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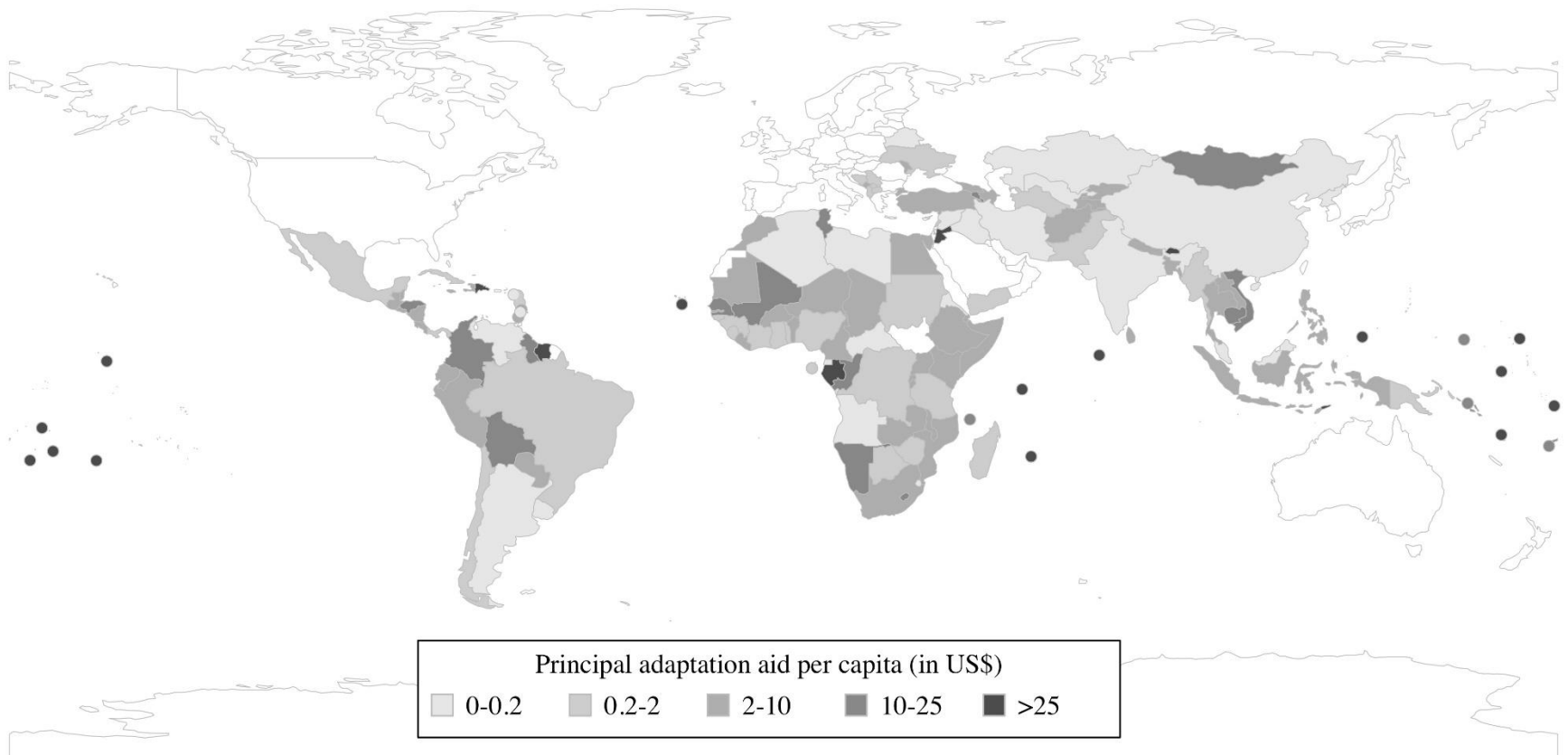
THE ALLOCATION OF AID FOR CLIMATE CHANGE ADAPTATION

BACKGROUND

- Certain climate change impacts are no longer avoidable. Adaptation, "the process of adjustment to actual or expected climate and its effects" (IPCC, 2014), is therefore urgently needed, especially in developing countries.

- Developed countries agreed in the 1992 United Nations Framework Convention to Climate Change (UNFCCC) to assist "particularly vulnerable" developing countries to adapt to climate change.

