# Risk and Responsibility: Climate Disasters and IMF Conditionality

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**Abstract**

International Monetary Fund (IMF) loans often require states to implement stringent policy conditions for funds to be disbursed. However, many recipients experience frequent climate disasters, which limit the feasibility and political desirability of taking on cumbersome conditions (e.g., those mandating drastic cuts to public spending). We examine whether and how the IMF accounts for the burden posed by states' experiences of climate disasters when designing loan programs. The Fund appears to balance moral hazard concerns against climate vulnerability by granting disaster-prone countries access to IMF programs with fewer and less stringent prior actions — stringent pre-approval conditions. Mechanism tests and unique interviews with IMF staff and Executive Board members suggest this effect is driven by bureaucrats' attention rather than the desires of management or member states. These findings highlight the responsiveness of international financial institutions to countries' climate vulnerabilities and illustrate how climate change influences international economic policymaking processes.

*Keywords:* climate; conditionality; international organizations; IMF

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## Introduction

Countries prone to climate disasters increasingly exert pressure on international financial institutions (IFIs) to mobilize resources to combat the climate crisis (Merling and Forster 2024). The Bridgetown Initiative, spearheaded by Barbadian Prime Minister Mia Mottley, is indicative of this trend; Mottley, in coalition with leaders of several low-lying island nations, has called for the World Bank and International Monetary Fund (IMF) to significantly revamp their lending activities to account for the burden that climate change places on vulnerable states, especially as a result of increasingly frequent and damaging climate disasters.

The Bridgetown Initiative has specifically demanded that the G-20 countries contribute an additional $100 billion per year to IFIs to fund climate finance; called for an expansion of the lending capacity of the World Bank; asked the IMF to relax access limits to concessional finance through the institution's Resilience and Sustainability Trust (RST); and pushed for these institutions to redistribute voting shares away from rich nations in the Global North in favor of more "inclusive and equitable" governance.[1] The Bank estimates that total financing needed to tackle climate shocks through 2030 exceeds $2.4 trillion per year.[2] The severity of the looming crisis has led IMF Managing Director Kristalina Georgieva to call for a "new Bretton Woods moment,"[3] equating the challenge to the erection of the IMF and World Bank in the wake of the Second World War.

However, IFIs have been slow to meet the demands of climate disaster-vulnerable states. The World Bank has been hesitant to expand lending, expressing concern that doing so might threaten its AAA credit rating and, in turn, increase borrowing costs for recipients.[4] The IMF, meanwhile, faces resistance from member states at the Executive Board, the institution's highest decision-making body; original interview evidence suggests that many Executive Directors believe climate falls outside the Fund's purview. Said one such director, "I have a major problem with the IMF getting so much into climate change — an issue that is very important but outside of the IMF's

[1] *Reuters*, 2023, https://bit.ly/3Pe6mLO; *Foreign Affairs*, 2023, https://bit.ly/3v9d3ry
[2] *Carnegie Endowment for International Peace*, 2023, https://bit.ly/3VeqMIn
[3] *IMF*, 2020, https://bit.ly/3TuHr94
[4] *Reuters*, 2023, https://bit.ly/3VejaFu

mandate. The next economic crisis is totally independent of how the issue is being handled."[5] A former director of the European department similarly recounted significant resistance arising at the Board during his tenure over climate change increasingly appearing in the Fund's reporting.[6]

This apparent inaction on climate begs the question: how, if at all, are IFIs responding to the mounting climate crisis? We focus on the IMF and argue that the Fund has begun assisting countries affected by severe climate disasters in crucial yet subtle ways that circumvent donor-state objections and avoid altering its formal mandate. In particular, we contend that IMF staff respond to severe climate disasters by easing the difficulty of prior actions — the Fund's most binding form of conditionality, required before a loan or program revision is approved. Because the IMF has limited flexibility to provide direct climate finance, easing conditionality is one of the few levers available to staff to offer immediate relief: reducing up-front requirements facilitates rapid disbursement while avoiding more visible changes to program size or design that would attract scrutiny from powerful Executive Board members.

Realized climate risks, which manifest in the occurrence of climate disasters, are apparent to staff working in these countries (Clark and Zucker 2024). Indeed, more so than slower-onset climactic trends or latent climate vulnerability, disasters are highly salient signals of countries' susceptibility to climate shocks. We argue that bureaucrats rely on such salient heuristics in their decision-making, which is subject to recency bias (Kahneman, Slovic and Tversky 1982). Staff may experience climate disasters or their aftermath when sent abroad, learn about the severity of climate risks as they interact with policy officials, or hear discussions about climate in the public zeitgeist. As staff recognize countries' climate vulnerability, we argue that they design loan programs that are less burdensome for affected states to implement, while simultaneously maintaining support from IMF principals with heterogeneous preferences over the Fund's role in addressing climate risks. Staff are typically afforded significant discretion when designing conditional loan programs (Clark and Dolan 2021; Lang et al. 2024). We contend that staff can exercise this discre-

[5]Interview with former IMF Executive Director, performed by authors in August 2021. Additional information about interviews, including sampling protocol, who we interviewed, and the questions asked, appear in Appendix 5.

[6]Interview with former director of European department, performed by authors in June 2021.

tion to ease the conditionality burden placed on states that experience climate-related disasters.

Why would bureaucrats take such steps in the face of opposition from powerful member states? We argue that IMF staff reduce the burden of conditionality as the result of bargaining between climate-attentive bureaucrats and vulnerable borrowing governments. When countries experience severe climate disasters, they are often able to persuade sympathetic staff to grant them relief from the most onerous loan conditions. Borrowing governments nearly always seek less stringent IMF conditionality, as such conditions are politically unpopular and constrain public spending (Li, Sy and McMurray 2015; Kentikelenis, Stubbs and King 2016) — especially when they take the form of binding prior actions. These concerns are particularly acute for disaster-prone states, which must mobilize fiscal resources to invest in climate-adaptation measures (Ko and lee 2024). Although governments routinely request easier terms, they are most successful when they possess bargaining leverage, such as from alliance ties with the United States or temporary membership on the UN Security Council (Stone 2011; Dreher, Sturm and Vreeland 2015). We argue that climate disasters can similarly enhance governments' bargaining position vis-á-vis IMF staff responsible for program design.

Bureaucrats are receptive to countries' requests under these conditions for several reasons. First, imposing burdensome up-front demands on disaster-affected countries may appear unjust to IFI staffers, particularly those concerned about climate issues. Recent research indicates many IMF bureaucrats see climate change as integral to the Fund's mission, influenced either by their own experiences (Clark and Zucker 2024) or by the directives of recent Managing Directors Christine Lagarde and Kristalina Georgieva, who have emphasized climate concerns (Copelovitch and Rickard 2021). Climate justice considerations may thus shape bureaucrats' decisions, prompting leniency toward vulnerable states. Interviews support this perspective. One former mission chief noted, "With climate, the trends are increasingly making it a macro-critical issue, and not just for small island countries... Financial regulators are increasingly raising climate into dialogue with the Fund."[7] Another summarized succinctly: "Climate is macrocritical. We should use all the tools we

[7]Interview with former mission chief and director of Strategy, Policy, and Review (SPR), August 2021.

have [at the Fund]."[8]

Alternatively, staff may be driven by a desire to bolster institutional relevance by tackling salient issues like climate. The Fund increasingly competes with a growing number of regional financing arrangements, as well as vast networks of currency swaps and bilateral partners (Schneider and Tobin 2020; Pratt 2021; Clark 2022), including emerging lenders such as China (Ferry and Zeitz 2024). Recognizing states' climate vulnerabilities may help staff retain their business. and subsequently their employment. in such a competitive lending environment.[9] A former resident representative offered evidence in this vein, saying, "If you wish to remain a relevant institution, you have to work on the issues relevant to your members... Inequality, climate change — these are relevant issues at the forefront of a lot of the ways people want politicians to be framing economics."[10] Regardless of their precise motivation, our theory expects Fund staff to design loan programs that limit the strain of conditionality demanded of countries experiencing severe climate disasters.

We first show that when countries are hit hard by climate disasters, they receive fewer and less wide-ranging conditions, including significantly fewer prior actions. This pattern is consistent with IMF staff easing up-front conditionality to expedite financing for vulnerable borrowers. Because the overall number of conditions in a program is salient to IMF principals, staff appear to concentrate their discretion on reducing prior actions rather than performance criteria, which are less politically costly and can be waived ex post if necessary. Indeed, we find no systematic relationship between disaster exposure and the number of performance criteria included in programs, but a strong positive association between disaster exposure and the share of performance criteria that are ultimately waived.

We further build on recent work (Kramarz et al. 2025) by deploying a novel latent semantic scaling approach that evaluates the difficulty of conditionality based on the language used in prior actions, and we find consistent evidence that disaster-affected countries face less demanding up-

[8]Interview with former mission chief and department head, July 2021.

[9]On how states select among creditors, see Bunte (2019); Cormier and Manger (2022).

[10]Interview with former resident representative, performed by authors in November 2024.

front requirements. Finally, we probe the mechanisms underlying this dynamic and show that staff concern about climate risk — rather than the preferences of management or major member states — best explains these patterns.

By disaggregating condition types and incorporating text-based measures of conditionality difficulty, our analysis advances prior empirical work on IMF conditionality. We highlight how different political considerations govern the design and enforcement of distinct conditionality instruments, and we shift attention from simple counts of conditions to their burdensomeness. Counts alone may obscure how demanding IMF programs actually are, particularly when performance criteria are frequently waived or when conditions are relatively easy to implement. Our approach therefore provides a more accurate account of how difficult IMF programs are for borrowing states to carry out.

