

Deliberation and climate change

- A quantitative analysis of potential relationships between deliberation and countries' efforts in mitigating climate change

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Abstract

The debate whether democracy and its procedures are capable of tackling climate change has been going on for years. One mechanism that has been claimed to yield improved environmental performance is deliberation. Meetings between civil society and politicians are assumed to generate more ambitious environmental policy. The field have been characterised by normative and qualitative research. Conducting quantitative studies has however not been possible due to lack of data of deliberation. Thanks to the Varieties of Democracy institute data on deliberation is now available. This study contributes to the discussion regarding potential relationships between deliberation and increased efforts of climate change mitigation. This is done by statistical analysis of deliberation and emissions of carbon dioxide per capita (CO₂). The results do not indicate any relationship between deliberation and CO₂ emissions per capita. The robustness of the model can be discussed signifying that further research should be done, possibly with different operationalisations. Measuring democratic indicators are questionable making further research necessary.

Keywords: deliberation, democracy, CO₂ emissions, environmental performance

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Introduction and purpose

To claim that climate change is real is becoming less and less controversial. In the light of the effects of climate change the demand for effective tools to accomplish a sustainable development increase. As the problem of increasing temperatures requires global solutions states are one the most important actors. States can enter international agreements, legislate on limits of emissions and relief taxes on green alternatives. Therefore, it becomes important to find out what kind of governance that is most capable of tackling climate change. There is a debate whether democratic systems can deal with the environmental problems. When the solutions tend to be unpopular often because of the big expenditure they require in terms of taxation on fuel and economical ventures in new technology. Are politicians able to do what is required to save the planet in the long haul when they may sacrifice being elected in the coming elections? In addition, one can wonder what the public really wants and what they are willing to sacrifice for a sustainable future? Would they be in favour of stricter environmental regulations and legislations? These are valid questions and they are subject of a debate that in a lot of ways lacks empirical background. The reason for the lack of empirical research probably comes from the fact that measuring democracy is hard and often problematic. However, it is today possible to conduct empirical research on democracy using several available datasets with information about democracy.

One of the democratic procedures that some scholars claim is appropriate for tackling climate change is deliberation. A deliberative system offers channels of communication and deliberative discussions between authorities and civil society. The idea is that the public will use their influence to advocate environmental regulations. The aim of this study is to find out if there is a relationship between deliberation and countries' efforts to mitigate climate change. Emissions of carbon dioxide (CO₂) is the main driver for climate change (Houghton, 2009, p. 35), therefore, emissions of CO₂ per capita will be seen as a case of climate change in this study. By using statistical design, the result of this study is a quantitative empirical input to the debate whether deliberation can be a contributing factor in countries mitigation of climate change. It is highly unlikely that the fluctuations of CO₂ emissions could be explained by one factor and therefore a substantial part of the study also explore possible effects of control variables, with the aim to isolate the effect of deliberation.

The study is divided into sections. First, I present previous research and theory. The second section will present the methodology. In the third section the results are presented

and analysed. The study is then rounded off with conclusions and some recommendations on what future research could focus on.

Theory and previous research

Scholars have for years theorised whether democracy is favorable for the environment or not (Li and Reuveny, 2006, Jagers, 2007, Eckersley, 2004, Scruggs, 2009). One can argue that people according to classic economic literature are profit maximisers (Smith, 1990) and that they will not vote for politicians that advocates regulations as taxes on fuel, meat and coal energy and limit the economic development. It is after all the liberal market economies in democratic countries that historically have driven the emission of greenhouse gases (Ciesielski, 2013). At the same time, one can argue that the public's will is to conserve the environment and when they can they will advocate for the sake of the environment. Therefore, it is logical to enhance the general public's access to political forums. Access to political forums and politicians consulting the civil society when designing new laws is within the concepts of deliberation. Deliberative democracy means that the state consults the people when writing new laws. The deliberative perspective of democracy is based on the idea that the ones being affected of a political decision also should participate in designing it (Smith, 2003, pp. 54-60).

Discussion is essential in a deliberative democracy and via discussion, rational consideration and compromises the different sides will find a solution acceptable for everyone. Consensus and the rule of the majority is not the most important as in a representative system. In the deliberative system the interest of minorities but also future generations interests are also valid. The procedures where different interests are considered is the important part according to Lidskog and Elander (2007, p. 90) and Smith (2003, p. 64). Advocates for deliberation claim that it is a suitable tool for dealing with complex matters such as climate change. Some Scholars claim that deliberative democracy will lead to decreasing environmental degradation. As people will gain from, for example, lower emissions from CO₂ people will use their influence on policy makers in a deliberative governance to do so (Lidskog and Elander, 2007). Graham Smith argues that policy makers in the democracies today, also representative ones, are situated too far away from the outcomes of their policies to see the actual results. Groups, including nature itself, without financial or social capital are excluded from designing of policy (Smith, 2003, p. 62). Deliberation should therefore be a system well equipped to minimise the gap between the politicians and the outcome of policy via deliberative forums.

One of the most cited researchers in the field, John Dryzek, states that deliberative forms of democracy is particularly suitable for dealing with the environmental issue. No other form of governance is according to him capable of handling such complex issues (Dryzek,

1987). He also means that a lot of the problems in the world origins from lack of logical reasoning. In the long run no one has anything to gain from environmental depletion which make distinct collective action logical. Despite this uncontroversial statement the world lacks international agreements dealing with environmental problems in many areas such as emissions of CO₂. Deliberative democracy would create forums where the impartial and rational solutions would be easier to reach (Dryzek, 1990). Graham Smith deem in addition to Dryzek that the environmental movement is widespread in its opinions and priorities that deliberative discussion is fundamental for progress and legitimacy (Smith, 2003, p. 65). The advantage of deliberative democracy contra western liberal democracy from Dryzek's perspective lies in its ability to overcome the human flaw of bounded rationality. This meaning that in a policy-making situation the one making the decision is limited in terms of information, cognitive abilities, time and other factors often resulting in not so rational decision (Fearon, 1998, p. 49). James Fearon agrees with Dryzek and Smith and claims that deliberative decision making, if not eliminate, moderate the human factor and make sure that multiple options and opinions are being considered. Another effect is that different ideas can build on each other resulting in outcomes that would have been impossible in other forums (Fearon, 1998, p. 50).