- At the 2009 Copenhagen Summit, developed countries confirmed this commitment and put forward concrete numbers for the first time. Beyond US$30 billion so-called fast-start finance for the period 2010 through 2012, developed countries pledged to "mobilise" US$100 billion in "new and additional resources" every year for both mitigation and adaptation in the Global South by 2020 (UNFCCC, 2009, Decision 2/CP.15, para. 8).

- The Paris Agreement repeated this 100-billion-target and specifically called on developed countries to "significantly increas[e] adaptation finance" (UNFCCC, 2015, Preamble, para. 114).

WHO RECEIVES BILATERAL ADAPTATION AID?

Principal adaptation aid per capita (in US$)

0-0.2   0.2-2   2-10   10-25   >25

EXISTING LITERATURE

- Previous research has empirically traced the geographic distribution of adaptation funding, for subsets of donors (Betzold, 2015) or of recipients (Robertsen et al., 2015; Robinson & Dornan, 2016), at the aggregate (Betzold & Weiler, 2017) or subnational level (Barrett, 2014, 2015), and for multilateral funds (Persson & Remling, 2014; Remling & Persson, 2015).

- None of these papers consider aid from all donors to all recipients at the dyadic level, as we do in this paper.

- Our analysis uses a dyadic dataset covering adaptation aid flows from 2010 through 2015 across all donors and all recipients reported in the OECD Creditor Reporting System.

DETERMINANTS OF ALLOCATION

Building on prior literature, we test various drivers of aid allocation:

1. Recipient need: The more vulnerable a country, the more adaptation aid it should receive. Vulnerability comprises
    a. Physical vulnerability: the more physically vulnerable a country, the more adaptation aid it should receive
    b. Adaptive capacity: The lower a country's adaptive capacity, the more adaptation aid it should receive.

2. Recipient merit: The better governed a country, the more adaptation aid it should receive

3. Donor interests: The more relevant a country—economically or politically—to a donor, the more adaptation aid it should receive from that donor.

AID DATA

- To test our expectations, we compiled a dyadic dataset of bilateral adaptation aid from all OECD donors between 2010 and 2015 based on project-level aid data from the OECD Creditor Reporting System. Since 2010, donors need to identify projects where adaptation is the principal (i.e., main) or a significant (i.e., not the main, but still important) objective, using the Rio Marker for adaptation

- The "Rio Markers system is [so far] the most advanced initiative to monitor, report, and verify financial and investment flows across a range of countries at both ends and in sectors" (Huhtala et al. 2010).

AID DATA - CAVEATS

- The OECD data are not without problems as donors tend to over-state the adaptation relevance of aid projects.

- To minimise problems of over-reporting and over-estimation of adaptation aid, we report results for principal adaptation aid only—that is, projects where adaptation is the main objective—since over-reporting seems less prevalent for principal adaptation aid flows (AdaptationWatch, 2015).

- Following the approach of Germany and Sweden, we also construct a variable using both principal and significant aid, which discounts significant aid by 50% as project tagged this way are particularly prone to over-reporting.

MODELLING STRATEGY

Following the aid literature, we apply a two-stage Cragg Model (Clist, 2011a, 2011b; Manning, Duan, & W.H., 1987), which allows a separation of aid allocation decisions into:

1. A selection stage: at which donors decide whether to allocate adaptation funds to a country (or, the list of countries to which they will provide adaptation funds)

2. An allocation stage: at which donors decide how much to allocate to those countries chosen at the selection stage (or, how to allocate their total adaptation budget to the list of countries to which they decide to provide funding)

DETERMINANTS OF ALLOCATION

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3. Donor interests: The more relevant a country—economically or politically—to a donor, the more adaptation aid it should receive from that donor.

MEASURES OF PHYSICAL EXPOSURE AND SENSITIVITY

1. Recipient need: Vulnerability comprises
   a. Physical vulnerability: the more physically vulnerable a country, the more adaptation aid it should receive
   b. Adaptive capacity: The lower a country's adaptive capacity, the more adaptation aid it should receive.

- **ND-GAIN exposure** variable provided by the Notre Dame Global Adaptation Index: Captures physical exposure to climatic changes of countries, and is thus not connected in any way to other socio-economic variables that we also include in our models

- **Index of Structural Vulnerability to Climate Change (SVCCI):** Strongly focuses on the physical dimension of climate vulnerability

- **Climate Risk Index (CRI)** provided by Germanwatch: CRI focuses on annual weather patterns and the loss to humans and the economy that climate-related natural disasters such as storms, droughts or floods cause.

