DONOR CHARACTERISTICS AND THE SUPPLY OF CLIMATE MITIGATION FINANCE

The paper examines the links between donor country characteristics and international mitigation finance. We make use of an extensive panel dataset to show that donors that reserve a larger amount of domestic financial resources for environmental purposes display lower commitment towards mitigation finance overseas. On the other hand, donors with left-wing governments and good institutions exhibit weaker commitment towards overseas mitigation finance. We also find important discrepancies when comparing donor behaviour in terms of original commitment and actual disbursement. For the latter, it is only income per capita and ratification of the Kyoto Protocol that matters – there is no evidence that a high level of CO_2 emissions per capita at home influences the disbursement of mitigation finance.

Keywords: Climate mitigation finance; development aid; ODA; donors.

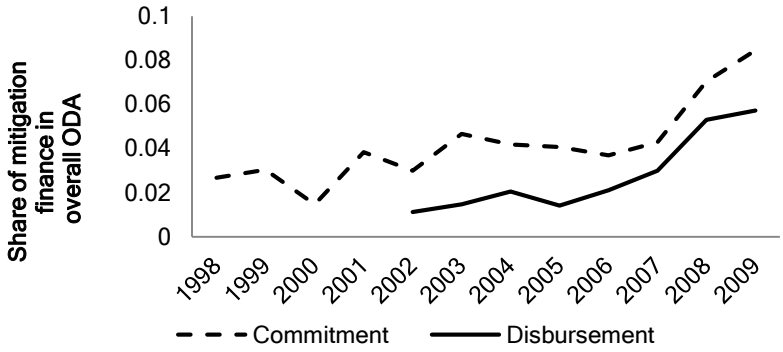
1. Introduction

In recent years many scholars have attempted to define the motives behind the supply of overseas development assistance (ODA). It is commonly argued that donors' motives extend beyond the altruistic objective of improving the economy and well-being of people in developing countries (Alesina and Dollar, 2000; Berthelemy, 2006; Hoeffler and Outram, 2011; Maizels and Nissanke, 1984; McKinlay and Little, 1977; Trumbull and Wall, 1994). Lewis (2003) argues that this also applies to the case of environmental aid. The economic and political interests of donors are often much stronger determinants of environmental aid than the environmental needs of the recipient countries. In the past decade there has also been a significant increase in bilateral ODA aimed at funding activities that tackle climate change (Ballesteros and Moncel, 2010; Bierbaum and Fay, 2010; Brown *et al.*, 2010; ICTSD, 2010; Michaelowa and Michaelowa, 2007).

With a more specific focus than environmental ODA, official mitigation finance largely aims at minimising GHG emissions. To date there is limited information as to why some donors provide more mitigation finance than the others. There is no literature empirically investigating the linkages between donors' economic, political and institutional characteristics and corresponding provision of official mitigation finance. Our study contributes to the literature by empirically examining the role of

several characteristics of the 22 Development Assistance Committee (DAC) donors in defining their mitigation finance commitment and disbursement (as a share of overall ODA) between 1998 and 2009. The 22 DAC countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Republic of Korea, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States. Luxembourg is not included due to the limited number of observations available. We define mitigation finance as projects funded by ODA that fall under the Organisation Economic Cooperation and Development Creditor Reporting System (OECD CRS, 2011a). The CRS 1998-2009 data on climate mitigation finance classify projects funded by ODA into seven categories: (1) only climate change, (2) only biodiversity, (3) desertification, (4) biodiversity and climate change, (5) desertification and climate change, (6) biodiversity, desertification, and climate change and (7) others. In our analysis we include projects for which climate change mitigation is either the principal or a significant objective (the latter activities have other primary objectives but also significantly contribute to climate mitigation - a detailed description of all variables is provided in Section 2).

The percentage of ODA allocated to mitigation finance has been on the rise (both in terms of original commitment and actual disbursement, see Fig. 1). Between 1998 and 2009, the commitment of mitigation finance rose from US$1.2 to US$9.2 billion (i.e. by 7.6 times). There was also a nine-fold increase from US$600 million to US$5.4 billion with respect to the actual mitigation finance *disbursed* between 2002 and 2009 (the years for which data are available). Mitigation finance disbursement has been consistently lower than commitment. Donors take several years to meet the amount of mitigation finance they have committed to provide. Interestingly, the disbursement-commitment gap narrowed between 2007 and 2008 and as a whole mitigation finance disbursement grew faster than mitigation finance commitment (Fig. 2).



Note: All figures in this study are constructed by the author based on data from OECD (2011b)

Figure 1: Trend in mitigation finance commitment and disbursement

Our study also compares data across donors. Japan is the largest climate mitigation finance donor followed by Germany. Japan only started to report data on its climate finance commitment in 2002, but it has made the largest contribution to mitigation finance both in absolute values and as a proportion of total ODA (see Fig. 2). It allocated 12.5% of its total ODA from 2002 to 2009 to mitigation finance with a cumulative value close to US$20 billion.

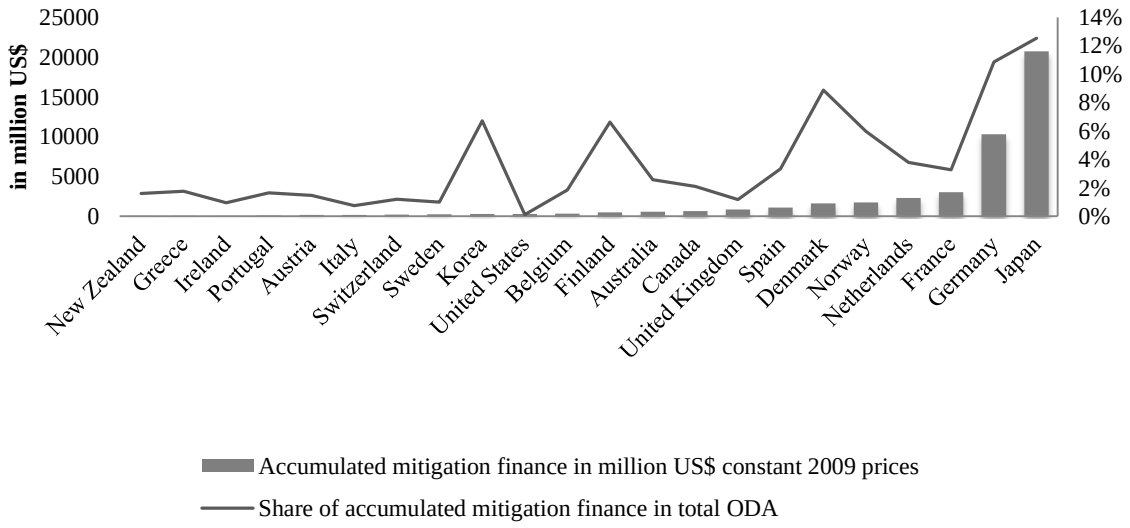


Figure 2: Donors' commitment to mitigation finance (1998-2009)

To develop an empirical framework for the correlation between donors' characteristics and mitigation finance, this paper draws on the wider literature investigating the links between donor characteristics and general development or environmental aid. For example, the study by Chong and Gradstein (2008) claims that countries with higher levels of income per capita and citizen satisfaction with

government performance tend to provide more foreign aid in general. Hicks *et al.* (2008) examine the relationships between environmental aid provision and donor characteristics using data from the Project-Level Aid Database (known as Aid Data 2.0). They find that wealthier bilateral donor countries are likely to allocate more aid towards green projects with global benefits, although their results are not robust to including unobserved time-variant variables or adopting alternative specifications. They find no evidence that institutional/political characteristics, such as the strength of environmental lobby groups, affect the allocation of aid for environmental purposes.