One can draw parallels between theories saying that democratic mechanisms are positive for the environment and theories claiming that economic development has a positive effect on the environment. Grossman & Krueger means that the environmental stress caused by society can be explained by economic development. The relationship is illustrated by an inverted U- curve. The theory is widely known as the *Environmental Kuznets Curve* (EKC). It is based on the idea that a societies effect on the environment has a positive relationship with the economic development which lead to increased stress on the environment. At a certain tipping point shifting norms of the society, green technology and environmental regulations cause a decoupling of economic development and environmental degradation. The authors do not mean that this effect would appear automatically. Instead their idea is that as the economic development continues the public's demand for environmentally friendly technology and policy increases and politicians will then respond to this demand (Grossman and Krueger, 1995, pp. 371-372) . One could therefore argue that deliberation and economic development associate with environmental performance in harmony. As the public does not gain from environmental degradation it is logical to assume that, when given opportunity, they will advocate policy

preserving the environment. Just like the case of EKC one can think that this environmental engagement should rise as other needs like poverty is being dealt with and fulfilled.

In addition to theories claiming that deliberative democracy can be a tool for overcoming the failings of humans there is also the idea that nature needs its own voice. In a conventional liberal democracy nature does not have valid claims and interest. In a deliberative polity interest groups and civil society can plead nature's cause. Therefore, one can argue that deliberation is important for making environmental policy (Goodin, 1996, p. 847). If nature should have valid claims or not is of course a normative question and not something I will discuss deeper. However, if one comes to the conclusion that nature in itself is a legitimate actor, deliberation is likely to be one of the aspects of governance that gives nature the most influence.

At the same time as deliberation allows actors to lobby for the sake of the environment, it also means that those against stricter environmental laws are being given the same opportunity. This raises the question of why people will use their voice to advocate stricter environmental laws. One can argue that representatives from industries relying on fossil fuel would use deliberative democracy as a tool to work against stricter environmental policy. One cannot be sure of the outcome of deliberative democracy (Smith, 2003, p. 76). Robert Goodin expresses it better than most others:

“To advocate democracy is to advocate procedures, to advocate environmentalism is to advocate substantive outcomes: what guarantee can we have that the former procedures will yield the latter sorts of outcomes?”
(Goodin, 1992, p. 168)

Some of the critics against the assumption that deliberation will yield better environmental performance originate from the eco-authoritarian perspective. As people get more power in liberal democracies they consume more and expand their ecological footprint. One could therefore argue that the public needs to be guided by some sort of green authoritarian leader. Goodin suggests that environmental outcomes should be prioritised at the expense of democratic procedures. By rational reasoning one must come to the conclusion that environmental performance is too important to be jeopardized (Goodin, 1992, p. 120). That solving the environmental crisis is important is obvious. However, are we prepared to tamper with democratic liberties to meet ends? Robin Eekersley disagrees with Goodin saying that democratic freedoms have an intrinsic value (Eekersley, 1996, p. 223). Instead she offers something that

could be called a middle way. It is logical to see deliberative democracy as an extension of liberal democracy, as deliberative elements in policy making enhances the people rights and liberties. Eckersley means that those regulations that are required for mitigating or stopping the environmental degradation will not be carried out in a liberal democracy. In a liberal society the public does not tolerate to be restricted more than what is considered as necessary. To be able to create a truly green state one must shift the focus on individual rights, for example the right to consume, to a more holistic approach to rights. If one person's exercise of liberal rights restricts another person's possibilities to exercise his or hers liberal rights, how liberal is that (Eckersley, 2004)? An example of this could be that in a modern liberal society everyone is free to consume, which could have the effect of rising sea levels caused by climate change that force islanders to move. But why would this problem be solved in a deliberative society?

One can argue that advocates of deliberative democracy are relying too heavily on the ones participating in these forums to act unselfish. Why would not a situation of Garret Hardin's *tragedy of the commons* (Hardin, 1968) occur in a deliberative democracy? The critic against the view that deliberative democracy would have a positive effect on the environment in, for example, terms of decreasing CO₂ emissions must be considered as relevant and valid. How can we know that those participating in these deliberative forums would advocate stricter environmental laws? The simple answer is that we do not know for certain which pinpoints the need for empirical research on the matter. Although there is an extensive literature in this field scholars have not been able to conduct quantitative empirical research, until a few years ago when extensive data on deliberation and democracy became available. Varieties of democracies institute from University of Gothenburg produces datasets consisting of indicators of democracy, deliberation being one of them. This make it possible to conduct quantitative empirical studies which contributes to the discussion whether deliberation, and in the long run, democracy can impede climate change.

As pointed out there is today no way to be sure whether deliberation would result in lower emissions of CO₂ or more care for the environment in general. However, Smith argues that it should be considered likely as a deliberative polity would offer a context where diversity of environmental interests would be processed (Smith, 2003, p. 76). Consequently, the first hypothesis for this study is that deliberation is associated with lower emissions of CO₂. Note that it is not deliberative democracy that is examined but deliberative components in all kinds of governance. It is possible that an authoritarian state receives high score for deliberation, even

if this is less likely compared to democracies. However, one can argue that deliberation needs a democratic context to be a force for lower emissions of CO₂. Without the democratic mechanisms such as rule of law and accountability, deliberative components in a country would be less likely to work. Therefore, the second hypothesis of this study is that the relationship of deliberation and CO₂ emissions will strengthen in democratic countries.

Hypothesis

The first hypothesis of this study is that deliberation, whether it is in a democratic context or not, is associated with lower levels of CO₂ emissions.

H₁ Higher levels of deliberation are associated with lower levels of CO₂ emissions.

The second hypothesis is that deliberation needs a democratic context to lower the emissions of CO₂.

H₂ Higher levels of deliberation are only associated with lower levels of CO₂ emissions in democratic countries.

Given the stated research question and hypotheses there are mainly three possible patterns of the relationship. The first one is that deliberation really is connected to lower CO₂ emissions. Second, deliberation is associated with higher emissions of CO₂. Third, deliberation is not related to these emissions at all. These conclusions will be made by reviewing the output from regression analysis. By doing this it is possible to see potential relationships, whether these are negative or positive and if they are statistically significant.

Additional application

The main focus of this study is to study possible relationships between deliberation and CO₂ emissions, but the aim is of course to say as much as possible in a wider environmental perspective. Irrespectively of the conclusion whether deliberation is related to levels of CO₂ emissions or not one must wonder if the same relationship can be found between deliberation and other environmental performance indicators. It is reasonable to think that above described elements of deliberation not only relates to CO₂ emissions. It is possible to argue that CO₂ emissions is a proxy for, or a case of environmental degradation in general. In

a situation where a relationship between deliberation and CO² emissions can be supported, would this relationship also be found between deliberation and other indicators for environmental performance such as air quality, deforestation and management of fisheries? Of course, this is not something that can be assumed. However, if one study the previous research presented above on deliberation and its impact on the environment the main point is that the will of the people is to conserve the environment as they will gain from it. If the policy makers meet with civil society and corporations the output will be better environmental performance (Smith, 2003, p. 76, Lidskog and Elander, 2007, pp. 81-89, Li and Reuveny, 2006). Therefore, if the result of this study find support for the hypothesis one could imagine that the results also should be applicable to other indicators of environmental performance. It would thus be interesting to see further research on the matter.