The three indices measuring physical exposure all try to capture the same concept, albeit using different data and methodologies. Consequently, we only include one of these variables at a time.

MEASURES OF ADAPTIVE CAPACITY AND GOVERNMENTAL QUALITY

1. Recipient need: Vulnerability comprises
   a. Physical vulnerability: the more physically vulnerable a country, the more adaptation aid it should receive
   b. Adaptive capacity: The lower a country's adaptive capacity, the more adaptation aid it should receive.

2. Recipient merit: The better governed a country, the more adaptation aid it should receive

- **GDP per capita:** We assume that all else being equal, countries with more financial resources are better able to cope with the challenges posed by climate change

- **Vulnerability dummies:** We use dummies for the three groups of countries that are singled out as being "particularly vulnerable" in climate negotiations: small island developing states (SIDS), least developed countries (LDCs) and African states

- **Worldwide Governance Indicators (WGIs):** Used as a proxy for the quality of governance in recipient countries

- **ND-GAIN adaptive capacity** variable: Captures elements such as infrastructure quality, a country's preparedness to cope with disasters, or its engagement in international environmental conventions

MEASURES OF DONOR INTEREST

3. Donor interests: The more relevant a country—economically or politically—to a donor, the more adaptation aid it should receive from that donor.

- **Total exports:** To capture economic interests of donors, we utilize export data using bilateral trade flow data from UN Comtrade

- **Colonial ties:** We expect colonial ties to play a role for (adaptation) aid allocation decisions, as donors want to sustain their influence over former colonies.

- **UN voting:** The more similar the preferences of donors and recipients in the international sphere, the more adaptation aid flows we expect to see.

- **Distance between partners:** Donors have strategic interests in geographically close countries. We therefore include the distance between donor and recipient country.
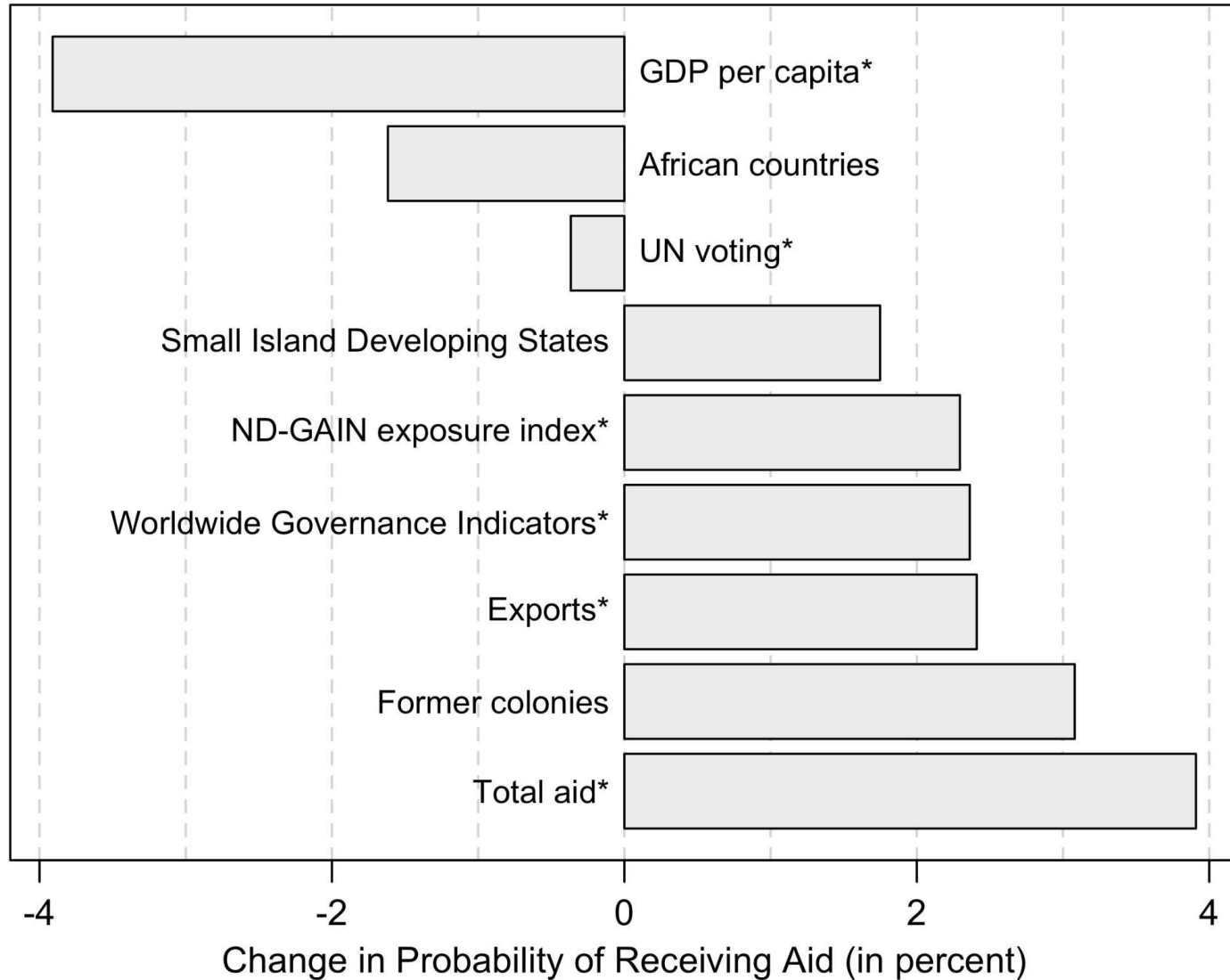
CONTROL VARIABLES