To our knowledge, this is the first empirical attempt to identify the determinants behind climate mitigation finance at the donor level. The study by Hicks *et al.* (2008) is the closest to the subject of our research, although with a wider focus on broader environmental aid. Our study advances knowledge in the field by linking climate mitigation finance more specifically with donor characteristics (with a particular focus on the climate change relevant factors, such as the level of carbon dioxide (CO_2) emissions per capita or ratification of the Kyoto Protocol).

Sections 2 and 3 discuss the hypotheses tested in this paper and explain the econometric methods employed; section 4 empirically studies the connection between donor characteristics and the provision of mitigation finance in total ODA. This section also compares mitigation finance commitment and disbursement to reflect on discrepancies between the two. Section 6 discusses alternative indicators of mitigation finance and their determinants. Section 5 concludes. Appendix 1 provides a detailed explanation of mitigation finance reporting and data under CRS.

2. Research Hypotheses

Below we discuss the hypotheses that are empirically tested in this study and which aim to link the supply of climate mitigation finance to donor characteristics:

Hypothesis #1: The higher the CO_2 (GHG) emissions per capita in a DAC donor country, the higher the proportion of mitigation finance in its total ODA.

GHG emissions need to be constrained in order to mitigate climate change. The provision of finance to mitigate global GHG emissions and a country's associated responsibilities remain debatable and contentious within international climate change negotiations. The UNFCCC Convention indicates which factors determine the responsibility of a country for financing GHG emission reduction activities. The preamble to UNFCCC (1992) states:

> *…the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.*

The preamble guides its parties, both developed and developing countries, to consider per capita GHG emissions as one of the key measurements guiding efforts to protect climate systems. To improve understanding of how developed countries' financing has responded to their UNFCCC commitment, this paper tests the effect of donors' per capita CO_2 emissions (as well as other types of GHG emissions) on their mitigation finance provision. The data on per capita CO_2 emissions were provided by Boden *et al.* (2011) and the rest of the GHG data are taken from the UNFCCC (2012).[1]

Hypothesis#2: The higher the GDP per capita of a DAC country, the higher the proportion of mitigation finance in its total ODA.

In this paper, GDP per capita represents donor's economic capacity (after controlling for population size). Economic capacity is one of the key factors in guiding the distribution of global collective effort behind GHG mitigation. The UNFCCC's Article 3 (UNFCCC, 1992) presents a list of principles to which international efforts to protect climate systems should adhere and which should be implemented '*on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities*' (UNFCCC, 1992).

Countries with a higher income level are likely to have a better capacity to pay for activities supporting global GHG emission reductions (such as energy efficiency programmes and development aid facilitating low-carbon development). Hicks *et al.* (2008) find a positive and statistically significant relationship between income per capita and brown aid, which produces local benefits, and green aid, which provides global benefits. They find that richer countries are generally more generous when paying for overseas environmental projects. We test whether this also holds for the case of climate mitigation finance. Data on income per capita are provided by the World Bank's World Development Indicators (WDI) database (2011).

Hypothesis #3: The better the governance in a DAC country, the higher the proportion of mitigation finance in its total ODA.

[1] Appendix 3 presents description and data sources for all variables used in the analysis. Appendix 4 provides descriptive statistics and Appendix 5 presents a correlation matrix for all variables.

Donors' good governance practices can be crucial in effectively administering public funds in the battle against climate change. It might be the case that donors who have an effective and transparent public administration are more likely to display a stronger commitment towards climate change mitigation. Papyrakis (2013) for example shows how good government institutions correlate with several environmental indices (including lower carbon emissions).

To identify whether developed countries with better governance provide more mitigation finance, our study includes the average of six of Kaufmann's institutional indices (Kaufmann *et al.*, 2011) in our specifications. We also test separately each of all six indices: i.e. the level of regulatory quality, rule of law, voice and accountability, corruption control, political stability, and government effectiveness. Each index ranges from -2.5 to 2.5, with higher values corresponding to higher quality. All of these institutional variables strongly correlate with one another (see Appendix 5). Hence, we avoid including multiple governance indices in the same specification in order to avoid multicollinearity.

Hypothesis #4: The higher the number of left-wing party seats in the parliament of a DAC country, the higher the proportion of mitigation finance in its total ODA.

Donor governments' main political views might influence their decisions about the relative importance of environmental issues (such as climate mitigation) in their national and international agenda. Some studies reach conflicting findings on the relationship between political views and environmental related actions. Neumayer (2004) finds that left-wing parties and individuals are more pro-environment than their counterparts: donor governments with more left-wing representatives tend to have stronger environmental policies. On the contrary, Hicks *et al.*'s (2008) study finds that leftist party representation in donor governments has little relevance in decisions about the allocation of green aid. They argue that this unexpected outcome is possibly due to legislatures being pressurised by local and national environmentalists to allocate more funds at home.

Our analysis includes more recent data than the ones used by Hicks *et al.* (2008) and we expect that the supply of mitigation finance increases with stronger leftist governments. The data on the political orientation of the government are obtained from the Database of Political Institutions (DPI) (Thorsten *et al.*, 2001), which uses a coding system to classify party orientation with respect to economic policy: (1) denotes governments defined as conservative, Christian democratic or right-wing; (2) denotes centrist governments and (3), those that are communist, socialist, social democratic or otherwise left-wing.

Hypothesis #5: The higher the proportion of domestic environmental spending in the total government budget of a DAC country, the higher the share of mitigation finance in its total ODA.

Donor governments that allocate a large share of their budget towards domestic environmental spending might be characterised by a broader environmental sensitisation (that can extend also to the case of international climate mitigation finance). On the other hand, it might be the case that domestic spending on environmental projects might limit the availability of funding for overseas environmental activities (see Hicks *et al.* (2008)). We include the proportion of domestic environmental spending in total government national spending in our regression analysis in order to test for the sign of any such correlation. Data are provided by the International Monetary Fund's (IMF, 2010) Government Finance Statistics (GFS).

Other control variables

Other control variables, such as the size of population and the level of democracy, are included in the main specifications. It might be the case that larger countries find it easier to raise and/or reserve funds for international environmental projects (other things equal). Additionally, larger economies tend to bear a larger historical responsibility towards the climate change problem. Data on population are taken from the World Development Indicators (WDI) (2011). The level of democracy is included as another control variable. Neumayer (2002) finds that democratic governments exhibit stronger commitment to environmental protection than non-democratic ones, possibly as a result of being held accountable to their electorates for their spending decisions. Democracy is measured using the 0-10 index from the Polity IV dataset (Marshall *et al.*, 2011), with larger values corresponding to higher levels of democracy.