This research builds on recent work positing a role for staff influence in driving IFIs' pivots to climate change (Clark and Zucker 2024; Goes and Chapman 2024), as well as a growing literature interested in bureaucratic influence in international relations more generally. A large literature recognizes the importance of IO staff as agents of change in global governance; individual staff have been shown to affect the performance of loan programs in IFIs, the content of their research, the economic policies they advance, and even the shape of new international institutions (e.g., Weaver 2008; Johnson 2014; Carcelli 2023; Thrall 2024; Weaver 2008; Cormier and Manger 2022; Heinzel 2022; Heinzel, Weaver and Jorgensen 2024; Lang, Kentikelenis and Wellner 2024). We extend this literature by showing how staff can respond to calls for IFIs to take action on climate change in subtle yet impactful ways.

## IFI Bureaucrats, Climate, and Conditionality

As IFIs increasingly feel pressure from countries vulnerable to climate disasters (Merling and Forster 2024), the bureaucrats that staff these institutions must strike a delicate balance. Disaster-prone countries often push such staff to recognize the challenges they face and furnish them with assistance, financial or otherwise. Staff may wish to meet the demands of disaster-prone countries,

both to retain states' participation and because they themselves may be concerned about climate change. However, IFI bureaucrats must also prioritize the interests of the powerful member states, like the US and G-5, that dominate these institutions and provide the vast majority of their financing; the states most vulnerable to climate disasters, by contrast, tend to be developing and middle-income countries that possess relatively little formal and informal influence in IOs (Arias, Clark and Kaya 2025).

These institutions' pivots to climate are driven at least in part by the efforts of rank-and-file bureaucrats. Recent scholarship places a spotlight on bureaucrats in IOs and foreign policy bureaucracies (Carcelli 2023). In IFIs, such bureaucrats can leverage agency slack to impact the design and performance of loan programs (Heinzel 2022; Heinzel, Weaver and Jorgensen 2024; Lang, Kentikelenis and Wellner 2024). Clark and Zucker (2024) show that when IMF bureaucrats spend time in climate vulnerable countries, they come to identify climate as relevant to institutional mandates and emphasize it in research and surveillance reports. These research outputs are leading indicators of changes to IFIs' lending operations (Cormier and Manger 2022).

We build on this literature by arguing that IMF staff are persuaded during loan negotiations to grant disaster-vulnerable states relief from conditionality. Notably, bureaucrats in IFIs possess substantial discretion over the design of such conditions (Lang, Kentikelenis and Wellner 2024). Although powerful member states sometimes intervene to relax conditionality for strategically important borrowers (Dreher 2006; Stone 2008), such interventions are selective in order to preserve institutional legitimacy (Stone 2011).[11] Moreover, great power influence is most effective when shareholder preferences are cohesive and intense (Copelovitch 2010). Preferences over climate policy among the IMF's leading shareholders — China, France, Germany, Japan, and the United States — are instead heterogeneous and often ambivalent. This preference heterogeneity creates room for bureaucratic initiative in climate-related matters while constraining member states' ability to direct climate policy at the Fund.

Against this backdrop, we expect IMF staff to impose fewer and less burdensome prior ac-

[11]Even when programs align with the interests of major shareholders, staff, not states, are the primary drivers of program design (Clark and Dolan 2021).

tions on countries suffering severe climate disasters. We believe they do so of their own volition rather than in response to powerful member states' directives. Interviews with current and former Executive Directors at the IMF bolster this claim — insiders assert that the Board remains unconvinced that climate change falls under the institution's purview, and their focus remains on more immediate macroeconomic threats.[12] In subsequent empirical tests, we account for the influence of powerful states and attempt to disentangle staff versus managerial influence, finding relatively more evidence for staff influence (see Section "Probing Mechanisms.")

We argue that IMF bureaucrats reduce the number and difficulty of prior actions when countries experience severe climate disasters because borrowing governments actively demand relief from the most onerous components of conditionality. Countries generally prefer fewer and less stringent conditions, as this reduces the economic and political costs of program implementation. When recipients possess bargaining leverage, such as through alliance ties with the United States or temporary membership on the UN Security Council, they secure fewer conditions across a narrower range of policy areas and with softer language (Copelovitch 2010; Stone 2011; Dreher, Sturm and Vreeland 2015; Clark and Dolan 2021; Clark 2022). Because borrowers' political capital is limited, they are unlikely to obtain sweeping relaxation of IMF programs and instead concentrate their bargaining efforts on prior actions.

Our motivating examples indicate that disaster-prone countries have become particularly dissatisfied with IFIs, seeking greater access to financing with lower up-front conditionality in order to preserve fiscal space for climate adaptation investments such as seawall fortification and more resilient infrastructure (Ko and lee 2024). Since IMF conditionality frequently entails austerity measures (Kentikelenis and Stubbs 2023), which can generate substantial political and social costs (Clark and Meyerrose 2024), governments in regions affected by climate disasters are especially resistant to stringent prior actions. IMF staff, recognizing these constraints, appear more willing to accommodate such demands by easing up-front requirements rather than altering other elements of program design.

[12]Interviews with current and former IMF Executive Directors performed by authors in August and September 2021.

Indeed, climate disasters produce adverse macroeconomic impacts that further complicate loan repayment for affected states. IMF and World Bank research (e.g., Nguyen, Feng and Garcia-Escribano 2025; Fuje et al. 2023; Lepore and Fernando 2023; Hochrainer 2009) demonstrates that droughts alone can reduce economic growth by approximately 1.4 percentage points and diminish government revenue by 0.7% of GDP in emerging and developing economies. Such disasters can depress GDP for up to five years due to reduced exports and a diminished tax base. Climate-related events — heatwaves, droughts, cold spells, and floods — also negatively impact firm productivity and typically reduce private investment. By contrast, advanced economies generally remain better insulated from these economic shocks (see also Botzen, Deschenes and Sanders 2019).

While staff are not receptive to all countries' requests for breaks on conditionality, they may be predisposed to listen when a recipient has suffered severe climate disasters. Such disasters are highly observable, often affect many citizens, and can inflict a substantial economic toll — they are thus highly salient indicators of a country's climate vulnerability and present opportunities for updating beliefs about underlying climate risks. Bureaucrats are likely to notice when countries experience such severe climate disasters, whether because they often must travel to recipient states to negotiate with domestic policy officials and oversee implementation, or as they monitor salient issues in the state's news media and public zeitgeist. Moreover, IMF staff may be especially attuned to climate disasters given the Fund's existing research on physical climate risk (Lepore and Fernando 2023). Scholarship suggests that field agents can learn from their experience abroad (e.g., Campbell 2008; Honig 2018), including when it comes to climate disasters (Clark and Zucker 2024). Prior work has also documented that climate disasters are informative signals that affect public decision-making and attitudes (e.g., Baccini and Leemann 2021; Bergquist, Nilsson and Schultz 2019).[13] We anticipate that elites at the IMF are affected by disaster exposure in similar ways and thus are likely to be sympathetic to vulnerable countries' demands for lenient prior actions, opening a 'policy window' during which disaster-affected leaders may be able to more effectively bargain for fewer and less stringent prior actions with receptive bureaucrats (Kingdon

[13]Such effects tend to decay after a short period of time (Egan and Mullin 2012; Arias and Blair 2024).

1984).

The case of Pakistan illustrates these dynamics. In 2013, while under an IMF program, Pakistan endured devastating floods that inflicted billions of dollars in damages, impacted nearly 1.5 million people, and destroyed approximately 1.5 million acres of crops. These events severely strained the country's balance-of-payments, increasing fiscal deficits, driving inflation, escalating infrastructure costs, and reducing exportable commodities. The IMF explicitly acknowledged these economic impacts during subsequent loan negotiations.[14] The Fund attached five prior actions to Pakistan's loan in 2013 — relatively few compared to the Pakistani average of 7.58 prior actions during 2000-2019. Pakistan faced a similar challenge in 2023, when another catastrophic flood coincided with ongoing IMF negotiations. Pakistani officials argued forcefully that strict IMF conditionalities would undermine essential reconstruction efforts and severely restrict humanitarian relief capacity.[15] The Fund, in its report on the 2023 stand-by arrangement, extensively discussed Pakistan's climate vulnerability and the economic impacts of climate disasters.[16] The program ultimately included only two prior actions (one related to the FY24 budget and one related to market functioning), and IMF staff wrote that Pakistan should significantly increase its investments in climate adaptation measures. These examples underscore how climate disasters not only produce immediate economic disruptions but also heighten the political stakes surrounding austerity conditions, fueling resistance among affected governments and leniency from the IMF.