Method

The study will be a quantitative statistical study. By using data regarding deliberation and emissions of CO₂ statistical analysis can be conducted and answer the question whether deliberation might relate to the emissions of CO₂.

Statistical design

As the processed material is immense a quantitative statistical design using is a logical choice. Other methods would require a lot more work to review the material. As mentioned above several scholars have theorised about deliberation and its impact on environmental indicators. However, previous studies have focused on qualitative design which makes it hard to generalise the results to other cases. Quantitative studies can to a higher degree see patterns that can be generalised to a bigger population. Important to say is that the result of this study probably would be interesting to follow up with qualitative research to examine the causal effects further.

The statistical method of choice is *Ordinary least square regression* (OLS). This means that we can calculate the slope of a regression line which minimises the errors to all the points of measurement. This will yield a coefficient for the chosen variables (Berry and Feldman, 1985). The result will be interpreted and analysed based on regression outputs in the result section. By reviewing coefficients of the different variables, we can see if there is a positive or negative relationship and whether it is statistically significant or not. Conclusions will also be made from the value of the adjusted R square. R square shows how much of the variation in the dependent variable that can be explained by the model. At the same time as it is tempting to use as many control variables as possible to get as high R square as possible it can be misleading. When we have so much data available there will always be some variable with a high correlation. High correlation does however not guarantee a causal relation which creates a need for adjustments when more variables are being added. Adjusted R squared accounts for the number of variables being used giving us a more cautious prediction (Berry and Feldman, 1985). Therefore, adjusted R square is presented in the tables.

Another important value is the p- value. The p- value helps us answers whether a relationship could be coincidental (Esaiasson et al., 2017, p. 394). The p- value for a variable to be statistically significant in this study is 0.05. If a coefficient has a p-value higher than 0.05 it means that we cannot reject the null hypothesis. The null hypothesis is saying that an

independent variable is not related to the dependent variable, in this case CO₂ emissions per capita. The fact that there is a hard line for what is considered as statistically significant does however not mean that values close to this limit are not relevant to mention.

Standard error is a measurement of how far from the true value the measured value can be. This generates an interval which the value of a variable can be within. When using OLS we assume that the variance of the error is constant. If we cannot assume that we are dealing with constant variance of the error, we have a problem with heteroskedasticity. To account for this potential skewness one can use robust standard error instead of standard error creating a more cautious prediction (RobertL.Kaufman, 2013). There are reasons to suspect heteroskedasticity when there is potential of a systematic differences in the error variance in the model (Berry and Feldman, 1985). As an example, we can look at the previously mentioned EKC. Countries with small GDP per capita will not have funds to invest in environmental efforts as they need to use their money on more urgent matters. It is reasonable to imagine that the variance of the error in the group of the poorest countries in the world is quite small as they do not really have a choice what to spend their money on. If we then look at rich countries, they have more funds to invest in environmental efforts and furthermore it is likely that the error will be larger in this group as they have opportunity to use their funds differently. Thus, there is reasons to suspect systematic variance of the error.

Important to note is that it is not possible to draw conclusions about the causal mechanism, which is one of the bigger drawbacks of quantitative statistical designs. Even if it is possible to conclude high correlation between two variables, we cannot say for certain which one effects the other. This must be done true a theoretical framework to see what scenario is the most likely (Esaiasson et al., 2017). In this case we can imagine finding a correlation between countries with deliberative aspects in the society and lower CO₂ emissions compared to countries with lower grades of deliberation supporting the hypothesis. This does not mean that we can conclude that more deliberation will lead to lower emissions of CO₂. It only means that those variables are connected. It is just as likely from a statistical point of view that lower CO₂ emissions tend to lead to more deliberation. Concluding the causal mechanisms behind relationships between different variables is an area more suitable for qualitative studies where deeper analysis of fewer cases can be conducted (Esaiasson et al., 2017).

One can argue that the aim of the study also could be reached using a qualitative approach, for example a most similar design study could be an option. The goal with that kind

of study could also be to isolate the effect of the independent variable. In that case one would choose a few countries with as similar contexts as possible but with different values on the independent variable. Thus, they would have different degrees of deliberation. By this type of study, it would be possible to see if countries with more deliberation would have lower emissions of CO₂ or not. The advantage of this type of study would be that one can examine how deliberation is practised in the different countries which is not possible in the same way in a statistical design¹. The disadvantage with a qualitative design is however that it is harder to generalise the results beyond the chosen sample (Esaiasson et al., 2017).

Variables

The independent variable, deliberation is operationalised by the *Deliberative component index* from the V-Dem dataset. Possible values are ranging from 0 to 1, higher values meaning more deliberative components (Coppedge et al., 2018a). The advantage of using V-Dem is their method of merging different factors that affect democracy. The indicators are a blend of factual information (laws) and judgements of the governance of the state by country experts. The question that has been answered for making this variable is: “*To what extent is the deliberative principle of democracy achieved?*”. The variable is an aggregation of several variables from V- Dem including reasoned justification, common good justification, respect for counterarguments, range of consultation and engaged society (Coppedge et al., 2018b). By using this aggregated variable, it is possible to capture how policymakers try to justify their policy, respect other points of view and arguments and whether they consult the civil society when designing new policy (Coppedge et al., 2018b).

The dependent variable is operationalised by the variable CO₂ emissions per capita from the QoG dataset. In this case CO₂ emissions are defined as emissions of CO₂ from burning of fossil fuels and production of cement. The emissions are measured in metric tons (Teorell et al., 2018). QoG construct their dataset of information from several sources. The information on CO₂ emissions is collected from the World Bank (2016). The variable for CO₂ emissions per capita is log- transformed. This is done to account for non- linear relationships between the variables (Benoit, 2011). One assumption that is made when using OLS is that we are dealing with linear relationships which means that we have to account for non- linear ones

¹ A more extensive discussion about the variables will follow under *Potential problems with the variables* below

(Berry and Feldman, 1985). A non-linear relationship is potentially the case of deliberation and CO₂ emissions per capita. One can for example imagine that an increase of deliberation from low levels of deliberation would have a stronger association with CO₂ emissions per capita than increases from higher levels of deliberation would.

To test H_2 I will present a regression analysis where I only include the highest scoring countries in *Electoral Democracy Index*. This is equal to 25% of the sample. If it is not possible to see any relationship in some of the most democratic countries in the world, we cannot reject the second null hypothesis, that democracy does not influence the prospect for deliberation to associate with lower CO₂ emissions per capita.