- **Total development aid:** As the same institutions within donor countries distribute both development and adaptation aid, we expect the two to correlate highly

- **Population:** On the one hand, larger countries are of greater geopolitical interest. On the other hand, population size influences the level of aid per capita, with smaller countries receiving more relatively more aid per capita. We thus expect a positive relationship at the selection stage (which determines whether a country receives adaptation aid), but a negative relationship at the allocation stage (which determines how much countries that do receive adaptation aid are allocated on a per capita basis).

RESULTS: SELECTION STAGE

dv: principal adaptation aid/cap[+]

	(1)		(2)		(3)	
ND-GAIN exposure	3.171 ***	(0.518)				
SVCCI			0.013 ***	(0.005)		
CRI					0.006 ***	(0.001)
SIDS	0.399 ***	(0.102)	0.631 ***	(0.104)	0.604 ***	(0.101)
LDCs	0.063	(0.092)	0.259 ***	(0.095)	0.16 *	(0.094)
Africa	-0.577 ***	(0.071)	-0.466 ***	(0.075)	-0.381 ***	(0.075)
GDP/cap[+]	1.563 ***	(0.425)	1.556 ***	(0.447)	2.012 ***	(0.447)
GDP/cap^2[+]	-0.134 ***	(0.027)	-0.126 ***	(0.029)	-0.163 ***	(0.029)
WGI	0.829 ***	(0.068)	0.682 ***	(0.073)	0.792 ***	(0.071)
ND-GAIN capacity	-0.343	(0.296)	-0.760 **	(0.303)	-0.515 *	(0.311)
exports[+]	0.122 ***	(0.018)	0.099 ***	(0.019)	0.118 ***	(0.020)
distance[+]	0.035	(0.039)	0.038	(0.044)	0.084 **	(0.042)
ex-colony	0.777 ***	(0.119)	0.802 ***	(0.126)	0.839 ***	(0.125)
UN voting	-0.368 ***	(0.140)	-0.181	(0.164)	-0.485 ***	(0.156)
total aid[+]	0.623 ***	(0.021)	0.645 ***	(0.022)	0.621 ***	(0.021)
population[+]	0.107 ***	(0.025)	0.135 ***	(0.027)	0.078 ***	(0.029)