As previewed above, we focus theoretically and empirically on the difficulty of prior actions, rather than on alternative outcomes such as loan size or other types of conditions like performance criteria or benchmarks. Prior actions must be completed before the Executive Board approves a program or loan review, making them the most binding and politically costly form of conditionality, especially for climate-disaster-prone countries in dire need of rapid disbursement. Because powerful member states remain hesitant to expand the IMF's role in climate finance, Executive Directors would likely resist any attempt by staff to approve unusually large loans for disaster-

[14] *IMF*, 2013, http://bit.ly/45zJyhX
[15] *Al Jazeera*, 2023, http://bit.ly/4lhYLsO; *Al Jazeera*, 2023, http://bit.ly/41pHjeA
[16] *IMF*, 2023, http://bit.ly/454zSMf

affected countries. By contrast, the burdensomeness of conditionality — and especially the number and stringency of prior actions — can be adjusted relatively quietly during program design. Small changes, such as dropping a prior action or softening its language, are less visible to the Board and therefore less likely to provoke political backlash, especially if the top-line number of conditions inclusive of performance criteria and benchmarks, which are softer, remains consistent with historical averages. For these reasons, prior actions provide a theoretically compelling and institutionally plausible channel through which staff can respond to climate vulnerable states' demands without triggering shareholder opposition.

While scholars often examine both prior actions and performance criteria as binding conditions (e.g., Kentikelenis and Stubbs 2023), the latter are assessed after initial loan approval/disbursement and can be waived ex post. As such, performance criteria are a less reliable ex ante indicator of program burdensomeness than prior actions, and so they are not our primary dependent variable. In robustness analyses, however, we find no systematic reduction in the number of performance criteria imposed on disaster-affected countries, but a significant increase in the share of such criteria that are waived (Appendix Table A2). This pattern is consistent with our argument: staff concentrate their discretion on easing the most visible and politically sensitive up-front conditions, which borrowing governments are also most eager to relax, while preserving the apparent structure of performance criteria and exercising flexibility ex post through waivers. We also find no evidence that staff grant countries larger loans when they experience especially harmful climate disasters (Appendix Table A7). Taken together, this evidence reinforces our claim that the IMF accommodates climate vulnerability primarily through adjustments to prior actions and flexible enforcement, rather than through headline program size or overt changes to conditionality design that would invite resistance from IMF principals.

The notion that IMF bureaucrats are likely to respond to climate disasters in these ways builds on research showing how individuals exhibit recency bias by responding to proximate, highly observable pieces of information in their decision-making processes (Kahneman, Slovic and Tversky 1982). These types of biases are well-documented among the public (e.g., Arndt, Jensen and

Wenzelburger 2021) and have been more recently studied in bureaucratic decision-making (e.g., Rimkutė and Van der Voet 2024). Because climate change is a slow-moving, abstract, and complex phenomenon, high-salience events are likely to be valuable as heuristic signals (Arias and Blair 2024). We argue that such recency bias is also likely to affect the decision-making processes of IO bureaucrats. Having observed or experienced climate disasters in the course of their work, we thus argue that bureaucrats may offer breaks on up-front conditionality to affected states.

We posit that they may do so for two reasons — in recognition that the Fund ought to do more to assist such states, or in an effort to remain relevant and competitive given that states can access alternative lenders that may themselves be attuned to climate change. The first motivation is consistent with climate justice considerations; bureaucrats observe the damage that stems from a state's climate vulnerability and lessen the burdensomeness of ex ante conditions as a form of redress, smoothing disbursement of funds. Such damage, insofar as it is economic, can also help center climate issues within the Fund's macro-critical mandate. Bureaucrats may act of their own accord here or in response to pleas from local policy officials. Indeed, climate disasters may open windows of opportunity for such officials to push for less stringent conditions. A large literature shows governments bargain for fewer and less burdensome conditions when they possess credible leverage (Dreher, Sturm and Vreeland 2015; Clark 2022). Severe climate disasters may create similar policy windows in which policy officials can move the Fund to ease the burden placed on them. In the second case, bureaucrats are cognizant of the slew of lenders available to states under the global financial safety net. Staff perceive the occurrence of a climate disaster as a bargaining chip the government may be able to leverage to negotiate better terms elsewhere, especially at institutions that are working more closely on climate issues than the Fund, and they cave to retain members' business. In this situation, IFIs strive to remain relevant amid competitive pressures and emphasize climate considerations in their operations as a means to do so (see Arias, Clark and Kaya 2025).

In each case, the observable implication is the same, namely that countries prone to severe climate disasters should receive relatively "easy" conditionality packages from the IMF. In our

empirical analyses, we operationalize ease by assessing both the number and content of prior actions.

**Hypothesis 1.** *Countries suffering from more severe climate disasters receive less difficult conditionality packages from the IMF.*

An alternative explanation is that staff grant disaster-prone countries breaks on conditionality because such countries' capacity to implement reforms (e.g., privatization and economic liberalization) is hindered by climate disasters; domestic officials may be spread thin trying to pursue climate adaptation and relief measures. IMF programs are stringent and can generate additional costs for governments, especially in the short-term, including increased unemployment, reduced wages, and increased inequality (Caraway, Rickard and Anner 2012; Lang 2021). Staff have incentives to design loans that induce structural changes but also wish to smooth disbursement, which is contingent on states meeting conditions, and maximize the likelihood of successful repayment. Indeed, bureaucrats' performance is often graded based upon the speed with which they can bring a project to completion (Weaver 2008). In other words, staff may be responsive broadly to vulnerability, but not specifically to *climate* vulnerability. However, if staff are responsive to capacity constraints generally, they should reduce the burden of conditions for countries experiencing *any* disaster, not just those related to climate change. We thus conduct a placebo test comparing the impacts of climate disasters to those resulting from earthquakes and other geophysical phenomena. Like climate disasters, these non-climatic events can also trigger severe macroeconomic disruptions, occasionally exerting even greater negative impacts on economic growth (Hochrainer 2009; Bayoumi, Quayyum and Das 2021). Both climatic and geophysical disasters rank among the world's costliest events; earthquakes and hurricanes alike can cause billions in damages and significant economic distress. This comparison allows us to isolate whether IMF staff respond uniquely to climate-related disasters, or more broadly to severe economic disruptions.

## Measuring Climate Conditionality

Since we are interested in the difficulty of ex ante conditions attached to IMF loans, our sample consists of all country–years in which a country is actively participating in an IMF program that includes at least one prior action; the unit of analysis is therefore the country–year. Our data cover 2000–2019. This sample construction reflects our theoretical focus on how IMF staff calibrate the stringency of the Fund's most demanding up-front conditionality instrument once it is employed. Programs without any prior actions represent a qualitatively distinct staff decision — the choice to forgo up-front conditionality altogether — and including them would conflate the decision to use prior actions with decisions about how stringent those actions should be. By conditioning on programs in which prior actions are present, we isolate variation in their number and difficulty, which is the object of our theory. That said, in robustness analyses we also examine the broader set of IMF programs that include either performance criteria or prior actions, as discussed below.

For our first set of tests, our main dependent variable is the number of prior actions included in IMF programs in a given year. We draw on data from Kentikelenis, Stubbs and King (2016); Kentikelenis and Stubbs (2023), which identify all conditions imposed in program–years during the period we examine. Our key independent variable of interest is a measure of climate disaster impact, in line with our theory of realized climate risks. Unlike other measures of climate vulnerability, climate disasters constitute a highly visible signal of the effects of climate change that states are experiencing and are therefore likely to be legible to staff as they design loans. Other commonly used measures of climate vulnerability do not vary significantly over time; for example, ND-GAIN scores within-country change on average only 0.13 points per year (the average country-year NG-GAIN score is 47.96; scores range from 25.42 to 76.99).

We construct our disaster impact measure using the International Disasters Database (EM-DAT). These data include climatological (droughts and wildfires), hydrological (floods), and meteorological (extreme temperatures and storms) disasters from 1999-2023 (see also Arias 2022). Dellmuth et al. (2021) validate that these data capture meteorologically extreme events, and that

missingness is unlikely to be a source of bias in this data from the mid-2000s.[17] To construct our measure of disaster impact, we calculate the population share affected by disasters at the country-year level, centered and rescaled by the standard deviation, and lagged by one year (Roberts and Parks 2006). This includes the number of people with physical injuries, trauma, or illness requiring immediate medical assistance due to the disaster; the number of people otherwise requiring immediate assistance due to the disaster; and the number of people requiring shelter due to their house being destroyed or heavily damaged during the disaster.

This operationalization of disaster impact is preferable to a simple count of disasters or a binary indicator of disaster occurrence because our theoretical mechanism centers on staff attention. Individuals are more likely to notice and respond to large, salient disaster events — so-called "focusing events" — than to minor shocks that often fall below the threshold required to prompt action (Kingdon 1984; Birkland and Schwaeble 2019). Measures based on disaster counts or their binary occurrence would therefore include many relatively minor events with limited economic or human consequences, introducing substantial noise into the analysis (Ferris 2012). By contrast, the number of individuals affected by a disaster better captures the scale and visibility of an event: the larger the affected population, the more likely the disaster is to command the attention of IMF bureaucrats and shape program design. This approach is consistent with prior research that emphasizes the salience of large shocks for economic and policy outcomes (e.g., Noy 2009; Loayza et al. 2012; Cappelli, Costantini and Consoli 2021). Although the EM-DAT database provides alternative indicators of disaster severity, such as deaths and estimated economic damages, we rely on the number affected because it exhibits substantially lower missingness (19% of observations missing, compared to 31% for deaths and 65% for damage estimates).[18]

In some specifications, we also include control measures motivated by existing literature on IFI conditionality. These include political measures — V-Dem democracy scores and whether a

[17] Between 2000 and 2023, this measure ranges from 13.2% missing (2012) to 24.8% missing (2018). The correlation of missingness and time is small (-0.095) and years is an insignificant predictor of missingness ($p = 0.66$).