Control variables

To minimise the risk of drawing conclusions out of spurious relationship it is vital to examine the effect of control variables. With statistical design it is always the risk of missing out on the true explaining factors and via control variables we can isolate the effect of our independent variable. It is always the possibility that high correlation is caused by different underlying factors. At the same time as it is essential to control for enough variables so that we can isolate the effect of deliberation it is important to be parsimonious. It is only desirable to control for variables that are relevant in this case to avoid overspecification of the model. It is only relevant to control for variables that via previous research can be assumed to have an impact on the dependent and independent variable. It is therefore required to find research that supports the idea that possible control variables are related to the dependent and independent variable (Esaiasson et al., 2017, p. 99). The chosen control variables in this study are: electoral democracy, GDP per capita, corruption, oil production, latitude of countries capital, whether a country have signed the Kyoto protocol or not and CO₂ emissions from 1990, which are all assumed to affect the dependent variable CO₂ emissions.

The literature on how economic development is associated with different indicators of environmental performance is extensive. Scholars have argued that economic development makes production societies shift to service societies which are associated with lower CO₂ emissions. Further on a high economic development is claimed to be connected with green and clean technology (Grossman and Krueger, 1995). These results have however been criticised and several scholars have shown that economic development instead is associated with higher emissions of CO₂ per capita (Galeotti et al., 2006, Lægreid, 2017). As research on

the potential relationship between GDP per capita and CO₂ emissions per capita is ambiguous. GDP per capita becomes a relevant control variable. The data regarding GDP is based on the predicted value of GDP per capita in 2005. GDP per capita is measured in constant dollars and is collected from Gleditsch (2002) by Teorell et al. (2018). The data on GDP per capita is log-transformed to account for a non-linear relationship (Benoit, 2011) which is the case with GDP per capita and CO₂ emissions. As described the EKC indicates that economic development relates to CO₂ emissions differently depending on the present GDP per capita. A poor country will increase their emissions as its economy grows but a rich country can potentially lower their emissions as its economy grows (Grossman and Krueger, 1995).

As the variable for deliberation include both democratic and authoritarian states it becomes relevant to control for the effect of deliberation in democracies. As mentioned above Li and Reuveny (2006) argue that democracy works as a force for better environmental performance. They mean that the public's will is only truly considered in a liberal democratic context. It is logical to say that the people will gain from better environmental performance and democracies will therefore perform better (Li and Reuveny, 2006). Therefore, it becomes interesting to examine whether it is democracy rather than deliberation itself that relates to the emissions of CO₂. One can argue that the relationship between deliberation and CO₂ emissions only becomes apparent after a country has reached a certain threshold in their democratic development. In an authoritarian context one can imagine that the ones in control allow certain deliberative elements where members from the civil society are consulted without the intention of truly listening to them. Without the democratic mechanisms for accountability the hypothesis saying that deliberation is associated with lower CO₂ may not work. This would then possibly create a scenario where a country can receive a high score for deliberation but at the same time generate high emissions of CO₂. Therefore, the variable for *Electoral democracy index* from V-Dem is used to operationalise deliberation in democratic countries to isolate the effect of deliberation. The variable is based on the question: "*To what extent is the ideal of electoral democracy in its fullest sense achieved?*" (Coppedge et al., 2018b).

Another factor relevant for control is corruption. Several scholars find that the level of corruption is a key component for explaining a countries levels of CO₂ emissions. Cole (2007, p. 644) finds that corruption has a positive relation with CO₂ emissions. However, he also finds that in low income- contexts corruption tends to have a positive in direct association with CO₂ as corruption tends to relate to lower income which relates to lower production and

therefore lower emissions. Welsch (2004, pp. 681-684) also finds that corruption can be associated with increasing and decreasing emissions of CO₂. However, he suggests that the overall relation between corruption and CO₂ emissions is positive. This makes levels of corruption a relevant variable for control. A modern liberal democracy can score high points for deliberation and have low emissions but at the same time have low levels of corruption. In this scenario one can argue that it is in fact the corruption, or the lack of it, that is the driving force behind the decreasing emissions. At the opposite end of the spectrum one can imagine that a country scores high on deliberation, generates high emissions of CO₂ at the same time as the corruption is widespread. In this situation one can argue that corruption makes state officials only consulting certain actors from the civil society or corporations, those who pay the most. Corruption will therefore be used for control. Corruption is operationalised by the *Corruption Perception Index* (CPI) which defines corruption as “*the abuse of public office for private gain*” and the data is taken from Transparency International (2017) via the dataset from QoG. (Teorell et al., 2018). Important to note is that a higher score of CPI means less corruption.

I also include population density as a control variable. Population density can be seen both as a positive and a negative factor for environmental performance. On the one hand an increasing degree of population density (generally) lead to stress on the environment via higher demand on water, space and transportation. At the same time, when people live close to each other the use of resources may also be more efficient. It is easier to provide water, food and effective transportation when people live in urbanised areas. Furthermore the use of land becomes more effective per capita in cities compared to rural areas (Arvin and Lew, 2011, p. 1154). Both scenarios are likely which makes population density an interesting control variable. As the relationship between population density and CO₂ emissions is potentially non-linear as described above population density is log-transformed in line with (Benoit, 2011).

Emissions of CO₂ is closely connected with the consumption and production of oil. Therefore, it is interesting to control for the effect of countries oil production. As earlier said one can imagine a scenario where policy makers to a high degree selectively consult civil society and corporations. Controlling for oil production would then capture the possible effect of political pressure applied from the oil industry. One can also argue that this variable would work as a proxy for countries dependency on oil and probably other fossil fuels (Povitkina, 2018, p. 419). Oil production is measured in metric tons and is obtained from Ross and Mahdavi

(2015) via QoG (Teorell and Svensson., 2018). The variable is divided with one million for easier interpretation.

I also include the latitude of each country's capital from La Porta et al. (1999) via QoG (Teorell and Svensson., 2018) This is done to account for geographical heterogeneity in the sample; differences between the countries that cannot be observed via the datasets. For example, one can imagine that the climate of the country is related to their emissions of CO₂. Countries with beneficial climate for farming would have had an advantage in expanding their economy and production and therefore potentially emitting more CO₂ (La Porta et al., 1999, pp. 239, 244).

Another variable relevant for control is whether a country has signed the Kyoto protocol. It is likely that countries committed to the Kyoto protocol should emit less CO₂ compared to those who are not. Furthermore, one can argue that international agreements such as the Kyoto protocol are a kind of deliberation. One can therefore imagine that countries with a higher score for deliberation are more likely to have signed the Kyoto protocol.

The last control variable is the levels of CO₂ emissions from 1990. The data on these emissions is also measured in metric tons and obtained from World Bank (2016) via Teorell et al. (2018). The levels of emissions from 1990 will of course relate to how extensive the emissions are 2014, when the latest data is available. Including these older emissions as a control variable captures the different variations in management of emissions that occur within the different countries since 1990. The emissions from 1990 also helps to explain the changes of emissions before 1990. These numbers on CO₂ emissions are also log- transformed for the same reasons as the emissions from 2014.

