran, S. and Vedlitz, A. (2007) 'Collective Action and Citizen Responses to Global Warming', *Political Behavior*, 29 (3), 391–413.
- Nannestad, P., Svendsen, G. T., Dinesen, P. T. and Sonderskov, K. M. (2013) 'Do Institutions or Culture Determine the Level of Social Trust? The Natural Experiment of Migration from Non-Western to Western Countries', *Journal of Ethnic and Migration Studies*, 40 (4), 544–65.
- Newton, K. (1999) 'Social and Political Trust in Established Democracies', in P. Norris (ed.), *Critical Citizens: Global Support for Democratic Government*. Oxford: Oxford University Press, pp. 169–87.
- Newton, K. (2007) 'Social and Political Trust', in R. J. Dalton and H.-D. Klingemann (eds), *The Oxford Handbook of Political Behavior*. Oxford: Oxford University Press, pp. 342–61.
- Olivier, P. (1980) 'Rewards and Punishments as Selective Incentives for Collective Action: Theoretical Investigations', *American Journal of Sociology*, 85, 1356–75.
- Ostrom, E. (1998) 'A Behavioral Approach to the Rational Choice Theory of Collective Action', *American Political Science Review*, 92 (1), 1–22.

- Ostrom, E. (2000) 'Collective Action and the Evolution of Social Norms', *Journal of Economic Perspectives*, 14 (3), 137–58.
- Pinotti, P. (2011) 'Trust, Regulation and Market Failures', *Review of Economics and Statistics*, 94 (3), 650–8.
- Putnam, R. D. (1993) *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Rabe-Hesketh, S., Skrondal, A. and Pickles, A. (2004) 'Generalized Multilevel Structural Equation Modelling', *Psychometrika*, 69 (2), 167–90.
- Robbins, B. G. (2012) 'Institutional Quality and Generalized Trust: A Nonrecursive Causal Model', *Social Indicators Research*, 107 (2), 235–58.
- Rothstein, B. (2009) 'Creating Political Legitimacy: Electoral Democracy versus Quality of Government', *American Behavioral Scientist*, 53, 311–30.
- Rothstein, B. and Stolle, D. (2008) 'The State and Social Capital: An Institutional Theory of Generalized Trust', *Comparative Politics*, 40 (4), 441–59.
- Rothstein, B., Samanni, M. and Teorell, J. (2012) 'Explaining the Welfare State: Power Resources vs. the Quality of Government', *European Political Science Review*, 4 (1), 1–28.
- Scholz, J. T. and Lubell, M. (1998) 'Trust and Taxpaying: Testing the Heuristic Approach to Collective Action', *American Journal of Political Science*, 42 (2), 398–417.
- Steg, L., Dreijerink, L. and Abrahamse, W. (2005) 'Factors Influencing the Acceptability of Energy Policies: A Test of VBN Theory', *Journal of Environmental Psychology*, 25 (4), 415–25.
- Sterner, T. (2012) *Fuel Taxes and the Poor: The Distributional Effects of Gasoline Taxation and Their Implications for Climate Policy*. Washington, DC: Resources for the Future Press.
- Svallfors, S. (1997) 'Worlds of Welfare and Attitudes to Redistribution: A Comparison of Eight Western Nations', *European Sociological Review*, 13 (3), 283–304.
- Svallfors, S. (2003) 'Welfare Regimes and Welfare Opinions: A Comparison of Eight Western Countries', *Social Indicators Research*, 64 (3), 495–520.
- Svallfors, S. (2013) 'Government Quality, Egalitarianism and Attitudes to Taxes and Social Spending: A European Comparison', *European Political Science Review*, 5, 363–80.
- Svensson, J. (2005) 'Eight Questions about Corruption', *Journal of Economic Perspectives*, 19 (3), 19–42.
- Teorell, J., et al. (2011) The Quality of Government (Dataset, version 6 Apr11). Retrieved from The Quality of Government Institute, University of Gothenburg. Available from: <http://www.qog.pol.gu.se> [Accessed 26 April 2011].
- Van Liere, K. D. and Dunlap, R. E. (1980) 'The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence', *Public Opinion Quarterly*, 44 (2), 181–97.
- Vedung, E. (1998) 'Policy Instruments: Typologies and Theories', in M.-L. Bemelmans-Videc, R. C. Rist and E. Vedung (eds), *Carrots, Sticks and Sermons*. New Brunswick, NJ: Transaction, pp. 21–58.
- Wilke, H. A. M. (1991) 'Greed, Efficiency and Fairness in Resource Management Situations', *European Review of Social Psychology*, 2 (1), 165–87.

About the Author

Niklas Haring is a Researcher and Lecturer at the Department of Political Science, University of Gothenburg. He is affiliated to the Centre for Teaching and Learning in the Social Sciences at Stockholm University, The Quality of Government Institute and the Centre for Environmental Political Studies, University of Gothenburg. His current research interests are in environmental politics, political trust, social trust, values, education and value change, corruption, quality of government and public opinion on climate change. Niklas Haring, Department of Political Science, University of Gothenburg, Box 711, SE-405 30 Gothenburg, Sweden; email: niklas.haring@pol.gu.se