[18] While disasters may affect more individuals in vulnerable, developing states, major disasters also occur in the Global North. Our models account for cross-national differences through controls for economic development and state capacity, as well as country fixed effects. An additional robustness test controlling for government quality (i.e., capacity) yields no significant relationship with prior actions (Appendix Table A15).

state is a member of the United Nations Security Council, and UN voting distance from the US[19] — and economic measures — the log of GDP per capita, trade as a share of GDP, foreign direct investment as a share of GDP, debt as a share of GNI, debt service as a share of exports, and the log of official development assistance (ODA) as a share of GNI. These factors could affect the burden of conditional lending independently of climate vulnerability in a variety of ways. For example, states with more robust democratic systems have been shown to receive more stringent loan conditions because they are less likely to be overturned (Stone 2011).[20] All independent variables are lagged by one year to account for possible endogeneity and the temporal gap between when a country applies for assistance from IFIs and when loan terms are agreed upon.

In our main models including the full set of covariates, we impute missing covariate data with multiple imputation following existing work on policymaking in IFIs (Schneider and Tobin 2020; Clark 2022).[21] Doing so is necessary since control variables can exhibit high levels of missingness for developing countries (Lall 2016); failing to impute would leave a disproportionate number of advanced democracies — countries that take relatively few loans from IFIs. However, for robustness, we drop observations with missing data and obtain similar results (Appendix Table A3).

Our main estimations are linear regression models with fixed effects at the country and year levels to capture unobserved heterogeneity between countries and years, and standard errors are clustered at the country- and year- levels to account for uncertainty within countries and years. In subsequent sections, we also show that the results are robust to a host of additional specifications.

## Number of Prior Actions

Results from our baseline tests appear in Table 1, including both the bivariate results and estimates with covariates included. We find support for our key theoretical expectation: countries that are vulnerable to the extreme and highly visible effects of climate change obtain fewer prior

[19]UN voting data from Fjelstul, Hug and Kilby (2025); distance scores from Bailey, Strezhnev and Voeten (2017).

[20]See Appendix §1 for more information on variable sources and §2 for summary statistics.

[21]We employ multivariate imputation by chained equations (MICE) over 3 imputations (Van Buuren and Groothuis-Oudshoorn 2011). Missingness is highest for our economic control variables and does not meaningfully correlate with wealth, population, or regime type.

actions. These results are statistically significant in both the bivariate analysis and the model with controls. A one standard deviation increase in climate disaster severity corresponds to a decrease of approximately 1.3 prior actions (an average loan document in our data consists of 4.58 prior actions; this result therefore represents a 28% decrease in the number of prior actions in an average IMF loan). This result is thus substantively striking in the extent to which it reflects a lessening of the burden of conditionality.[22]

While other features, such as UNSC membership, also correlate with less burdensome loans, realized climate vulnerability has an independent effect on loan difficulty even when accounting for relevant political and economic factors. Sensitivity analyses following Cinelli and Hazlett (2020) indicate that an unobserved confounder would need to explain more than one-third of the remaining variation in both the treatment and the outcome, after accounting for observed covariates and fixed effects, to render the estimated effect statistically insignificant, and nearly 60% to attenuate the estimate to zero. By comparison, an omitted confounder would need to be approximately 2.5 times as strongly related to both disaster exposure and conditionality as UN Security Council membership to eliminate statistical significance, and about 4.4 times as strongly related to drive the estimate to zero.

Our baseline results are observational, and we recognize that endogeneity and selection issues are a potential concern. To better isolate the impact of climate disasters on conditionality, we use PanelMatch (Imai, Kim and Wang 2023).[23] PanelMatch is advantageous because, in addition to matching on observables, it matches treated units with control units in the same time period that have identical preceding treatment history, enabling a more reliable comparison between the two

[22]For comparison, Clark (2022) shows an effect of a similar magnitude when countries have access to outside options and can bargain over the terms of IMF lending.

[23]We opt for PanelMatch over 2SLS with compound instrumentation (e.g., Stubbs et al. 2020) because our theoretical focus is on the effect of disaster shocks on treated units (countries that experience disasters), rather than on marginal units induced into treatment by an instrument. PanelMatch directly estimates the Average Treatment Effect on the Treated (ATT) and exploits pre-treatment histories and covariate profiles to construct credible counterfactuals. It also allows us to model dynamic treatment effects and avoids the strong exclusion restriction assumptions that compound IVs require. Moreover, Stone (2011, 134-135) notes that two-stage approaches when estimating the drivers of IMF conditionality can introduce additional bias into estimates. Lastly, in the appendix, we estimate a first-stage in which IMF program participation is regressed on disaster incidence (Table A8). The lack of a strong or statistically significant relationship between the two suggests a two-stage regression is not needed.

Table 1: Predicting Number of Conditions

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | -1.34*** | -1.26*** |
| | (0.339) | (0.272) |
| Polyarchy | | -1.04 |
| | | (2.30) |
| UNSC Member | | -1.15* |
| | | (0.563) |
| GDPPC (log) | | -0.142 |
| | | (1.39) |
| Trade/GDP | | -0.011 |
| | | (0.010) |
| FDI/GDP | | -0.006 |
| | | (0.008) |
| Debt/GNI | | -0.0001 |
| | | (0.005) |
| Debt service/exports | | 0.002 |
| | | (0.011) |
| ODA/GNI (log) | | -0.951 |
| | | (0.653) |
| US Ideal Point Diff. | | -0.529 |
| | | (0.766) |
| *Fixed-effects* | | |
| Year | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 564 | 564 |
| $R^2$ | 0.392 | 0.404 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

groups.

PanelMatch requires a binary treatment. In our observational analyses above, we utilize a continuous measure of the number of individuals affected by disasters in a country-year, and we include country and year fixed effects. We construct a binary measure that mirrors this measurement strategy as follows. First, we identify a country-specific threshold for a moderate-to-severe year in terms of disaster impact to determine if a country suffered worse than usual from disasters in a given year (above 25th percentile of number of individuals affected by country). Second, we identify a year-specific threshold to determine if a country suffered relatively worse than other countries in that year (above 25th percentile of number of individuals affected by year). If both

of these conditions are met, we expect IMF staff will be attentive to the occurrence of the disaster, and that country leaders would be likely to address it in their negotiations over conditionality, consistent with our observational analysis. We then compute a binary equal to 1 if a country is above both of these thresholds in a given year and 0 otherwise. This is a relatively conservative treatment — it includes country-years with moderate-to-severe disaster severity rather than only the most extreme cases — which should ensure conservative estimates.[24] Since disasters are relatively infrequent to begin with, we believe cutting out only the least impactful disasters captures the cases that will command the attention of both local and IMF officials. Anecdotally, disasters that fall just above the 25th percentile thresholds are substantively meaningful. For instance, Turkey experienced severe flooding in 2001 during the course of an IMF program. The floods overflowed rivers, destroyed hundreds of homes and businesses, and resulted in a dozen deaths. The country suffered over $60 million in damages as a result of the floods.

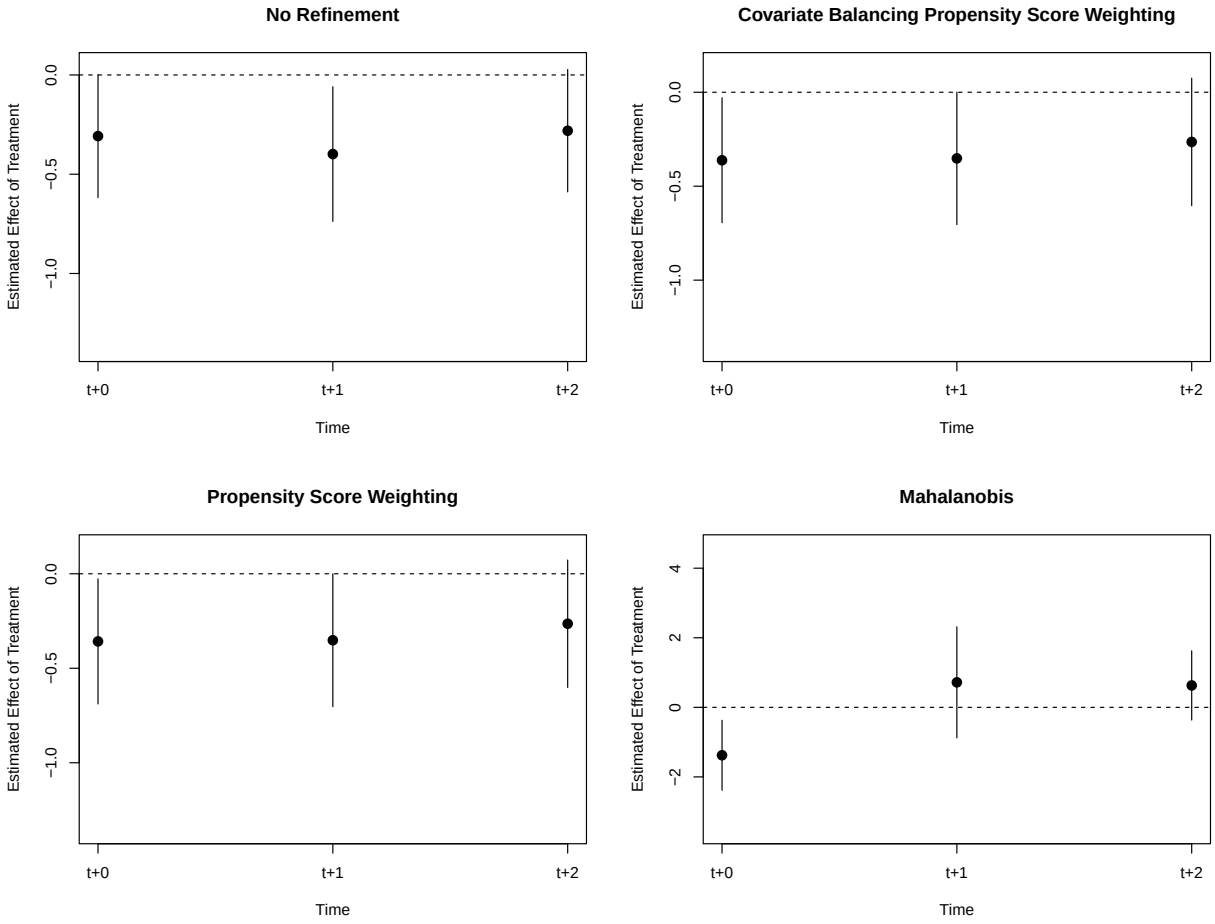
These results (Appendix Figure 1) again align with our expectations.[25] We observe a negative and significant effect of climate disasters on conditionality in the year after a disaster occurs (time $t = 0$ in the plots since we lag disaster incidence by one year) and, in some specifications, the second year post-disaster (time $t = 1$). The effect wanes in magnitude and significance the following year. This suggests that, in accordance with our posited mechanism, bureaucrats only cut countries breaks on their prior actions when climate disasters are salient (i.e., immediately after they occur) rather than permanently adopting a more lenient approach towards climate vulnerable countries. In other words, it does not appear that bureaucratic responses to climate disasters induce a long-term shift in affected states' conditionality burdens, which would potentially raise concerns about moral hazard. This finding is in line with other recent work documenting that experiencing climate disasters has a meaningful but short-lived effect on attitudes (Arias and Blair 2024).