Test of robustness

There are other ways of measuring democracy. The dataset from QoG contain a variable from *Freedom House* for classifying a country as free, partly free and not free (2018). One can argue that free and partly free countries should be considered as democracies (Teorell et al., 2018). Even though one must be humble to the fact that there are several ways of measuring democracy I argue that it is more relevant to use an index to measure democracy as *Electoral democracy index* to outline patterns. However, to see whether the different types of measurements results in different outputs an additional model will be available in the appendix where the variable for freedom from *Freedom House* will be used instead of electoral

democracy from V-Dem. The variable is recoded as dummy variable, democracy or no democracy. This regressions analysis will also include *deliberative democracy index* from V-Dem instead of *deliberative component index* (Coppedge et al., 2018b). The variables for deliberation and democracy can be problematic which makes it interesting to see if other operationalisations give a different output. This will work as a test of robustness of the model.

Data on CO₂ emissions from QoG is available up to 2014. To test if the results in the first analysis is robust, I use changes in emissions over the years as dependent variable in a separate model which is available in the appendix. To see the changes, I use the levels of emissions from 2014 and subtract them from the levels of emissions from 1994 (twenty years before the most recent figures). This data is then merged with data on deliberation. If the results from the different analysis differ there is reason to question the robustness of the model.

Potential problems with the variables

It is important to be aware of the limitations of the variables. The chosen variables must represent what is claimed to be examined. In this case CO₂ emissions are represented by the World Banks definition of those emissions and deliberation is represented by V-Dems *Deliberative Component Index*. There are of course problems with both operationalisations. To measure emissions of CO₂ is less controversial than measuring indicators of democracy. However, it is important to point out that for this study emissions are defined as emissions from burning of fossil fuels and production of cement within a country. This means that this study does not take note for outsourcing where production is mowed from richer countries to poorer ones. Thus, a population in a country can by consumption be a driving factor of emissions in other countries.

One can argue that this way of measuring does not reflect reality. While this is important to think of it is also a valid point that a state to the full extent, or at least for the most part, only can control the laws within the country. Country x can create strict environmental laws shifting an industrial society to a service society. On the contrary country x cannot write environmental laws in country y. It therefore makes sense to measure the emissions within a country (Brülde, 2015, .pp 84-85). What is measured here is therefore the emissions of the state and not the carbon footprint of its inhabitants. That would however be an interesting approach for future research.

Also, to be noted regarding the dependent variable is that the measurements are from 2014. Environmental politics is a dynamic area and one cannot ignore the possibility that important changes has occurred since the measurements were made. One example is the *Paris agreement* which entered into force October fifth, 2016.² One can imagine that the prospects of deliberation, or any of the control variables, for being associated to the emissions of CO₂ has changed since then. One can also imagine a scenario where the increasing number of warnings of climate change and the increasing pile of evidence that climate change is anthropocentric that has been presented since 2014³ may influence the public's interest in advocating and tolerating stricter environmental regulations.

The independent variable of this study is potentially more problematic. Data on this variable is taken from the eight version of V-Dems dataset on indicators of democracy (Coppedge et al., 2018b). It is important to stress that one can never be certain that the match between what we call deliberation and the data is one hundred percent. Why does one country get 0.3 and another country 0.4 on a scale of deliberation? Another problem is that one can imagine that the authorities arrange deliberative forums, but they do not really consider what the civil society says. The same potential problem can be found in one of the control variables; electoral democracy also from V-Dem (Coppedge et al., 2018b). Defining and measure democracy is hard, and the results needs to be interpreted carefully. As with deliberation one can wonder what make some countries score 1.3 and others 1.4. There is also the possibility that data from some countries are better than others. Furthermore, it can be problematic to compare different countries form of governing as every country's situation is somewhat unique. Both variables are collected from V-Dem and the problems with measuring democratic indicators are highly prioritised by the institute, and their method combining expert's judgments with constitutional records⁴ is to be considered one of the more precise tools to measure democratic indicators today.

Measuring corruption could also be problematic as it in some way will rely on judgments. CPI is constructed by both surveys and expert judgements and is produced by Transparency International (2015). Different people have different perception of corruption. One can argue that people living in a low corrupt context has a lower acceptance rate for

² <https://unfccc.int/process/the-paris-agreement/status-of-ratification>. Accessed 2018-11-26

³ <https://unfccc.int/news/scientists-warn-against-economic-disruption-from-climate-change>. Accessed 2018-11-26

⁴This information is collected from <https://www.v-dem.net/en/about/> 2018-11-21. More information about V-Dem and their different datasets can be found on their website <https://www.v-dem.net/en/>

corruption as they are used to little or no corruption at all. At the same time, one can imagine that people that have lived their whole lives in countries with high corruption has a higher acceptance rate for the same reason, high levels of corruption is all they know and therefore has another perception of it. I would however argue that CPI is a relevant measure to see trends of corruption. Benjamin Olken also points out that corrupt government officials in general are good at hiding corruption because it is illegal. This possibly creates a situation where people's perception of how corrupt a country really is does not necessarily reflect the reality because they cannot see the corruption. Olken's findings suggest that several variables effect a person's perception of corruption. Amongst them is education and age which not only effect the perception of corruption but also the likeliness of reporting it. Even if his findings suggest that there are multiple variables that do effect people's perception of corruption he concludes that the effect is rather limited (Olken, 2009).

Measuring social phenomena and interpreting social science must always be done with a critical mindset. We can never be completely sure that our methods and data are the best possible. One must always be humble for the possibility that relevant control variables are being overlooked or that all the chosen control variables are relevant. Furthermore, there are always limitations in terms of available data, time and other factors. However, with the limitations of quantitative statistical design it should be considered possible to see reliable results by the used methodology and material.

Results

The result section is divided into two parts: results of the analysis and then a discussion of the robustness and possibilities to generalise the results. First, I will present and discuss Table 1 which is a bivariate analysis of the dependent and independent variable. Second, I discuss Table 2 which shows the results from the multivariate analysis with the control variables except CO₂ emissions per capita from 1990. Thirdly I present and discuss Table 3 which is the result of the analysis of the most democratic countries in the world according to Electoral Democracy index. Forth, I present Table 4 which contains a regression analysis of CO₂ emissions per capita and all control variables including emissions of CO₂ from 1990. In table 4 we can see how the significance of the effect of the different variables changes together with each other.

H_1 is not supported by the model in Table 1. Instead the results indicate that deliberation is related to higher per capita emissions of CO₂. The coefficient is in addition statistically significant.

Table 1. Bivariate regression analysis with CO₂ emissions per capita from 2014 as the dependent variable.