Several additional variables are tested for robustness, namely the CO_2 intensity of economic activity (i.e. emissions per unit of GDP; hereafter 'CO_2 intensity'), the proportion of alternative (i.e. non fossil-fuel based) energy use in the total energy mix, and the ratification status of the Kyoto Protocol. For example, donor countries with a high-energy intensity may find it easier to meet their Kyoto targets by improving energy efficiency overseas rather than financing a more costly energy-saving transition at home. The data of CO_2 intensity are taken from WDI (2011). We also expect donor countries that have adopted green policies domestically and ratified the Kyoto Protocol to provide more mitigation finance. We use the proportion of alternative energy use in the total energy mix (data taken from WDI (2011)) as a proxy of the 'greenness' of

domestic energy policy of donor countries. Donor countries that rely more on alternative energy technologies may have a stronger incentive to finance a similar transition overseas in a concerted global effort to mitigate climate change. To test whether donor commitment to the Kyoto Protocol is associated with a higher proportion of mitigation finance in total ODA, a 0-1 dummy (*kyotoprot*) is included as an additional control (with 1 corresponding to ratification of the protocol). Data are taken from the Environmental Treaties and Resource Indicators (CIESIN-SEDAC, 2011). Due to its time-invariant characteristic, this variable is only included in our random effects models.

3. Methodology

We make use of fixed-effects and random-effects models to identify the influence of donor characteristics on the proportion of mitigation finance in their total provision of ODA (A_{it}^{j}). Donor characteristics are captured by the level of CO_2 emissions per capita, E_{it}, the level of wealth, measured by income per capita, I_{it}, governance, G_{it}, the composition of left or right representatives in the national parliament, L_{it}, the proportion of environmental expenditure in the government budget, X_{it}, and a vector of other explanatory variables, Z_{it} as seen in Eq. (1) below[2].

$$A_{it}^{j} = \propto_0 + \propto_1 E_{it} + \propto_2 I_{it} + \propto_3 G_{it} + \propto_4 L_{it} + \propto_5 X_{it} + \propto_6 Z_{it} + a_i + \varepsilon_{it} \qquad (1).$$

The superscript j of the dependent variable A_{it}^{j} on the left-hand side denotes different measures of mitigation finance; namely the proportion of mitigation finance in a country's total ODA commitment and the proportion of mitigation finance in its total aid disbursement (in Section 6 we make use of alternative climate finance measures, such as the logarithms of mitigation finance commitment and disbursement, $\ln A^c$ and $\ln A^d$, the disbursement-commitment ratio $\frac{A^d}{A^c}$, the logarithm of mixed mitigation finance commitment $\ln A^{MIX}$, and the proportion of mixed mitigation finance in a country's total aid commitment). The period of analysis for the regressions focusing on climate finance commitment and disbursement is 1998-2009 and 2002-2009 respectively.

The fixed-effects model (FEM) controls for unobserved and time-invariant variables a_i. The random-effects model (REM) is often used as an alternative to the FEM and assumes that individual specific effects are random variables uncorrelated with other explanatory variables (Baltagi, 2005, pp. 12-16). We carry out the Hausman test to

[2] Appendix 5 provides a correlation matrix for all variables included in the analysis.

form a judgment on which of the two estimators is more appropriate for each specification. For all specifications, the Hausman test reveals a preference for the FEM - nevertheless, we report results for both models as a robustness check. We also run collinearity tests across explanatory variables for all specifications using variance inflation factors (VIFs) - these ranged between 1.14 and 2.96, indicating low levels of collinearity (Puhani, 2000). Lower variance inflation factors typically indicate that the model produces robust estimations.

4. The empirics of mitigation finance supply

Table 1 presents empirical results based on our key specifications that link climate finance with donor characteristics. The first four columns of Table 1 use mitigation finance commitment as the dependent variable. The last four columns repeat the same specifications for the case of mitigation finance disbursement. Columns 1 and 3 (hereafter 'c1' and 'c3') estimate our basic specification using fixed and random effects respectively. These include *lnco2pc* and *lngdppc* as explanatory variables, which measure the logarithm of CO_2 emissions per capita and GDP per capita respectively. While we find donor countries with higher CO_2 emissions (in per capita terms) displaying higher mitigation finance commitment, the relationship is not statistically significant for the richer specification c2 and c4, where we additionally control for variation in democratic accountability (*democracy*), CO_2 intensity (*co2inten*), alternative energy (*altenergy*) and verification of the Kyoto Protocol (*kyotoprot*). Specifications c2 and c4 suggest that donors characterised by a higher energy intensity and reliance on alternative energy sources tend to display larger mitigation finance commitment.

Table 1: Determinants of mitigation finance in total ODA provision

Dependent variable: Share of mitigation finance in total ODA, 1998 to 2009	Commitment				Disbursement			
	Fixed effect		Random effect		Fixed effect		Random effect	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
lnco2pc	0.019**	0.001	0.019***	0.001	-0.004	-0.003	-0.004	-0.003
	(2.947)	(0.077)	(2.819)	(0.074)	(-0.490)	(-0.208)	(-0.470)	(-0.199)
lngdppc	-0.004	-0.002	-0.004	-0.002	0.024*	0.018	0.024**	0.018
	(-0.315)	(-0.094)	(-0.301)	(-0.090)	(2.133)	(1.663)	(2.046)	(1.592)
govern	0.031***	0.055***	0.031***	0.055***	-0.005	0.001	-0.005	0.001
	(4.755)	(7.138)	(4.549)	(6.819)	(-0.588)	(0.130)	(-0.563)	(0.124)
leftgov	-0.003**	-0.004**	-0.003**	-0.004***	0.002	0.001	0.002	0.001
	(-2.373)	(-2.891)	(-2.270)	(-2.762)	(0.933)	(0.451)	(0.895)	(0.432)
environexpen	-0.024**	-0.028**	-0.024**	-0.028**	-0.004	-0.003	-0.004	-0.003
	(-2.405)	(-2.445)	(-2.301)	(-2.336)	(-0.454)	(-0.278)	(-0.436)	(-0.266)
lnpop	0.009***	0.009**	0.009***	0.009***	0.001	0.001	0.001	0.001
	(3.322)	(2.867)	(3.178)	(2.739)	(0.194)	(0.195)	(0.186)	(0.187)
democracy		0.000		0.000		0.003		0.003
		(0.019)		(0.018)		(0.605)		(0.579)
co2inten		0.040***		0.040***		0.014		0.014*
		(5.228)		(4.994)		(1.832)		(1.754)
altenergy		0.001**		0.001***		0.001*		0.001*
		(3.071)		(2.934)		(1.936)		(1.854)
kyotoprot			0.066***	0.068***			0.043***	0.045***
			(12.924)	(10.435)			(13.918)	(15.620)
R-Squared (overall)	0.112	0.156	0.441	0.520	0.112	0.070	0.362	0.381
R-Squared (between)	0.436	0.350	1.000	1.000	0.795	0.448	1.000	1.000
R-Squared (within)	0.256	0.361	0.256	0.361	0.043	0.072	0.043	0.072
N	113	113	113	113	94	94	94	94

Notes: Heteroscedasticity-corrected t-statistics in parentheses. *, ** and *** denote significance at the 10%; 5% and 1% level respectively.