Next, we look beyond the most stringent IMF conditions — prior actions — by examining the relationship between disaster impact and performance criteria. This expands the sample to all IMF

[24] At more aggressive thresholds (e.g., above the 75th or 90th percentile by country-year), our estimates are less precise because there are significantly fewer matched pairs (dozens instead of hundreds).

[25] Treatment matching information and covariate balance plots can be found in Appendix Figures A2 – A3. We present conditional standard errors.

Figure 1: Panel Match Results. 95% CIs are depicted.




programs that include binding conditions. As described previously, whereas prior actions must be completed for program or revision approval, performance criteria are assessed after disbursement and may be waived; they bind only in the absence of a waiver, and noncompliance without a waiver halts future disbursements. Our theory implies that governments use the limited political capital generated by severe climate disasters to seek relief from the most burdensome conditions, which is why our core analyses focus on prior actions. By contrast, we do not have strong theoretical expectations that disaster exposure will reduce the number of performance criteria imposed ex ante. Instead, it is plausible that staff respond to climate shocks by exercising greater flexibility ex post, for example by waiving performance criteria — an adjustment that reduces the effective burden of conditionality while remaining less visible to IMF principals. The results in Appendix Table A2 show no significant relationship between disaster exposure and the number of performance

criteria, but a strong positive association with the share of criteria that are waived. In short, staff do not relax the formal structure of performance criteria, but instead reduce their effective burden by granting more waivers when climate shocks constrain government capacity.

Taken together, our results provide consistent evidence that IMF staff respond to climate vulnerability by easing the most burdensome elements of conditionality. Across baseline OLS models, disaster exposure is associated with significantly fewer prior actions, a finding that is robust to alternative specifications using PanelMatch. Extending the analysis to performance criteria, we find no systematic reduction in their number but a pronounced increase in waivers granted to disaster-affected countries. These patterns suggest that staff accommodate climate shocks primarily by relaxing up-front conditionality and, where necessary, by exercising greater flexibility in enforcement rather than by altering headline program features.

## Robustness

To increase confidence in our main results, we conduct a variety of robustness tests probing the relationship between climate vulnerability and ex ante program conditionality. Robustness tests are universally consistent with our core findings; results are in the Appendix.

First, we include additional control variables, otherwise replicating our main model. These include additional program characteristics (loan size, whether the IMF program utilized the Poverty Reduction and Growth Facility or one of its predecessors, and the number of years since the country's last IMF program) and information on membership in and lending from regional financing arrangements, which are the Fund's primary competitors (Clark 2022).[26] Our main result is robust to their inclusion (Table A3).

Next, we swap year fixed effects for linear and squared time trends[27] and utilize negative binomial models in place of OLS to address overdispersion in our dependent variable (Table A4). In each case, results are again robust.

[26] We include these covariates only for robustness because their temporal coverage only extends through 2014.

[27] An illustrative plot of time trends in the conditionality and disaster measures appears in Figure A1.

We further examine whether there are heterogeneous effects across types of climate disasters. Our mechanism may be most applicable to fast onset disasters (e.g., flash floods or hurricanes) that are highly visible and thus likely salient to IO staff rather than those that slowly accumulate over time (e.g., droughts). Table A6 provides evidence consistent with this assertion: the results are more stable and statistically significant for fast-onset disasters.[28]

We then evaluate whether the bargaining dynamics we describe are more apparent in initial program negotiations (i.e., before the first disbursement) or during subsequent program reviews. IMF programs may include prior actions not only at approval but also at later review stages. To examine ex ante bargaining, we restrict our sample to the first year of an IMF program, allowing us to test whether more damaging climate disasters in the year preceding program initiation lead countries to secure relatively fewer up-front prior actions. To assess whether similar dynamics operate during a program, we replicate our main models using program fixed effects instead of country fixed effects, thereby leveraging within-program variation. The results (Table A12) demonstrate that IMF staff respond to climate vulnerability both at the initial bargaining stage and throughout the life of a program.

In some research, scholars examine loan size as a lever staff and powerful donor states can manipulate to the benefit of recipients — existing work shows countries that are aligned with the U.S. receive larger loans, for instance (Stone 2011). Above, we discussed why we prefer binding conditionality as an outcome in this paper: staff may not be able to escape the detection of climate-skeptical member states if they try to push an especially large loan through the Board. We replicate our main results with loan size (in logged millions of USD) as the dependent variable (Table A7) and fail to identify a significant relationship. This aligns with the notion that staff focus their attention on conditionality when accommodating disaster-prone states.

One concern is that our results might be explained by systematic differences in the types of IMF programs undertaken in disaster versus non-disaster contexts, rather than by staff modifying conditionality in response to climate shocks. Appendix Figures A4–A6 present descriptive comparisons

[28]We also show in Table A11 that our results hold across different disaster types — it is not the case that a specific type of disaster (i.e., floods) is driving our results.

of program characteristics (lending arrangements, conditionality instruments, and conditionality categories) by disaster status. The plots suggest that our main results are not driven by compositional differences in program design or the mix of condition types, but rather by variation in the stringency of prior actions within otherwise comparable IMF arrangements. Similarly, in Table A8, we show that experiencing climate disasters does not increase the likelihood of entering into an IMF program in the first place.

Finally, we conduct a placebo test to validate that bureaucrats respond specifically to climate disasters in constructing loans, rather than to the occurrence of disasters generally. We replace our measure of climate disasters with an identically constructed measure that captures the share of the population affected by geophysical disasters from the EM-DAT dataset (earthquakes, dry mass movements, and volcanic activity), which are not driven by the effects of climate change but can still cause devastating economic and human impacts. On average, these geophysical disasters are more severe than climate disasters in terms of the number of deaths caused (5345 vs. 59), but are less widespread in the average number of people affected (12,808 vs. 294,771). The number of individuals affected by geophysical disasters has no relationship with loan conditionality (Table A9). Staff at the IMF are thus responding to climate disasters in particular.

# The Language of Conditionality

The prior specifications rely on counts of the number of prior actions attached to loans to proxy the difficulty of such loan conditions. While widely used in the literature, the count measure is imperfect — it assigns equal weight to every condition, though conditions vary dramatically in their scope and cost of implementation. One condition may mandate that a report be written and another might ask for several state-owned enterprises to be sold off. Further, most prior work employs a count of both prior actions and other types of conditions (performance criteria and benchmarks), which provides limited information on whether such conditions were ultimately enforced. To improve on the state of the art, we conduct additional tests to further capture the burden of loan

conditions and ensure our results are not driven by the construction of the count measure alone.

First, we consider the scope of the prior actions included in a given loan document (see Stone 2008), which measures the number of policy categories covered by loan conditions. The logic of this approach assumes that a broader loan document is more difficult to implement than a relatively narrower one. In our test, we specifically swap our count dependent variable for an alternate measure that captures the number of policy categories covered by prior actions in conditionality packages, leveraging the categorical coding from Kentikelenis, Stubbs and King (2016) which sorts conditions into twelve categories. The results hold directionally, but do not achieve statistical significance at conventional levels with this dependent variable (Table A10).