	CO2 emissions per capita (2014)
Deliberation	1.504** (0.5118)
Intercept	-0.381 (0.386)
<i>N</i>	171
adj. <i>R</i> ²	0.051

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The analysis of Table 2 indicates as Table 1 a positive relationship between deliberation and CO₂ emissions per capita saying that deliberation is associated to more per capita emissions of CO₂. This relationship is however not statistically significant. We can therefore not reject the null hypothesis that deliberation does not relate to CO₂ emission. Instead it is economic development, whether a country has signed the Kyoto protocol and the latitude of the capitals that are statistically significant. Economic development is statistically significant with a positive coefficient saying that higher economic development is associated with higher

emissions. This is in line with Lægreid (2017) and Galeotti et al. (2006) that argued that there is a lack of empirical evidence for theories like EKC claiming that economic development will yield better environmental performance.

The coefficient for signing of the Kyoto protocol is negative which is in line with the made assumption that those countries are more committed to preventing climate change than others. Latitude of the capitals have a statistically significant effect. Thus, there are geographical factors that could be related to the emissions of CO₂.

Table 2 implies that democracies emit more than others. This relationship is however not statistically significant. The coefficient for CPI is negative indicating that less corruption is associated with less CO₂ emissions per capita which is expected given previous research. Remember that a higher score of CPI means less corruption. CPI is however not statistically significant. One can still imagine that corruption is associated with emissions of CO₂. One can of course argue that different operationalisations of corruption could yield different outputs. In this study corruption was operationalised with CPI which as discussed in the methods section could be have a downside. As CPI is very broad in its application one can imagine that it misses special nuances of corruption that only relates to CO₂. For example, there is the possibility that a country in general does not have problems with corruption though its environmental authorities and politicians dealing with environmental policy are corrupt.

Oil production does not seem to have any relationship with per capita emission of CO₂ according to Table 2 as the coefficient is not statistically significant. Oil dependent countries can therefore not be assumed to be associated with higher emissions of CO₂. Population density does not have any statistically significant association with per capita emission of CO₂ according to Table 2. The population density coefficient is interesting as it could be interpreted as it highlights the two ways of how population density can relate to different emissions of CO₂ emissions, which was described in the literature by Arvin and Lew (2011). One could therefore argue that population density has reached a point where the cons are being outplayed by effectiveness in terms of water- and food supply and transportation that comes with increasing density of population, even if this relationship as noted is not statistically significant.

Table 2. Regression analysis with CO₂ emissions from 2014 as dependent variable.

	CO2 emissions per capita (2014)
Deliberation	0.437 (0.4781)
Democracy	0.00809 (0.5124)
GDP/capita	1.070*** (0.1103)
Corruption	-0.00567 (0.0063)
Oil production	0.0022 (0.0011)
Population density	-0.0283 (0.0531)
Latitude of capital	1.197* (0.5121)
Kyoto protocol	-0.717** (0.2173)
Intercept	-8.863*** (0.7295)
<i>N</i>	131
adj. <i>R</i> ²	0.798

Robust standard errors in in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3 shows the results of the regression analysis where only the highest scoring countries in *Electoral Democracy Index* are included. This is equal to 25% of the sample. The results indicate that there is no association between deliberation and CO₂ emissions in the most democratic countries in the world either. Therefore, the results do not support H_2 . Thus, we should not reject the second null hypothesis saying that deliberation does not have a stronger association with lower emissions of CO₂ per capita in more democratic contexts. The model in Table 3 also shows that signing the Kyoto protocol and the latitude of capitals does not relates to CO₂ emissions per capita in more democratic countries. The effect of GDP per capita is also less statistically significant compared to Table 2. Instead it seems that oil production is related to emissions of CO₂ per capita in more democratic countries as its coefficient is statistically

significant. Table 3 illustrates that the effect of different variables can change after certain thresholds.

Table 3. Multivariate regression with CO₂ emissions from 2014 as dependent variable. Only the highest scoring countries in Electoral Democracy Index are included.*

	CO ₂ emissions per capita (2014)
Deliberation	-0.152 (1.0087)
Democracy	-5.131 (1.7631)
GDP/capita	0.485* (0.2853)
Corruption	0.00672 (0.0047)
Oil production	0.00303** (0.0009)
Population density	-0.0456 (0.0493)
Latitude of capital	-0.155 (0.8426)
Kyoto protocol	0.454 (0.3189)
Intercept	0.812 (2.6524)
<i>N</i>	33

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

* This is equals 25% of the sample

By examining Table 4 we can see that H_1 is not supported when emissions from 1990 are included either. The initial analysis of electoral democracy indicates a positive relationship which is statistically significant, saying that consolidated democracies emit more CO₂ than other countries. This relationship is though not statistically significant when controlled for. Economic development has a statistically significant effect both with and without the other control variables. The coefficient is however considerably smaller when controlled for. Without the other control variables, the coefficient for signing the Kyoto

protocol is positive and statistically significant implying that signing the Kyoto protocol is related to higher emissions of CO₂ per capita, and thus the opposite of what was expected. However, when controlled for, the coefficient becomes negative and remaining statistically significant as in Table 2. Corruption has a positive statistically significant effect when it is analysed without the other control variables. As a higher score of CPI means less corruption these results imply that less corruption relates to more CO₂ emissions per capita. When controlled for the effect of corruption is, as in Table 2, however not statistically significant. The coefficient for the levels of emissions per capita from 1990 is statistically significant and positive both with and without the other control variables. The coefficient is saying that an increase of CO₂ emissions 1990 per capita is related to an increase of CO₂ emissions 2014 as the relationship is positive. This would suggest that those countries with higher emissions of CO₂ 1990 per capita still are the ones who emit the most today. However, the coefficient is smaller 2014 compared to 1990 implying that the increase of emissions has slowed down.

When using all control variables, the model explains circa 90 percent of the variation in the dependent variable (CO₂ emissions per capita) which can be seen by looking at the value of the adjusted R square. Important to note is that the emissions from 1990 constitute a substantial part of the value of the adjusted square. The CO₂ emissions from 1990 alone has an adjusted square value of circa 86 percent.