RESULTS: SELECTION STAGE

RESULTS: ALLOCATION STAGE
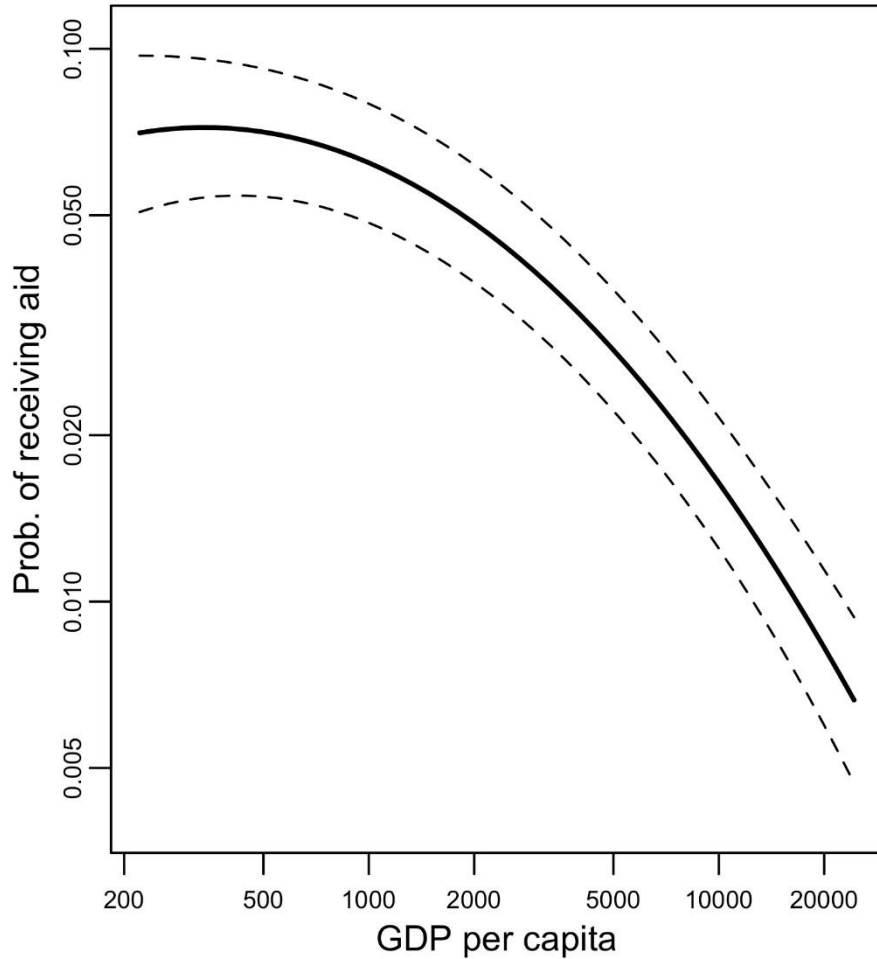
dv: principal adaptation aid/cap$^+$

	(1)		(2)		(3)	
ND-GAIN exposure	1.017 ***	(0.200)				
SVCCI			0.009 ***	(0.002)		
CRI					0.000	(0.000)
SIDS	0.173 ***	(0.042)	0.204 ***	(0.042)	0.260 ***	(0.037)
LDCs	0.091 ***	(0.035)	0.101 ***	(0.036)	0.096 ***	(0.032)
Africa	0.052 *	(0.028)	0.011	(0.029)	0.074 ***	(0.026)
GDP/cap$^+$	0.366 **	(0.176)	0.275	(0.181)	0.450 ***	(0.160)
GDP/cap^2$^+$	-0.024 **	(0.011)	-0.017	(0.012)	-0.029 ***	(0.010)
WGI	-0.014	(0.028)	-0.010	(0.030)	0.014	(0.026)
ND-GAIN capacity	-0.496 ***	(0.121)	-0.472 ***	(0.123)	-0.502 ***	(0.111)
exports$^+$	0.039 ***	(0.008)	0.035 ***	(0.008)	0.021 ***	(0.007)
distance$^+$	0.015	(0.013)	0.010	(0.014)	0.009	(0.012)
ex-colony	-0.199 ***	(0.041)	-0.160 ***	(0.042)	-0.161 ***	(0.037)
UN Voting	0.009	(0.056)	0.069	(0.064)	0.050	(0.053)
total aid$^+$	0.103 ***	(0.008)	0.103 ***	(0.009)	0.094 ***	(0.008)
population$^+$	-0.176 ***	(0.010)	-0.173 ***	(0.011)	-0.127 ***	(0.010)