While the scope variable helps capture the breadth of conditionality, it still relies on a count measure, meaning it equates the difficulty of one policy area with another. Yet, we know that conditions falling into some policy areas, like those that affect labor markets or mandate privatization (see Caraway, Rickard and Anner 2012), are often more difficult for countries to implement than others, such as those pertaining to poverty reduction and the environment. Indeed, mass protests and electoral turnover during IMF programs often stem from austerity measures, as recent events in Argentina and Kenya illustrate. We attempt to overcome some of the known issues with count measures of the stringency of conditions with a novel approach that leverages the text of IMF loan conditions; in doing so, we build on Kramarz et al. (2025), who focus on the World Bank. This strategy has several advantages: It allows us to consider the difficulty of individual prior actions as well as aggregate to the level of the program to assess the burdensomeness of conditionality in a comprehensive fashion. Text analysis also enables us to leverage variation in difficulty both within and across policy categories.

We specifically make use of latent semantic scaling (LSS) — a semi-supervised text analysis technique that utilizes word embeddings to estimate the polarity of texts (Watanabe 2021). The researcher specifies a set of 'seed words' with known polarity which inform the estimated polarity of words that are used in similar contexts on a unidimensional scale. LSS is increasingly utilized in a variety of related settings, including to gauge the sentiment of economic news (Watanabe 2021),

security threat emphasis (Watanabe, Segev and Tago 2022), and IO policy agendas (Baturo and Gray 2024).

We generate seed words that correspond to the relative difficulty of implementation of prior actions in an iterative process that combined expert reading of conditions with automated categorization by artificial intelligence (AI) models. A variety of features might make a prior action rate higher or lower on the difficulty dimension (for example, conditions may be difficult to implement because they are precise or because they are broad), but in general, high difficulty conditions are expected to engender both elite resistance (e.g., contestation from parliament) and public backlash (e.g., protests, voting against incumbent).[29] These seed words (Appendix Table A18) are used to construct polarity scores for other features in the corpus, which then are used to predict prior action-level and country-year difficulty scores.

We provide more extensive details on the implementation of the LSS model and illustration of the LSS results in Appendix §6. The evidence presented therein offers face validity for our estimated difficulty scores: easy words reflect conditions that are known to be less onerous to implement (e.g., the publication of reports) or allow for more room for interpretation by policymakers on compliance (e.g., establishing new guidelines and processes), generally reflecting reforms that are less costly for elites to implement and publics to bear. On the other hand, difficult terms correspond to policy areas (e.g., debt, compliance) that are more difficult for policymakers to reform and include language that is more specific, concrete, and mandates enforcement. The most difficult prior actions include measures such as balancing budgets (-5.197, -4.475), changing interest rate policy (-5.069, -4.512), collecting tax arrears (-4.225, -4.093), and addressing governmental debt guarantees (-4.449, -4.341). The easiest prior actions include measures such as appointing advi-

[29]Our conceptualization of difficulty is distinct from Kramarz et al. (2025)'s "stringency": the "the degree to which loans require verifiable and costly reforms rather than vaguely defined changes of little consequence," as some verifiable conditions—for example, reporting—are unlikely to be difficult to implement, and the consequences of conditions may be orthogonal to their difficulty of implementation. Furthermore, the seed words in the IMF context should not be the same as those used for the Bank, as these institutions have substantively different mandates, and conditions mandated by the Bank are generally easier to implement than those included in Fund loans (Clark and Dolan 2021). Therefore, while our approach features some overlap with Kramarz et al. (2025), the specific language used to estimate the text-based models differs. Indeed, Kramarz et al. (2025) employ WB research to assign stringency or leniency to keywords, suggesting that a direct implementation of their key words to our IMF case would be inappropriate.

sors for committees (6.345, 5.980), adopting guidelines and audits for investment projects (5.653, 5.766), and conducting reports and reviews (5.527, 5.254)

For our analysis of the difficulty of loan conditions, we aggregate prior action-level scores to create a loan-level difficulty score, which we implement as the dependent variable in our models. The specification is otherwise identical to our baseline models. In these tests, higher scores reflect easier loans, while more negative scores indicate more difficult loans. Our theoretical logic would suggest that countries experiencing more severe climate disasters would receive less difficult loans, and thus, we should observe a positive relationship between loan ease and climate disaster impact. We find that more damaging climate disasters are indeed predictive of easier loans (Table 2), resulting in a 1.53 point increase in loan ease in the bivariate model, and a 1.62 point increase when controls are included in the model. The substantive magnitude of this effect is meaningful, corresponding to a decrease in difficulty relative to the average loan of about twenty percent of a standard deviation. These results show that not only are climate disaster-vulnerable states more likely to receive less onerous loans in terms of the number of prior actions, they are also likely to receive loans where the difficulty of implementation is lower.

# Probing Mechanisms

To assess mechanisms, we conduct additional statistical analysis and buttress them with anecdotes from a series of interviews conducted with IMF staff. Our theoretical logic places a spotlight on the initiative of bureaucrats, who grant climate vulnerable countries less burdensome conditions in negotiations with disaster-affected leaders. We suggest that staff may do so either as they observe countries' experiences with climate disasters, in line with research showing that such staff are concerned about climate change in their work at the Fund (Clark and Zucker 2024), or in a bid to remain relevant and competitive relative to other lenders working in the areas of finance and climate change. Alternatively, staff may be responsive to management, who can push their preferred agenda items (Copelovitch and Rickard 2021), or to member state demands (Clark and

Table 2: Loan Ease (LSS) as Alternate DV

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | 1.53*** | 1.62*** |
| | $(1 \times 10^{-5})$ | (0.250) |
| Polyarchy | | 4.70 |
| | | (3.59) |
| UNSC Member | | 0.573 |
| | | (1.51) |
| GDPPC (log) | | 4.29** |
| | | (1.83) |
| Trade/GDP | | -0.020 |
| | | (0.018) |
| FDI/GDP | | 0.014 |
| | | (0.040) |
| Debt/GNI | | 0.013 |
| | | (0.010) |
| Debt service/exports | | -0.030 |
| | | (0.042) |
| ODA/GNI (log) | | 0.275 |
| | | (0.777) |
| US Ideal Point Diff. | | 0.996 |
| | | (2.16) |
| *Fixed-effects* | | |
| Year | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 563 | 563 |
| $R^2$ | 0.375 | 0.388 |

*Clustered (Year & Country) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Dolan 2021). As a result of any of these mechanisms, staff can exert influence over the design of loans to relax the burden on climate vulnerable states. In this section, we attempt to disentangle the precise mechanism behind our baseline findings.

First, we examine whether staff are responding to cues from institutional leaders, and specifically the Managing Director at the IMF. Both Christine Lagarde and Kristaline Georgieva have made climate a priority in their speeches. Staff may act on these directives as a result of explicit agenda-setting or more subtle socialization (e.g., Copelovitch and Rickard 2021). To account for the potential influence of IMF Managing Directors, we follow Clark and Zucker (2024) and re-

place year fixed effects with Managing Director fixed effects. We recover our main findings (Table A5). This suggests that the effect of climate vulnerability on the burdensomeness of loans is not driven by variation in institutional leaders alone. Second, it is possible that staff are answering to powerful member states that desire increased attention be paid to climate issues at the Fund. We expressed skepticism towards this mechanism in our theoretical discussion since the powerful principals at the IMF vary widely in the extent to which they have tackled climate domestically (cf. Copelovitch 2010). Our preferred explanation is that individual staff members take an interest in climate issues as they observe the damage caused by disasters in recipient countries. To alleviate the burden placed on such states, and in recognition of their climate vulnerability, staff grant these states breaks on conditions. However, we recognize that powerful member state influence is pervasive at the Fund (Copelovitch 2010; Stone 2011).

Thus, we conduct two sets of analyses that seek to disentangle and explicitly test staff versus member state influence. To do so, we create measures of the attention paid to climate change by both IMF staff and member states. To capture staff attention, we measure the number of climate mentions each year included in all Article IV documents (Clark and Zucker 2024). Article IV reports are one of the Fund's most influential products, as they shape both market perceptions and state behavior (Breen and Doak 2021; Goes and Chapman 2024). These documents are routine reports on member state economies and identify potential threats to economic stability and development.[30] Importantly, Article IV is an area over which rank-and-file staff have a great deal of autonomy (Clark and Zucker 2024; Goes and Chapman 2024), making this a reliable measure of staff interest in climate change. To measure state attention, we construct a measure that captures the stock of national climate laws adopted by all IMF member states in a given year (see Eskander and Fankhauser 2020; Gazmararian and Milner 2024). We also specify a measure in which we count only climate laws adopted by G-5 states (the United States, United Kingdom, Germany, France, and Japan) to specifically capture attention by the IMF's most powerful member states (see Copelovitch 2010; Stone 2011). Descriptively, these measures of attention suggest increasing

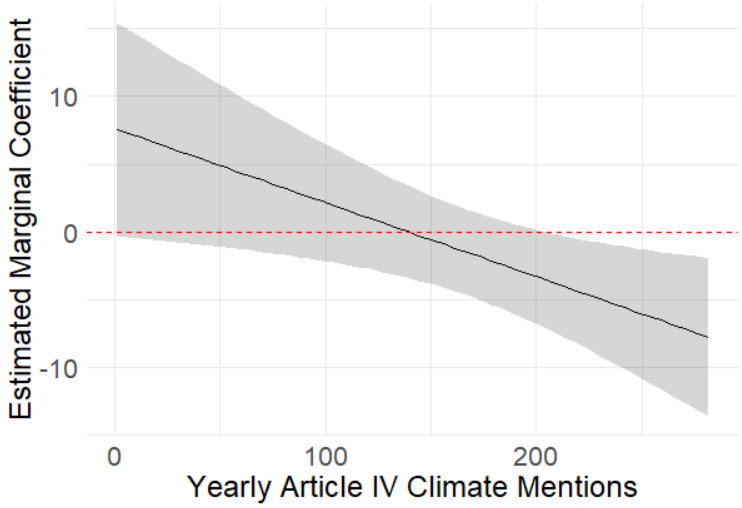
[30]We use data from Clark and Zucker (2024) on mentions of "climate" in Article IV reports and aggregate to the year-level.

focus on climate issues by states and staff over time.