Table 4. CO₂ emissions per capita from 2014 as the dependent variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)	CO ₂ /capita (2014)
Deliberation	1.504** (0.5126)									0.148 (0.3194)
Democracy		1.982*** (0.5126)								-0.0570 (0.3212)
Eco. dev.			1.023*** (0.0545)							0.436** (0.1374)
Corruption				0.0449*** (0.0043)						-0.0024 (0.0042)
Oil prod.					0.0066*** (0.0011)					0.0007 (0.0007)
Pop. den.						0.0448 (0.0858)				0.0015 (0.0333)
Lat. cap.							4.466*** (0.5041)			0.270 (0.3908)
Kyoto prot.								1.668*** (0.1519)		-0.654*** (0.1481)
CO ₂ /capita (1990)									0.803*** (0.036)	0.618*** (0.0805)
Intercept	-0.381 (0.386)	-0.530 (0.3548)	-8.226*** (0.4811)	-1.296*** (0.2433)	0.489*** (0.1212)	0.465 (0.0856)	-0.564** (0.2039)	0.233 (0.1356)	0.418*** (0.0504)	-3.254*** (0.9524)
N	171	167	189	180	172	190	150	171	158	130
adj. R ²	0.051	0.094	0.752	0.322	0.085	-0.004	0.272	0.196	0.857	0.912

Robust standard errors statistics in parentheses
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The result from the regression analysis using different operationalisations of deliberation and democracy, which can be seen in the appendix, does not differ much from the one seen in Table 2. Neither deliberation or democracy relates to CO₂ emission per capita with these operationalisations either. These results indicate that the model in Table 2 is robust. However, passing a robustness test does not mean that we can conclude that the model is robust, it is only an indication. The regression analysis using changes in CO₂ emissions between 2014 and 1994 as dependent variable, which can be seen in the appendix however indicates that only

corruption has a statistically significant effect which was not the case in Table 2. This could potentially indicate a problem with the model in Table 2. One would expect that if a variable is related to the levels it should be related to the changes even if we of course cannot assume this.

The overall results from the regression analysis above does not support H_1 or H_2 and we cannot reject the null hypotheses. By looking at the regressions analysis we cannot see any statistical assured connection between variations of CO₂ emissions and deliberation. One can argue that this in some way is in line with previous research in that matter that different scholars have reached different conclusions. These non-results are also important. However, we must consider if these results reflect the reality or if it can be something wrong with the model. I would argue that deliberative component index is an appropriate choice of variable to represent deliberation. This because it measures different components and creates a scale instead of binary variables. It captures various types of governance. One can of course argue that the cases that are interesting to examine are the one where the interests of the public and civil society are truly considered and discussed in deliberative forums. One can therefore imagine that deliberation would have an effect in those countries which are above the average score in deliberative component index. This could be an interesting starting point for future research. One could also imagine that other operationalisation of CO₂ emissions could yield a different output. As this study defined emissions as those caused by production within a country, emissions generated from imported goods are not included. As a countries consumption of imported goods can cause more emissions than those that are not, one can argue that a broader definition of emissions would be more realistic.

While we cannot say that deliberation in general is related to lower emissions it is still possible that this is the case in some contexts that I have not examined in this study. The model in Table 2 and Table 4 do explain a lot of the variation in emissions. However, there is still more variation that is unexplained which means that there are several other factors that are important.

Conclusions

The aim of this study was to examine a potential relationship between deliberation and countries efforts to decrease their contributions to climate change. This was done by studying whether deliberation is associated with lower levels of CO₂ emissions. By using a statistical design, no relationship in either positive or negative direction was discovered. Instead the results indicate that it is economic development, whether the country has signed the Kyoto protocol or not, a country's geographical location and earlier levels of emissions that relates to the CO₂ emissions.

Previous research about democratic mechanisms such as deliberation's potential association with improved environmental performance such as lower emissions of CO₂ is as noted ambiguous (Smith, 2003, Lidskog and Elander, 2007, Eckersley, 2004, Scruggs, 2009). As the result in this study does not imply any relationship between deliberation and lower CO₂ emissions one can argue that advocates for deliberation should admit that the empirical facts are not in their favour. The empirics presented above are tilting towards the null hypothesis saying that deliberation does not relate to lower emissions of CO₂ in either more or less democratic countries. Would the result therefore support an idea that authoritarian rule is better than others in preventing climate change? I would be hesitant to this conclusion. One can of course argue that a green authoritarian state that puts the environment first would be the most environmentally friendly state. As we cannot assume that the public would use deliberation to advocate environmentalism we cannot assume that authoritarian rulers would either. At the same time, one can argue that there is still hope for deliberation as the results does not indicate a negative relationship either. I would therefore say that these results are in line with previous ambiguous research. There is still room for refinement of theories claiming that deliberation will yield lower CO₂ emissions. As there is unexplained variation left there are certainly a lot of important factors to examine.

There is also the possibility of interaction between variables. Even though that none of them indicated to be related to CO₂ emissions here there is still the possibility of interaction effects between deliberation and democracy. They may not be significant by themselves, but possibly when interacting. One can think that deliberation in some contexts still is associated with lower emissions and that this effect will be more distinguished in democracies. It is also possible that democracy and deliberation could play a more central role in tackling environmental degradation in the future. As the effects of climate change becomes

more apparent one can imagine that the demand for environmental regulations will increase, potentially via deliberation. Furthermore, one can imagine that increasing awareness of environmental degradation and climate change also should be followed by public interest in ambitious environmental policy. I would therefore find it likely, as it is in the public's interest, that democratic and deliberative institutions will relate to better environmental performance in the future. This would be interesting to see in coming research that should investigate whether there are contexts where deliberation could be a method for lowering emissions of CO₂ and if the prospects for this change over time. This is interesting since a lot of the research reach different conclusions.

It would furthermore be interesting to see if the non- relationship that was found in this study could be applicable to other indicators of environmental performance such as air quality, deforestation, eutrophication and biodiversity. One can argue that a potential relationship between deliberation and CO₂ emissions also should be found between deliberation and other environmental indicators. This as previous research argued for a relationship between deliberation and environmental performance in general. However, the results in this study say otherwise. The gap between theory and the empirics therefore makes it problematic to apply the results regarding CO₂ to other indicators of environmental performance. It is of course possible that there is a negative relationship between deliberation and for example deforestation or air quality but not for CO₂ emissions. It is possible that the case of CO₂ has particular elements that make it stand out from other environmental performance indicators. For example, emissions of CO₂ are more closely linked to profitable production industry than for example deforestation. Applying the results in this study to other indicators of environmental performance would imply that the public and civil society would not use their influence to advocate for example cleaner air, less deforestation, less eutrophication, enhanced biodiversity and others. Of course, every individual case (country) has its own unique situation and context and the same goes with different environmental performance indicators. If a countries economy is highly dependent on logging industry one can imagine that deliberation would not lead to less deforestation, potentially more, while deliberation would lead to decreasing emissions of CO₂ if the economy in this particular country is not dependent of emission intensive industry. Applying the results of this study to other cases of environmental performance indicators would therefore needed to be done carefully.

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Appendix A - Analysis with alternative operationalisations

Regressions analysis with the changes in CO₂ emissions between 2014 and 1994 as the dependent variable.

	(1) CO ₂ emissions (20 years)
Deliberation	-0.205 (1.397357)
Democracy	-2.203 (2.624025)
GDP/capita	-0.516 (0.3235091)
Corruption	0.056* (0.0312677)
Oil production	-0.001 (0.0050551)
Population density	0.159 (0.1768346)
Latitude of capitals	0.162 (2.280537)
Kyoto protocol	1.615 (0.9451554)
CO ² emission (1990)	0.0163 (0.3538988)
Intercept	2.166 (0. 2.196804)
<i>N</i>	129
adj. <i>R</i> ²	0.069

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regression analysis with CO₂ emissions from 2014 as the dependent variable. Deliberation is operationalised via Deliberative Democracy index. Democracy is operationalised via a dummy variable from Freedom House.