RESULTS: ALLOCATION STAGE

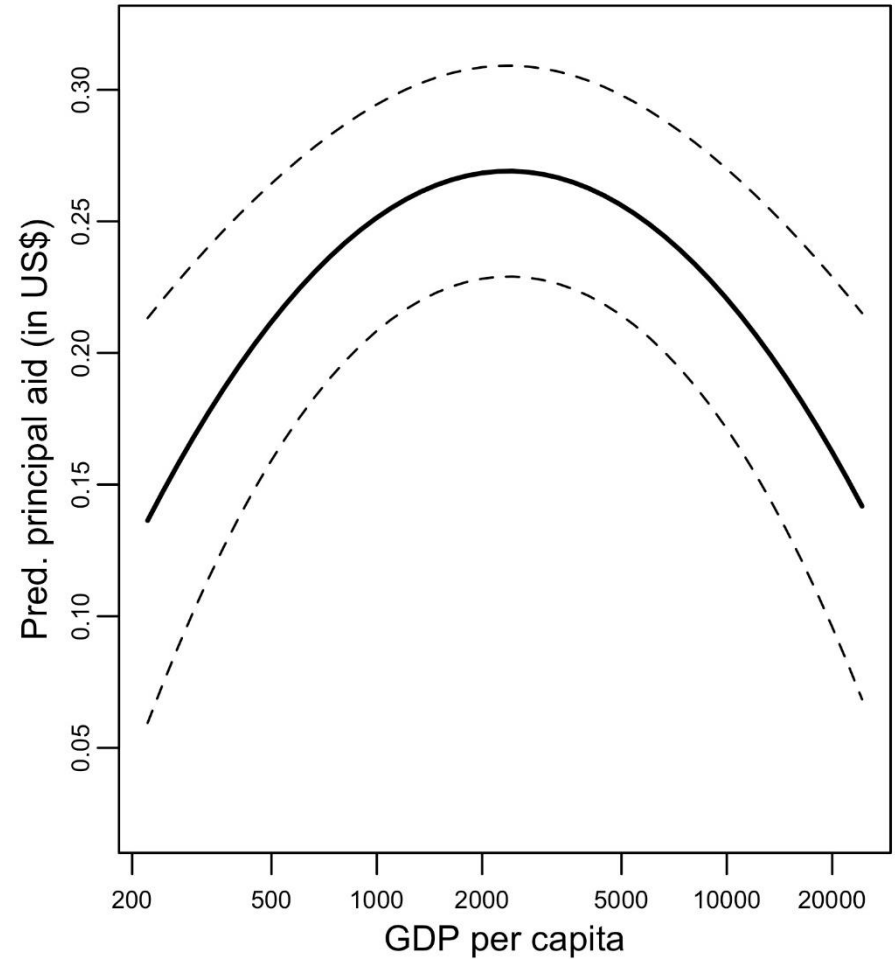Change in the Amount of Adaptation Aid received (in percent)

RESULTS: GDP PER CAPITA

Selection stage

Allocation stage

SUMMARY

To what extent then is adaptation aid allocated to vulnerable countries, to well-governed countries or to countries of interest to the donor?

Hypothesis 1: Vulnerable countries receive more aid

- Our analysis suggests that physical vulnerability strongly influences both whether a country receives adaptation aid, and how much adaptation aid it receives.   TRUE

- In contrast, adaptive capacity, the other dimension of vulnerability, does not seem to be a criterion for adaptation aid allocation.   FALSE

SUMMARY (2)

Hypothesis 2: Well governed countries receive more aid

- Good governance or recipient merit matters very significantly, suggesting that that the allocation decisions of donors are driven with a view to aid effectiveness.

  TRUE

- Well governed countries, though better able to deal with climate change, are significantly more likely to receive support for adaptation, and receive more funds per capita, presumably because they are (perceived to be) better able to absorb and make good use of aid inflows.

SUMMARY (3)

Hypothesis 3: Donors provide aid on the basis of their economic and political interests

MIXED

- Exports are a strong predictor of adaptation aid allocation. However, their impact is not as strong as other variables already mentioned (when taken collectively).

- Other predictors (UN voting patterns, distance, and even colonial status) are not good predictors

- These findings contradict those of the aid allocation literature, which identifies donor interests as a strong predictor of aid allocation (e.g. Alesina & Dollar, 2000; Berthélemy, 2006).

SUMMARY (4)

- At the same time, adaptation aid to a significant degree follows the more established development aid flows. The strongest predictor of adaptation aid in our models is overall development aid.

- While there may be good reasons for this, given complementarities between development and adaptation aid, this does raise concerns about the additionality of resources.

THANK YOU

(On behalf of my co-authors, Florian Weiler and Carola Klöck as well)

Our paper:
Weiler, F., Klöck, C. and Dornan, M. 2018. Vulnerability, good governance, or donor interests? The allocation of aid for climate change adaptation. *World Development.* 104 (2018) 65–77

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