We interact each measure of climate attention with our measure of climate disaster impact to assess whether the impact of disasters is moderated by attention — either of staff or states. We show the full results in Appendix Table A13. Model 1 tests the effect of staff attention; Model 2 depicts the relationship with member state attention in general; and Model 3 estimates the effect of powerful member state (G-5) attention. The results provide evidence for a staff- rather than state-based mechanism; we find no significant interaction effect of climate disasters with state interest but a significant interaction effect of climate disasters with staff attention.[31]

Figure 2 illustrates the interaction between the impact of climate disasters and Article IV climate mentions; as the number of Article IV mentions of climate change increase (i.e., when IMF staff are paying more attention to the potential risks that climate change poses to countries' economies), the incidence of climate disasters is associated with a larger reduction in the number of prior actions included in loans. Put differently, only when staff are attentive to climate issues do we identify a negative and statistically significant relationship between climate disasters and the burdensomeness of IMF programs.

Figure 2: Interaction Effects: Staff Attention to Climate




*Notes*: Estimated coefficient on key independent variable from OLS models with 95% confidence intervals. Full tabular results are shown in Table A13, Column 1.

[31]These results are not driven by temporal dynamics, see Table A16 where we test models with categorical measures of time as well as interaction effects of time with staff attention.

One possible objection to our state influence mechanism tests is that national climate laws are distinct from international climate preferences. To address this concern, we also try a measure of state attention to climate issues at the international level — the number of international environmental agreements (IEAs) that countries broadly, and the G5 more specifically, have signed in a given year.[32] The results appear in Appendix Table A14 and again offer little evidence for a state-based account — staff are no more likely to grant breaks to disaster-prone countries in years where countries generally, and powerful states in particular, sign more IEAs. In sum, we find convincing evidence that IMF staff are reducing the burden of reform placed on loan recipients experiencing severe climate disasters. When staff are collectively attuned to climate, countries that experience more damaging climate disasters receive significantly fewer prior actions with less intrusive language.

# Conclusion

This paper argues and shows that when countries experience severe climate disasters, they obtain meaningful breaks on IMF conditionality. We advance a staff-centered account of this pattern: IMF bureaucrats possess substantial discretion over the design of conditional loan programs, increasingly recognize the risks posed by climate change, and respond to disaster-affected states' bargaining efforts by easing the most burdensome elements of conditionality. Empirically, we show that realized climate disasters are associated with IMF programs that include significantly fewer prior actions — the up-front conditions that must be met for program approval or review — and, using a novel text-based measure, less demanding loan terms overall. We probe multiple potential mechanisms, including executive influence and member-state attention, but find no evidence that these factors condition the relationship between climate disasters and IMF lending. Instead, the effect appears only when IMF staff themselves are attentive to climate risks. Experiencing climate disasters thus generates bargaining leverage for affected governments, which they can deploy to

[32] We utilize data from (Mitchell 2020) on IEAs.

persuade climate-concerned staff to grant relief from the most stringent forms of conditionality.

Methodologically, our results underscore the importance of disaggregating conditionality by type and level of enforcement. Rather than relying on aggregate counts that combine conditions with vastly different degrees of stringency and enforceability, we focus on prior actions, which are the clearest indicator of up-front program difficulty since they bear on initial loan disbursement and must be met for a loan (or loan review) to be approved. We show that staff ease these conditions in response to climate shocks and, where formal program structure remains unchanged, exercise flexibility ex post by granting more waivers of performance criteria. Future research on IMF lending and IFI conditionality more broadly would benefit from similarly distinguishing between instruments that differ in visibility, enforcement, and political cost.

Our findings have real-world implications for IFIs and the recipient states such organizations serve. On the one hand, easing conditionality in the wake of severe climate disasters provides governments with critical short-term flexibility, facilitating faster access to resources, reducing political strain, and allowing states to direct funds toward immediate relief and adaptation needs. On the other hand, IMF lending often targets countries with deep structural economic problems, and relaxing reform requirements risks prolonging inefficient or counterproductive policies. One interpretation of our findings, therefore, is that climate disasters temporarily weaken the Fund's capacity to enforce difficult but potentially necessary adjustments. That this leniency appears short-lived rather than persistent helps mitigate this concern, but it does not eliminate the underlying trade-off.

More broadly, our results complement a growing literature documenting the IMF's evolving engagement with climate issues (Clark and Zucker 2024), while also highlighting the limits of its efforts in this space. Staff appear responsive to highly visible and salient manifestations of climate change, such as major disasters, and adjust conditionality accordingly. Yet these accommodations are modest and transitory, and they do little to ensure sustained investment in climate adaptation or resilience. Reducing the burden of conditionality may ease immediate pressures, but it cannot substitute for the scale of climate finance required to protect vulnerable countries from future

shocks. At the same time, vulnerable countries have increasingly called on the Fund to mobilize its healthy store of financial resources to ramp up climate finance and disaster relief. Thus, while the Fund's growing attention to climate risks is a meaningful development, it also underscores how far IFIs are from closing the climate finance gap and adequately confronting the economic and physical threats posed by climate change.

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# Risk and Responsibility: Climate Vulnerability and IMF Conditionality

Online Appendices

## Contents




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# 1 Variable Sources

In addition to our original data, we drew on the following sources for additional variables:

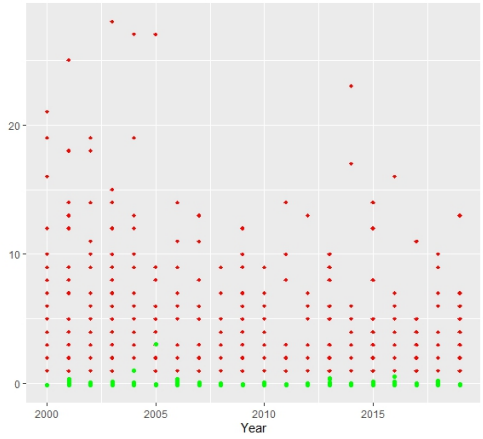
- Polyarchy: Varieties of Democracy
- GDP per capita, FDI / GDP, Debt / GNI, Trade / GDP, Debt service / Exports, ODA / GNI: World Development Indicators.
- IMF program participation: Alexander E. Kentikelenis, Thomas H. Stubbs and Lawrence P. King. 2016. "IMF Conditionality and Development Policy Space, 1985–2014." *Review of International Political Economy* 23(4):543–582.
- UN ideal point distance: Michael A. Bailey, Anton Strezhnev and Erik Voeten. 2017. "Estimating Dynamic State Preferences from United Nations Voting Data." *Journal of Conflict Resolution* 61(2):430–456.
- UNSC membership: Dreher, Axel. 2009. "IMF Conditionality: Theory and Evidence." Public Choice 141 (1): 233–67. Supplemented with hand coding from UN online resources to bring up-to-date.

# 2 Summary Statistics

Table A1: Summary Statistics: IMF Data

| Var. | Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. | Pct. Missing |
|---|---|---|---|---|---|---|---|
| Disaster Affected | 0 | 0.00 | 0.00 | 1027567.94 | 24604.50 | 346548559 | 0 |
| Total Conditions | 0 | 0.00 | 0.00 | 0.74 | 0.00 | 28 | 0 |
| Polyarchy | 0 | 0.28 | 0.52 | 0.52 | 0.77 | 1 | 0 |
| UNSC Member | 0 | 0.00 | 0.00 | 0.05 | 0.00 | 1 | 0 |
| GDPPC | 251 | 1405.13 | 4119.57 | 11965.10 | 13527.66 | 112418 | 0.03 |
| Trade/GDP | 15 | 53.47 | 74.99 | 86.44 | 103.05 | 443 | 0.10 |
| FDI/GDP | -117 | 1.17 | 2.86 | 5.51 | 5.71 | 449 | 0.03 |
| DEBT/GNI | 1 | 26.09 | 42.38 | 55.81 | 69.68 | 610 | 0.36 |
| Debt Service/Exports | 0 | 2.81 | 5.79 | 8.08 | 10.23 | 135 | 0.40 |
| ODA/GNI | -1 | 0.44 | 2.62 | 5.57 | 7.75 | 92 | 0.29 |
| UN voting (ideal point distance) | 0 | 2.06 | 3.09 | 2.87 | 3.43 | 5 | 0.04 |

Figure A1: Time Trends. Green is scaled climate disaster impact (population share affected by climate disasters in a given country-year). Red is the number of IMF conditions.



# 3 Research Ethics

This research conforms to all principles contained within the APSA *Principles and Guidance for Human Subjects Research*. Human subjects research was exclusively conducted with public officials at the International Monetary Fund and World Bank; we did not engage with low-power or vulnerable populations, and our contact with these officials did not put these populations at risk indirectly. We obtained voluntary informed consent from all officials via email, transparently communicating our affiliations, the purposes of our research, and other information about the study. We employed no deception — we principally asked subjects for oral histories of their past experiences. No harm or trauma was expected or identified. All subjects were informed of and ensured confidentiality. As the content of these interviews were the acquisition of oral histories, we did not anticipate or observe any impact on political processes. This research was deemed exempt by the Institutional Review Board at [UNIVERSITY REDACTED].