	(1) CO ₂ emissions/capita (2014)
Deliberation	-0.194 (0.2449814)
Democracy	0.185 (0.1318471)
GDP/capita	0.445** (0.137502)
Corruption	-0.00195 (0.0044656)
Oil production	0.000738 (0.0007412)
Population density	-0.00661 (0.0321149)
Latitude of capitals	0.291 (0.3835935)
Kyoto protocol	-0.656*** (0.1385191)
CO ₂ emissions/capita (1990)	0.613*** (0.0811384)
Intercept	-3.311*** (0.9678982)
<i>N</i>	130
adj. <i>R</i> ²	0.914

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix B – Descriptive statistics

CO ₂ emissions per capita 2014					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
co2_14_log	191	.6426842	1.503397	-3.112595	3.816024

Deliberative Component Index					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
v2xdl_delib	172	.6557801	.2459149	.0211708	.9861115

Electoral Democracy Index					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
vdem_polya~y	168	.551288	.2442211	.0264776	.924651

GDP per capita					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
gle_rgdpclog	192	8.726192	1.284245	5.655817	11.46894

CPI					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
ti_cpi	181	42.82476	19.5057	8	92

Oil production					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
oil_miljon	8,814	18.60661	62.13455	0	616

Population density					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
wdi_popden~g	192	4.327035	1.413843	.6323679	9.855662

Latitude of capitals					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
lp_lat_abst	10,829	.2836215	.1889851	0	.7222222

Kyoto protocol					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
kyoto_force	14,770	.0298578	.1702007	0	1

CO ₂ emission per capita 1990					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
co2_90_log	160	.1674531	1.76809	-3.729363	3.330748

Deliberative Democracy Index					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
vdem_delib~m	168	.4085341	.2630838	.0025476	.9121205

Dummy variable for democracy					
Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
dum_demokr~i	194	.7371134	.4413403	0	1

Appendix C – Variables from V-Dem

Deliberative component index

Question: To what extent is the deliberative principle of democracy achieved?

Components:

Engaged society

Question: When important policy changes are being considered, how wide and how independent are public deliberations?

Clarification: This question refers to deliberation as manifested in discussion, debate, and other public forums such as popular media.

Responses:

0: Public deliberation is never, or almost never allowed.

1: Some limited public deliberations are allowed but the public below the elite levels is almost always either unaware of major policy debates or unable to take part in them.

2: Public deliberation is not repressed but nevertheless infrequent and non-elite actors are typically controlled and/or constrained by the elites.

3: Public deliberation is actively encouraged and some autonomous non-elite groups participate, but it is confined to a small slice of specialized groups that tends to be the same across issue-areas.

4: Public deliberation is actively encouraged and a relatively broad segment of non-elite groups often participate and vary with different issue-areas.

5: Large numbers of non-elite groups as well as ordinary people tend to discuss major policies among themselves, in the media, in associations or neighborhoods, or in the streets. Grass-roots deliberation is common and unconstrained.

Reasoned justification

Question: When important policy changes are being considered, *i.e.* before a decision has been made, to what extent do political elites give public and reasoned justifications for their positions?

Responses:

0: No justification. Elites almost always only dictate that something should or should not be done, but no reasoning about justification is given. For example, "We must cut spending."

1: Inferior justification. Elites tend to give reasons why someone should or should not be for doing or not doing something, but the reasons tend to be illogical or false, although they may appeal to many voters. For example, "We must cut spending. The state is inefficient." [The inference is incomplete because addressing inefficiencies would not necessarily reduce spending and it might undermine essential services.]

2: Qualified justification. Elites tend to offer a single simple reason justifying why the proposed policies contribute to or detract from an outcome. For example, "We must cut spending because taxpayers cannot afford to pay for current programs."

3: Sophisticated justification. Elites tend to offer more than one or more complex, nuanced and complete justification. For example, "We must cut spending because taxpayers cannot afford to pay for current government programs. Raising taxes would hurt economic growth, and deficit spending would lead to inflation."

Common good

Question: When important policy changes are being considered, to what extent do political elites justify their positions in terms of the common good?

Responses:

0: Little or no justification in terms of the common good is usually offered.

1: Specific business, geographic, group, party, or constituency interests are for the most part offered as justifications.

2: Justifications are for the most part a mix of specific interests and the common good and it is impossible to say which justification is more common than the other.

3: Justifications are based on a mixture of references to constituency/party/group interests and on appeals to the common good.

4: Justifications are for the most part almost always based on explicit statements of the common good for society, understood either as the greatest good for the greatest number or as helping 144 the least advantaged in a society.

Respect counterarguments

Question: When important policy changes are being considered, to what extent do political elites acknowledge and respect counterarguments?

Responses:

0: Counterarguments are not allowed or if articulated, punished.

1: Counterarguments are allowed at least from some parties, but almost always are ignored.

2: Elites tend to acknowledge counterarguments but then explicitly degrade them by making a negative statement about them or the individuals and groups that propose them.

3: Elites tend to acknowledge counterarguments without making explicit negative or positive statements about them.

4: Elites almost always acknowledge counterarguments and explicitly value them, even if they ultimately reject them for the most part.

5: Elites almost always acknowledge counterarguments and explicitly value them, and frequently also even accept them and change their position.

Range of consultation

Question: When important policy changes are being considered, how wide is the range of consultation at *elite levels*?

Responses:

0: No consultation. The leader or a very small group (*e.g.* military council) makes authoritative decisions on their own.

1: Very little and narrow. Consultation with only a narrow circle of loyal party/ruling elites.

2: Consultation includes the former plus a larger group that is loyal to the government, such as the ruling party's or parties' local executives and/or women, youth and other branches.

3: Consultation includes the former plus leaders of other parties.

4: Consultation includes the former plus a select range of society/labor/business representatives.

5: Consultation engages elites from essentially all parts of the political spectrum and all politically relevant sectors of society and business.

Electoral democracy index

Question: To what extent is the ideal of electoral democracy in its fullest sense achieved?

Components:

Freedom of expression index

Question: To what extent does government respect press and media freedom, the freedom of ordinary people to discuss political matters at home and in the public sphere, as well as the freedom of academic and cultural expression?

Freedom of association thick index

Question: To what extent are parties, including opposition parties, allowed to form and to participate in elections, and to what extent are civil society organizations able to form and to operate freely?

Share of population with suffrage

Question: What share of adult citizens as defined by statute has the legal right to vote in national elections?

Responses: Percent.

Clean elections index

Question: To what extent are elections free and fair?