The level of a donor's income per capita is negatively correlated with its mitigation finance commitment, although the relationship is not statistically significant (c1 and c3). This indicates that wealthier donors do not display greater commitment in allocating a part of their aid towards mitigation finance, other things equal (this finding contradicts Hicks *et al.* (2008), who, though, base their estimates on pooled OLS). We also include in all regressions a measure of governance that can proxy a donor government's institutional capacity for effective administration and policy formulation (*govern*). This appears to positively influence mitigation finance commitment and the relationship is statistically significant at the 1% level (see c1-c4). This suggests that donors exhibiting better governance at home (e.g. more efficient administration and policy-making) pay more attention to global climate problems (in terms of mitigation finance commitment).

Furthermore, we include an index capturing the political orientation of the donor government, with higher values corresponding to more left-wing government orientation (*leftgov*) – we find the index to be negative and significant at 5%. This is significant across all commitment specifications (c2-c4). This finding contradicts that of Neumayer (2004), who finds that the strength of a leftist government has a significant positive influence on domestic environmental conditions, leading to lower level of pollution. As Hicks *et al.* (2008) argue, leftish donor countries may be pressurised by local green NGOs and environmentalists to spend their financial resources at home rather than overseas. This is also consistent with the observed negative relationship between the proportion of domestic environmental spending in total government expenditure (*environexpen*) and the proportion of mitigation finance allocated in total ODA. A 1% drop in the proportion of donor environmental expenditure in the government budget, corresponds approximately to a 2.4% rise in mitigation finance. This result indicates that a donor's domestic environmental spending may involve a trade-off. Competition between domestic and overseas green projects for financial resources may deter governments from generously financing activities abroad that will have little and indirect impacts on their electorates. Last, the positive and statistically significant of the Kyoto dummy (*kyotoprot*) suggests that ratification of the Kyoto protocol is linked to higher climate mitigation commitment.

In column 5 the focus switches from mitigation finance commitment to its actual disbursement. Data on mitigation finance disbursement are available only from 2002 onwards (hence, the smaller sample size in comparison to the commitment regression c1-c4). The disbursement regressions (c5-c8) reveal important discrepancies when comparing donor behaviour in terms of original commitment and actual disbursement. For the latter, it is only income per capita and ratification of the Kyoto Protocol that matters.

Table 2 replicates specification c1 of Table 1 by incorporating in alternate order GHGs listed by the UNFCCC other than carbon dioxide (*lnco2pc)*; namely methane (*lnch4pc),* perfluorocarbons (*lnpfcspc*), hydrofluorocarbons (*lnhfcspc*) sulphur hexafluoride (*lnsf6pc*) and nitrous oxide (*lnn2opc*). The *lnghgpc* variable corresponds to the CO_2-equivalent aggregate value of all GHG emissions. All measures are in logarithmic form and measured on a per capita basis. Table 2 presents only the coefficients for these GHG-related variables. While donor countries with a high level of overall GHG emissions (*lnghgpc*) display higher climate finance commitment, this does not seem to be the case for other specific subcomponents of GHGs other than CO_2.

Table 2: Determinants of mitigation finance commitment: individual GHG variables

Dependent variable: Share of mitigation finance in total ODA (commitment), 1998 to 2009, N: 107	Coefficient	t-statistic	R-squared		
			Overall	Between	Within
lnghgpc	0.009***	3.550	0.120	0.376	0.252
lnch4pc	0.008	1.169	0.104	0.444	0.258
lnhfcspc	-0.010*	-2.064	0.085	0.536	0.269
lnpfcspc	-0.005***	-5.322	0.277	0.330	0.332
lnsf6pc	-0.006***	-3.589	0.174	0.111	0.280
lnn2opc	0.010	1.143	0.095	0.464	0.259

Notes: *lnco2pc, lngdppc, govern, leftgov, environexpen* and *lnpop* are included but not presented. The level of carbon emissions per capita is ncluded in all regressions, being the main component of GHGs. *Lnco2pc* is excluded for the *lnghgpc* specification, given that the former is a component of the latter. The results are robust across estimation models. The estimation with REM (available upon request) produces stable signs and statistically significant results for these coefficients. The t-statistics are heteroscedasticity-corrected. * and *** denote significance at the 10% and 1% level respectively.

It might be the case that the donors characterised by a higher commitment towards climate mitigation finance are those with lower emissions of those GHG types with the highest global warming potential (namely *hydrofluorocarbons*, *perfluorocarbons* and *sulphur hexafluoride*). Pro-environmental donors may find it less complex to first mitigate these more specific and concentrated types of emissions, rather than carbon emissions which are produced by almost all economic activities at home.

Table 3 replicates specification c1 of Table 1 when the six disaggregated Kaufmann's World Governance indicators are introduced in alternate order (instead of their average value, captured by *govern*). All indices have positive correlations with the proportion of mitigation finance in overall aid provision. Four of them display a significant correlation with mitigation finance provision: regulatory quality (*regulquality*), rule of law (*ruleoflaw*), voice and accountability (*voiceaccount*), and control for corruption (*contcorrupt*). The other two indices, i.e. political stability (*polstability*) and government effectiveness (*goveffective*), have the expected sign but are statistically insignificant. In general, donors characterised by good institutions and governance at home appear to show great commitment towards mitigation finance.

Table 3: Determinants of mitigation finance: institutional variables

Dependent variable: Share of mitigation finance in total ODA (commitment), 1998 to 2009, N=113	Coefficient	t-statistic	R-squared		
			Overall	Between	Within
regulquality	0.024***	4.190	0.145	0.207	0.225
ruleoflaw	0.031***	6.226	0.150	0.286	0.286
voiceaccount	0.062***	5.055	0.131	0.153	0.280
contcorrupt	0.020***	7.306	0.126	0.364	0.277
polstability	0.020	1.439	0.099	0.738	0.213
goveffective	0.010	1.479	0.105	0.470	0.193

Note: The results above are robust across different estimation models. *lnco2pc, lngdppc, leftgov, environexpen* and *lnpop* are included but not presented (coefficients in terms of magnitude and significance are similar to the ones presented in Table 1, specification c1). The t-statistics are heteroscedasticity-corrected. *** denotes significance at the 1% level.

5. Specifications with alternative mitigation finance indices

In this section we replicate specification c1 of Table 1 by making use of alternative mitigation finance indices (as the dependent variable to be explained): i.e. the volume of mitigation finance commitment, the disbursement-commitment ratio, and the proportion of mitigation finance that includes funding addressing biodiversity and desertification in total aid. Table 4 presents the corresponding coefficients for carbon emissions per capita (*lnco2pc*), GDP per capita (*lngdppc*) and total ODA commitment or disbursement (*lnodacommit, lnodadisburse*).[3] When the volume of mitigation finance replaces the proportion of mitigation finance in total ODA as the dependent variable, all variables become insignificant except for total ODA itself (statistically significant at 5%, see Table 4, c9). The increasing amount of mitigation finance is mainly determined by increasing total ODA and there is no evidence that it is driven by domestic environmental and social factors. Specification c10 uses the volume of mitigation finance disbursement as the dependent variable. Again, there is a strong positive correlation between total ODA (disbursed) and mitigation finance (disbursed) – the level of GDP per capita is also strongly and positively correlated with mitigation finance disbursement. Richer donors have more financial resources in their disposal for mitigating global emissions at home or abroad.

[3] Results on other coefficients are available from the authors upon request.

Table 4: Alternative mitigation finance variables

Dependent variable	Log of mitigation finance commitment 1998-09 (9)	Log of mitigation finance disbursement 2002-09 (10)	Mitigation finance disbursement-commitment ratio 2002-09 (11)
lnco2pc	0.248	-0.719	17.388
	(0.316)	(-0.938)	(0.720)
lngdppc	1.658	2.898*	-59.468*
	(0.880)	(2.155)	(-1.902)
lnodacommit/ lnodadisburse	1.103**	0.763**	0.316
	(2.317)	(2.646)	(0.064)
R-squared (overall)	0.445	0.438	0.122
R-squared (between)	0.195	0.832	0.145
R-squared (within)	0.487	0.459	0.131
N	113	94	90

Notes: Heteroscedasticity-corrected t-statistics in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. Log of ODA commitment in the case of commitment and disbursement-commitment ratio

The disbursement of mitigation finance has historically lagged behind its commitment (the disbursement-commitment ratio $\frac{A^d}{A^c}$, for all donors, lies in the range of 0.22–0.66). A low ratio indicates poor donor performance in terms of meeting commitments. Specification c11 explores whether the magnitude of this ratio depends on donor characteristics. The statistical results are again weak, with *lngdppc* the only variable significantly (and negatively) affecting the ratio; in other words, while donor countries, whose per capita income is relatively higher, tend to disburse higher volumes of mitigation finance (c10), they are also the ones with the larger disbursement-commitment gaps (i.e. the ones largely failing to fulfil their targets) (c11).

6. Conclusions

While donors' commitment to fund climate change activities has increased considerably over the last decade, we see that there is still a large gap between commitment and actual disbursement. Donors that reserve a larger amount of domestic financial resources for environmental purposes display lower commitment towards mitigation finance overseas On the other hand. donors with left-wing governments and good institutions exhibit stronger commitment towards climate mitigation finance. We also find important discrepancies when comparing donor behaviour in terms of original commitment and actual disbursement. For the latter, it is only income per capita and ratification of the Kyoto Protocol that matters – there is no evidence that a high level of CO_2 emissions per capita at home influences the disbursement of

mitigation finance. Wealthier donors (i.e. those with a higher level of GDP per capita) are the ones characterised by a larger commitment-disbursement gap.

To our knowledge, this is the first empirical attempt to explain the variation in mitigation finance at the donor level. Various extensions of our analysis could be further developed. A possible extension of the analysis as a new line of study could entail a comparative study between the supply of adaptation finance provided by bilateral and multilateral donors (e.g. international organisations). Detailed country-specific case studies might also shed additional light into the determinants of climate finance supply by probing into more detail at how domestic policies on the provision of different types of aid are shaped at the country level.

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APPENDIX 1: CLIMATE CHANGE MITIGATION DATA

Fig. A shows an increase in the reporting of mitigation finance data over time, although some countries have consistently under-reported it. For example, Japan has only nine years of available data on projects purely addressing emission mitigation and projects whose objective is mitigation combined with combating desertification and protecting biodiversity (Fig. B). Norway is the only donor that consistently reports its ODA projects, according to the Rio Marker CRS, and hence has a full 12 years of data of reporting on all the Rio Markers.

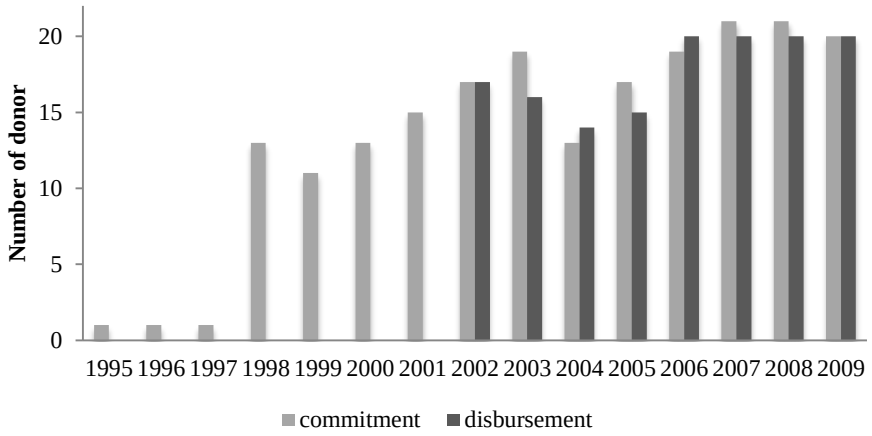

Figure A. Number of donors reporting mitigation finance commitment and disbursement

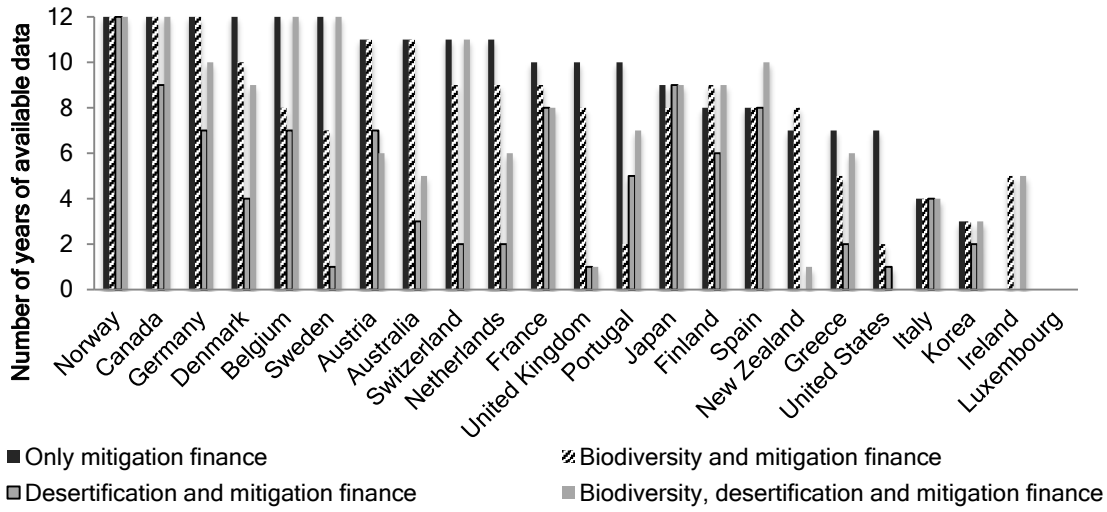

Figure B. Number of reporting years by each donor for each Rio Marker objective

APPENDIX 2: DONORS' COMMITMENT AND DISBURSEMENT TO MITIGATION FINANCE (1998-2009)

In million US$ constant 2009 prices

Year	Mixed mitigation finance (1)+(2)+(3)+(4)		Only mitigation finance (1)		Biodiversity and mitigation finance (2)		Desertification and mitigation finance (3)		Biodiversity, desertification, and mitigation finance (4)	
	C	D	C	D	C	D	C	D	C	D
1998	1249.7		499.8		213.1		286.3		250.5	
1999	1682.4		1055.7		214.6		88.4		323.7	
2000	867.9		346.9		225.0		28.0		268.0	
2001	2200.9		1490.4		208.2		52.5		449.7	
2002	2020.3	668.5	1121.8	287.2	474.1	105.5	24.8	44.7	399.6	231.1
2003	3955.9	1033.0	2941.5	646.1	210.4	150.8	38.0	48.6	766.1	187.4
2004	3480.6	1474.1	2731.8	968.8	155.1	124.0	47.6	67.6	546.0	313.7
2005	4438.6	1440.9	3324.7	1096.4	186.0	105.6	58.6	19.0	869.3	219.9
2006	4119.6	2022.7	2794.5	1423.4	264.4	116.2	112.3	24.7	948.4	458.4
2007	4061.9	2619.8	2703.7	1780.2	313.0	200.9	48.6	35.0	996.6	603.6
2008	7919.8	5138.3	6308.3	3890.8	258.8	266.6	215.4	71.7	1137.2	909.2
2009	9205.6	5429.1	7369.0	4255.1	1191.3	530.0	128.6	74.3	516.6	569.8

Note: C = commitment; D = disbursement

APPENDIX 3: LIST OF VARIABLES AND DATA SOURCES

Type of Variable	Variable label	Definition	Data Source
Mitigation finance	sharemfodacommit sharemfodadisburse	Proportion of mitigation finance in total ODA commitment disbursement	OECD (2011a, 2011b)
	lnmfcommit lnmfdisburse	Log of the amount of mitigation finance commitment disbursement in constant US$ 2009 prices (mitigation marker is coded as principal and significant)	OECD (2011a)
	mfdcratio	The amount of mitigation finance disbursement divided by the amount of mitigation finance commitment in constant US$ 2009 prices	Author's calculation using the data from OECD (2011a)
	lnmixedcf	Log of the amount of mixed mitigation finance in constant US$ 2009 (i.e. mitigation finance provided for activities that exclusively focus on climate change mitigation and adaptation, as well as for activities that relate both to climate change as well as biodiversity and desertification (i.e. categories 1, 4, 5 and 6 of the Rio Marker)	OECD (2011a)
Carbon emissions	lnghgpc	Log of the total six types of emissions listed below in thousand metric tons of carbon divided by total population	Author's calculation using the data from Boden *et al.* (2011)
	lnco2pc	Log of carbon dioxide (CO_2) in thousand metric tons of carbon divided by total population	*(ibid.)*
	lnch4pc	Log of methane (CH_4) in thousand metric tons of CO_2 equivalent divided by total population	UNFCCC (2012)
	lnpfcspc	Log of perfluorocarbons (PFCs) in thousand metric tons of CO_2 equivalent divided by total population	
	lnhfcspc	Log of hydrofluorocarbons (HFCs) in thousand metric tons of CO_2 equivalent divided by total population	
	lnsf6pc	Log of sulphur hexafluoride (SF_6) in thousand metric tons of CO_2 equivalent divided by total population	
	lnn2opc	Log of nitrous oxide (N_2O) in thousand metric tons of c CO_2 equivalent divided by total population	
	co2inten	CO_2 intensity (kg per kg of oil equivalent energy use)	WDI (2011)
	altenergy	Alternative and nuclear energy (% of total energy use)	(*ibid*)
Level of wealth	lngdppc	Log of Gross Domestic Product (GDP) per capita in constant US$ 2009	(*ibid*)
Institutional measures	govern	The average of six Kaufmann's World Governance Indicators (listed below). Each indicator ranges from -2.5 to 2.5 (max)	Author's calculation based on (Kaufmann *et al.*, 2010)
	regulquality	*Regulatory quality* captures the ability of government to formulate and implement sound policies and regulations	Kaufmann *et al.* (2010)
	ruleoflaw	R*ule of law* index captures the extent to which	(*ibid*)

		agents have confidence in and abide by the rules of society, as well as the quality of contract enforcement and property rights	
	voiceaccount	*Voice and accountability* captures the extent to which citizens can participate in government selection procedures and have freedom of expression and association	(*ibid*)
	contcorrupt	C*ontrol of corruption* captures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests	(*ibid*)
	polstability	*Political stability* captures perceptions on the likelihood that governments become destabilised or overthrown by unconstitutional or violent means	(*ibid*)
	goveffective	*Government effectiveness* that captures the quality of public services and policy formulation, as well as the degree of government commitment to policies.	(*ibid*)
Environmental expenditure	environexpen	Proportion of environmental expenditure in national budget	IMF (2010)
Kyoto protocol ratification	kyotoprot	Kyoto protocol ratification; coded 1 if ratified; coded 0 otherwise	CIESIN-SEDAC (2011)
Composition of donor government	leftgov	Coded: (1) conservative, Christian democratic, or right-wing; (2) centrist and (3) communist, socialist, social democratic, or left-wing. Annual data covers the period 1975-2010	Thorsten *et al.* (2001)
Level of democracy	democracy	0 to 10 index, where higher values correspond to more democratic states	Marshall *et al.* (2011)
Total ODA	lnodacommit lnodadisburse	Log of total ODA commitment/disbursement in constant US$ 2009	OECD (2011b)
Population	lnpop	Log of population size	WDI (2011)

APPENDIX 4: DESCRIPTIVE STATISTICS

Variable label	No of observations	Mean	Standard Deviation	Min	Max
sharemfodacommit	199	0.022	0.035	0.000	0.267
sharemfodadisburse	142	0.016	0.025	0.000	0.143
sharetotcfodacommit	215	0.037	0.047	0.000	0.292
lnmfcommit	199	2.585	2.594	-5.409	8.290
lnmfdisburse	142	2.429	2.234	-3.285	7.655
lnodacommit	264	7.472	1.315	4.667	10.371
lnodadisburse	176	7.535	1.301	5.013	10.272
mfdcratio	137	4.667	19.993	0.023	190.649
lntotalmf	215	3.328	2.218	-4.280	8.376
lnghgpc	241	-4.526	0.4825	-5.961	-3.260
lnco2pc	264	2.229	0.336	1.548	3.008
lnch4pc	241	-6.766	0.834	-8.717	-4.926
lnhfcspc	241	-9.040	0.545	-11.041	-7.428
lnpfcspc	240	-11.271	2.169	-19.684	-8.001
lnsf6pc	241	-11.095	1.187	-14.398	-8.234
lnn2opc	241	-7.013	0.572	-8.639	-5.912
co2inten	264	2.238	0.548	0.960	3.427
altenergy	264	16.815	14.247	0.554	50.734
lngdppc	264	10.393	0.205	9.743	10.933
enviroexpen	172	0.512	0.330	-0.458	1.617
kyotoprot	264	0.417	0.494	0.000	1.000
leftgov	251	1.956	0.935	1.000	3.000
democracy	264	9.841	0.498	8.000	10.000
lnpop	264	16.776	1.212	15.127	19.542
govern	210	1.398	0.360	0.502	1.913
regulquality	210	1.402	0.317	0.537	2.012
ruleoflaw	220	1.503	0.379	0.313	1.964
voiceaccount	220	1.345	0.254	0.609	1.827
contcorrupt	220	1.634	0.587	0.156	2.466
polstability	220	0.927	0.371	-0.180	1.577
goveffective	220	1.592	0.426	0.316	2.237

APPENDIX 5: CORRELATION MATRIX

	sharemfoda	sharemfdisburse	totmfodashare	lnmfcommit	lnmfdisburse	mfdcratio	lntotalmf
mfdisburse	0.7477*	1.0000					
	0.0000						
totmfodashare	0.8975*	0.6717*	1.0000				
	0.0000	0.0000					
lnmfcommit	0.7025*	0.5251*	0.6801*	1.0000			
	0.0000	0.0000	0.0000				
lnmfdisburse	0.6914*	0.7002*	0.6485*	0.8700*	1.0000		
	0.0000	0.0000	0.0000	0.0000			
mfdcratio	-0.1308	0.0487	-0.1507	-0.3745*	-0.0480	1.0000	
	0.1276	0.5720	0.0789	0.0000	0.5774		
lntotalmf	0.6964*	0.5043*	0.7502*	0.9159*	0.8266*	-0.2809*	1.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	
lnodacommit	0.3881*	0.2436*	0.3039*	0.6692*	0.6652*	-0.1747	0.6571*
	0.0000	0.0035	0.0000	0.0000	0.0000	0.0412	0.0000
lnodadisburse	0.3864*	0.2362*	0.3087*	0.6753*	0.6604*	-0.1794	0.6490*
	0.0000	0.0047	0.0001	0.0000	0.0000	0.0359	0.0000
lnghgpc	-0.0608	-0.2089	-0.0240	-0.0083	-0.0991	-0.0354	0.0196
	0.4061	0.0162	0.7332	0.9094	0.2582	0.6932	0.7810
lnco2pc	-0.0186	-0.1387	0.0498	0.0835	0.0299	-0.0127	0.1384
	0.7939	0.0997	0.4672	0.2412	0.7239	0.8833	0.0427
lnch4pc	-0.4124*	-0.3941*	-0.3566*	-0.3553*	-0.4274*	0.0155	-0.3654*
	0.0000	0.0000	0.0000	0.0000	0.0000	0.8625	0.0000
lnhfcspc	-0.0084	-0.0840	-0.0053	0.1226	0.0783	-0.0888	0.1697
	0.9083	0.3382	0.9397	0.0928	0.3722	0.3206	0.0152
lnpfcspc	0.0344	-0.0501	-0.0018	0.2924*	0.2236	-0.3431*	0.2684*
	0.6397	0.5696	0.9802	0.0000	0.0103	0.0001	0.0001
lnsf6pc	0.1190	0.0010	0.1002	0.3985*	0.3785*	-0.2383*	0.3323*
	0.1030	0.9906	0.1538	0.0000	0.0000	0.0070	0.0000
lnn2opc	-0.4245*	-0.4321*	-0.3138*	-0.3126*	-0.4012*	0.0028	-0.3286*
	0.0000	0.0000	0.0000	0.0000	0.0000	0.9752	0.0000
carboninten	0.0661	-0.0308	0.0394	-0.0705	-0.1604	0.0073	-0.0864
	0.3535	0.7162	0.5656	0.3221	0.0566	0.9328	0.2068
altenergy	-0.0174	0.0792	-0.0730	0.1080	0.1823	-0.0989	0.0683
	0.8077	0.3488	0.2865	0.1291	0.0299	0.2502	0.3185
lngdppc	0.0341	0.0437	0.0695	0.3340*	0.3814*	-0.1886	0.3028*
	0.6328	0.6057	0.3103	0.0000	0.0000	0.0273	0.0000
enviroexpen	-0.1377	-0.0136	-0.0633	0.0135	0.1090	0.0748	-0.1249
	0.1153	0.8956	0.4479	0.8782	0.2929	0.4808	0.1330
kyotoprot	0.1521	0.2444*	0.1811*	0.1629	0.2870*	-0.0310	0.2325*
	0.0320	0.0034	0.0078	0.0215	0.0005	0.7193	0.0006
leftgov	-0.1502	-0.0335	-0.1406	-0.1471	-0.1325	0.1019	-0.1591
	0.0401	0.6993	0.0455	0.0445	0.1254	0.2485	0.0234
democracy	-0.0159	-0.0390	-0.0384	-0.0981	-0.0715	0.0647	-0.1077
	0.8238	0.6453	0.5753	0.1680	0.3981	0.4524	0.1155
lnpop	0.2861*	0.1710	0.1695	0.4226*	0.4228*	-0.1136	0.4192*
	0.0000	0.0419	0.0128	0.0000	0.0000	0.1864	0.0000
govern	-0.0820	-0.1578	0.0136	0.0341	0.0007	0.0464	0.0256
	0.2837	0.0607	0.8563	0.6558	0.9934	0.5902	0.7342
regulquality	-0.1416	-0.2270*	-0.0465	-0.0153	-0.0497	0.0655	0.0008
	0.0631	0.0066	0.5367	0.8415	0.5572	0.4473	0.9919
ruleoflaw	-0.0093	-0.0755	0.0562	0.1361	0.1181	-0.0185	0.1002
	0.9036	0.3718	0.4458	0.0742	0.1616	0.8300	0.1735
voiceaccount	-0.1640	-0.1998	-0.0773	-0.0638	-0.0924	0.0728	-0.0528
	0.0311	0.0171	0.2943	0.4041	0.2739	0.3980	0.4745
contcorrupt	-0.0521	-0.1188	0.0521	0.0745	0.0634	0.0385	0.0733
	0.4961	0.1592	0.4804	0.3300	0.4537	0.6552	0.3201
polstability	-0.0159	-0.1049	0.0391	-0.0702	-0.1130	0.1034	-0.0919
	0.8354	0.2142	0.5964	0.3584	0.1807	0.2291	0.2122
goveffective	-0.1120	-0.1762	-0.0194	0.0519	-0.0042	0.0155	0.0319
	0.1424	0.0359	0.7923	0.4976	0.9601	0.8574	0.6657

	lnodacommit	lnodadisburse	lnghgpc	lnco2pc	lnch4pc	lnhfcspc	lnpfcspc
lnodadisburse	0.9896*	1.0000					
	0.0000						
lnghgpc	0.1072	0.1024	1.0000				
	0.0967	0.1974					
lnco2pc	0.2364*	0.2178*	0.8489*	1.0000			
	0.0001	0.0037	0.0000				
lnch4pc	-0.3776*	-0.3803*	0.5920*	0.4878*	1.0000		
	0.0000	0.0000	0.0000	0.0000			
lnhfcspc	0.4663*	0.3686*	0.3837*	0.4135*	0.1610	1.0000	
	0.0000	0.0000	0.0000	0.0000	0.0123		
lnpfcspc	0.3410*	0.3445*	0.2588*	0.3844*	0.1169	0.2325*	1.0000
	0.0000	0.0000	0.0000	0.0000	0.0707	0.0003	
lnsf6pc	0.4754*	0.5393*	0.2230*	0.3675*	-0.1574	0.2156*	0.6795*
	0.0000	0.0000	0.0005	0.0000	0.0144	0.0008	0.0000
lnn2opc	-0.3826*	-0.3834*	0.4547*	0.3910*	0.8533*	0.1363	0.2059*
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0344	0.0013
carboninten	-0.1651*	-0.1317	0.6713*	0.4261*	0.3272*	0.1221	-0.0929
	0.0072	0.0815	0.0000	0.0000	0.0000	0.0584	0.1513
altenergy	0.1699*	0.1527	-0.5932*	-0.4255*	-0.2431*	-0.0949	0.2299*
	0.0057	0.0430	0.0000	0.0000	0.0001	0.1417	0.0003
lngdppc	0.5054*	0.4753*	0.0767	0.2395*	-0.0156	0.3141*	0.4672*
	0.0000	0.0000	0.2356	0.0001	0.8101	0.0000	0.0000
enviroexpen	-0.1438	-0.0775	0.3094*	0.2271*	0.3804*	0.0283	-0.0283
	0.0598	0.4104	0.0001	0.0027	0.0000	0.7218	0.7220
kyotoprot	0.1705*	0.1027	-0.0868	-0.0469	-0.0744	0.3434*	-0.0945
	0.0055	0.1750	0.1795	0.4482	0.2499	0.0000	0.1444
leftgov	-0.1674*	-0.1903	-0.1069	-0.1091	0.1571	-0.0573	-0.1628
	0.0079	0.0137	0.1065	0.0844	0.0174	0.3878	0.0139
democracy	0.0759	0.1220	0.0603	0.0917	0.0915	-0.1287	-0.0717
	0.2188	0.1067	0.3511	0.1373	0.1567	0.0460	0.2682
lnpop	0.7114*	0.7075*	0.2403*	0.2812*	-0.2398*	0.3961*	0.1538
	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0171
govern	0.0628	0.0692	0.0600	0.1213	0.3070*	0.0498	0.0846
	0.3653	0.3726	0.4106	0.0794	0.0000	0.4946	0.2469
regulquality	0.0918	0.1086	0.2631*	0.2280*	0.4467*	0.3188*	0.0110
	0.1852	0.1611	0.0002	0.0009	0.0000	0.0000	0.8805
ruleoflaw	0.1346	0.1410	0.0659	0.1576	0.2597*	0.1484	0.1441
	0.0462	0.0619	0.3541	0.0193	0.0002	0.0360	0.0422
voiceaccount	-0.0242	0.0140	-0.0106	0.0315	0.3421*	-0.0371	-0.0321
	0.7208	0.8537	0.8816	0.6417	0.0000	0.6017	0.6525
contcorrupt	0.1026	0.1307	0.0405	0.1108	0.2751*	0.0928	0.0524
	0.1294	0.0838	0.5692	0.1013	0.0001	0.1911	0.4623
polstability	-0.2128*	-0.2554*	-0.1223	-0.0379	0.0810	-0.4070*	0.0197
	0.0015	0.0006	0.0844	0.5761	0.2539	0.0000	0.7829
goveffective	0.1353	0.1334	0.0937	0.1689	0.2204*	0.1343	0.1891*
	0.0451	0.0775	0.1870	0.0121	0.0017	0.0579	0.0075

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	lnsf6pc	lnn2opc	co2inten	altenergy	lngdppc	enviroexpen	kyotoprot
lnn2opc	-0.0699	1.0000					
	0.2796						
co2inten	-0.1070	0.0803	1.0000				
	0.0976	0.2140					
altenergy	0.2010*	-0.0743	-0.8938*	1.0000			
	0.0017	0.2503	0.0000				
lngdppc	0.5024*	0.0398	-0.2598*	0.2427*	1.0000		
	0.0000	0.5390	0.0000	0.0001			
enviroexpen	-0.0174	0.3340*	0.2854*	-0.3874*	0.1609	1.0000	
	0.8267	0.0000	0.0001	0.0000	0.0350		
kyotoprot	-0.1524	-0.1236	-0.0500	0.0048	0.2872*	0.0825	1.0000
	0.0179	0.0554	0.4187	0.9385	0.0000	0.2822	
leftgov	-0.0884	0.1741*	-0.0563	0.0341	-0.1980*	0.0441	-0.1512
	0.1823	0.0083	0.3745	0.5903	0.0016	0.5664	0.0165
democracy	-0.0373	0.0021	0.1489	-0.1924*	0.3512*	0.2175*	-0.0541
	0.5645	0.9747	0.0154	0.0017	0.0000	0.0042	0.3816
lnpop	0.3221*	-0.3849*	0.1840*	-0.1055	-0.0584	-0.2904*	0.0168
	0.0000	0.0000	0.0027	0.0872	0.3448	0.0001	0.7861
govern	0.1558	0.4754*	-0.4226*	0.2682*	0.4990*	0.2688*	-0.1022
	0.0318	0.0000	0.0000	0.0001	0.0000	0.0017	0.1400
regulquality	0.0437	0.5204*	-0.2205*	0.0326	0.4284*	0.4252*	0.0114
	0.5490	0.0000	0.0013	0.6380	0.0000	0.0000	0.8690
ruleoflaw	0.2840*	0.3789*	-0.3935*	0.2956*	0.5465*	0.2349*	-0.0111
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0047	0.8701
voiceaccount	-0.0625	0.4967*	-0.3542*	0.2050*	0.4718*	0.1548	-0.0595
	0.3790	0.0000	0.0000	0.0022	0.0000	0.0649	0.3800
contcorrupt	0.1579	0.4144*	-0.3968*	0.2562*	0.4773*	0.1971	-0.0708
	0.0256	0.0000	0.0000	0.0001	0.0000	0.0183	0.2958
polstability	0.0389	0.1953*	-0.3079*	0.1977*	0.2587*	0.2028	-0.2191*
	0.5840	0.0056	0.0000	0.0032	0.0001	0.0151	0.0011
goveffective	0.2358*	0.4182*	-0.4180*	0.3115*	0.4932*	0.1651	-0.1647
	0.0008	0.0000	0.0000	0.0000	0.0000	0.0488	0.0144

	leftgov	democracy	lnpop	govern	regulquality	ruleoflaw
democracy	0.0883	1.0000				
	0.1631					
lnpop	-0.1029	-0.2029*	1.0000			
	0.1039	0.0009				
govern	0.1183	0.4331*	-0.4915*	1.0000		
	0.0960	0.0000	0.0000			
regulquality	0.1475	0.3858*	-0.3225*	0.8839*	1.0000	
	0.0377	0.0000	0.0000	0.0000		
ruleoflaw	0.0822	0.3462*	-0.4031*	0.9540*	0.8404*	1.0000
	0.2367	0.0000	0.0000	0.0000	0.0000	
voiceaccount	0.1270	0.5014*	-0.5439*	0.8908*	0.7771*	0.7863*
	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000
contcorrupt	0.1551	0.4332*	-0.4151*	0.9780*	0.8747*	0.9355*
	0.0249	0.0000	0.0000	0.0000	0.0000	0.0000
polstability	0.1092	0.4248*	-0.6127*	0.7626*	0.4943*	0.6564*
	0.1155	0.0000	0.0000	0.0000	0.0000	0.0000
goveffective	0.0245	0.3001*	-0.3764*	0.9404*	0.8207*	0.8960*
	0.7249	0.0000	0.0000	0.0000	0.0000	0.0000

	voiceaccount	contcorrupt	polstability	goveffective
contcorrupt	0.8577*	1.0000		
	0.0000			
polstability	0.6537*	0.6665*	1.0000	
	0.0000	0.0000		
goveffective	0.7952*	0.8972*	0.6335*	1.0000
	0.0000	0.0000	0.0000	

Note: * denotes significance at 5% level.