# 4 Robustness Tests

Figure A2: Panel Match Treatment Matching

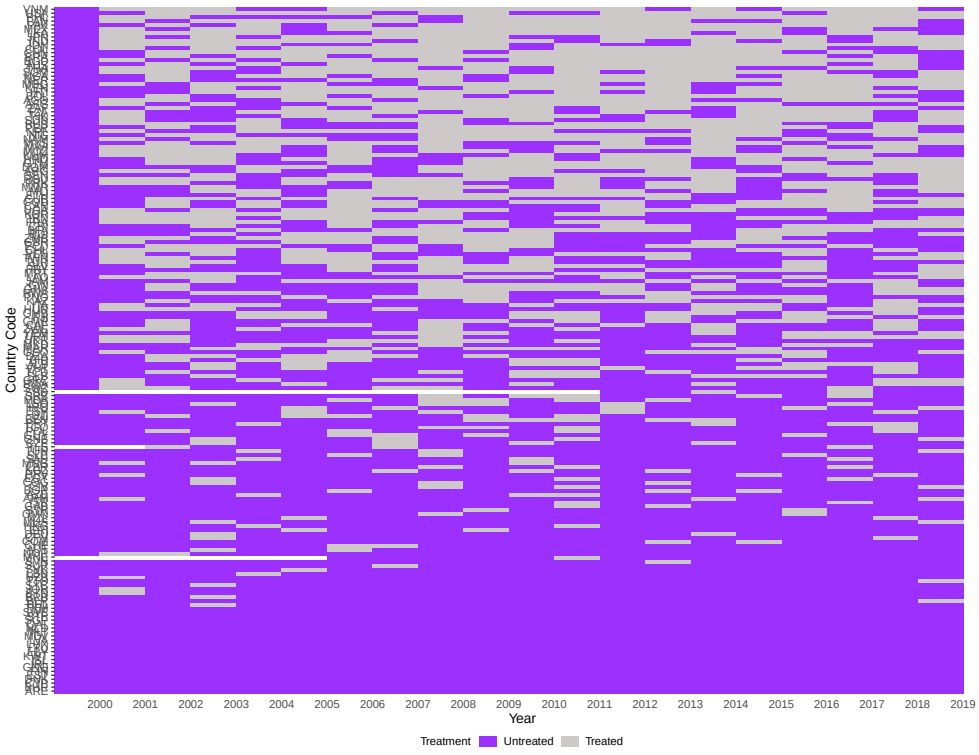
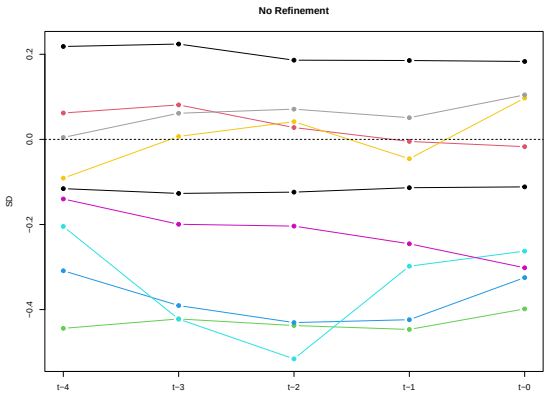
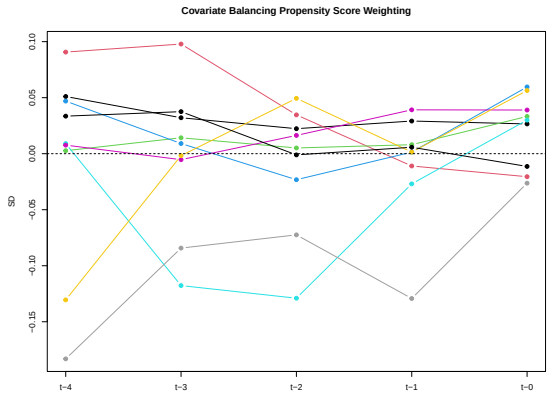


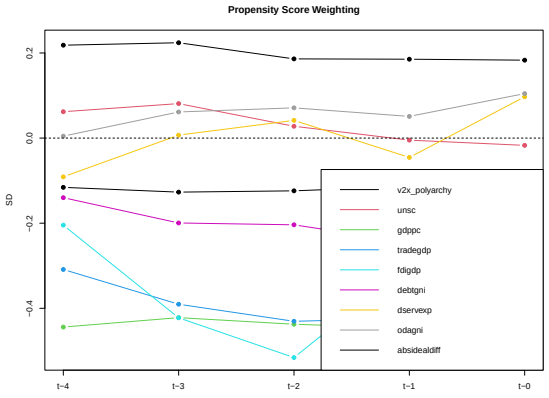
Figure A3: Panel Match Covariate Balance. The standard deviations are generally small, and the majority of estimates are less than 0.2, which is the benchmark specified by Imai, Kim and Wang (2023).



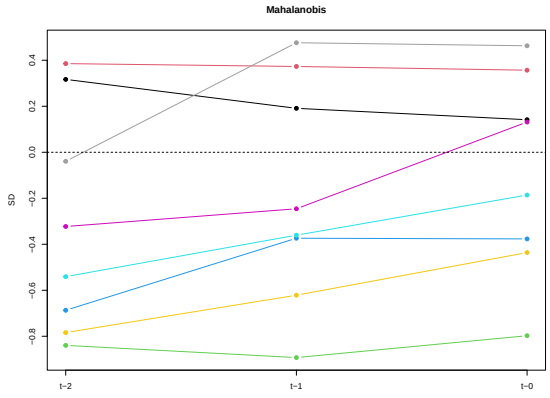

(a)




(b)




(c)




(d)

Table A2: Predicting the Number and Waivers of Performance Criteria. We include both quantitative and structural performance criteria. In column 1, the DV is the number of performance criteria required in a country-year. In column 2, the DV is the number of waivers of said criteria required in a country-year, controlling for the number of performance criteria (since waivers should mechanically increase as the number of conditions increase).

| Model: | (1) | (2) |
|---|---|---|
| DV | Performance Criteria | Waivers |
| *Variables* | | |
| Climate Disasters | 2.22* | 1.10*** |
| | (1.21) | (0.321) |
| Polyarchy | 2.02 | 1.12 |
| | (10.3) | (1.51) |
| UNSC Member | -0.272 | -0.456 |
| | (1.40) | (0.264) |
| GDPPC (log) | -7.06 | 0.259 |
| | (5.46) | (0.559) |
| Trade/GDP | 0.001 | $5.47 \times 10^{-5}$ |
| | (0.021) | (0.003) |
| FDI/GDP | -0.034 | -0.005 |
| | (0.044) | (0.004) |
| Debt/GNI | -0.002 | 0.002 |
| | (0.013) | (0.002) |
| Debt service/exports | 0.126** | -0.0007 |
| | (0.049) | (0.008) |
| ODA/GNI (log) | 1.51 | 0.020 |
| | (1.57) | (0.228) |
| US Ideal Point Diff. | -2.02 | -0.371 |
| | (3.14) | (0.401) |
| Number of performance criteria | | 0.066*** |
| | | (0.008) |
| *Fixed-effects* | | |
| Country | Yes | Yes |
| Year | Yes | Yes |
| *Fit statistics* | | |
| Observations | 903 | 903 |
| $R^2$ | 0.319 | 0.471 |

*Clustered (Country & Year) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A3: Robustness Checks: Additional Controls and Listwise Deletion

| | Number of Prior Actions | |
|---|---|---|
| Model: | (1) Additional Controls | (2) Listwise Deletion |
| *Variables* | | |
| Climate Disasters | -1.14*** | -1.20*** |
| | (0.343) | (0.341) |
| Polyarchy | -3.87 | -0.527 |
| | (2.87) | (2.06) |
| UNSC Member | -0.585 | -0.817 |
| | (0.573) | (0.551) |
| GDPPC (log) | -5.50** | -2.84* |
| | (2.31) | (1.40) |
| Trade/GDP | 0.007 | -0.007 |
| | (0.026) | (0.018) |
| FDI/GDP | -0.054 | -0.031* |
| | (0.040) | (0.018) |
| Debt/GNI | -0.020 | -0.003 |
| | (0.012) | (0.008) |
| Debt service/exports | 0.004 | 0.007 |
| | (0.021) | (0.017) |
| ODA/GNI (log) | -0.576 | 0.072 |
| | (0.692) | (0.587) |
| US Ideal Point Diff. | -1.31 | -0.260 |
| | (1.20) | (1.04) |
| Loan size | $-6.83 \times 10^{-5}$ | |
| | (0.0003) | |
| PRGF | 0.338 | |
| | (0.839) | |
| Time since last IMF loan | -0.034 | |
| | (0.064) | |
| Outside option member | 0.397 | |
| | (1.48) | |
| Outside option amount | -0.004 | |
| | (0.005) | |
| *Fixed Effects* | | |
| Country | Yes | Yes |
| Year | Yes | Yes |
| *Fit statistics* | | |
| Observations | 341 | 397 |
| $R^2$ | 0.525 | 0.451 |

*Clustered standard errors in parentheses.*
*Significance levels:* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: Robustness Checks: Time Trends and Count Models

| | Time Trends (OLS) | | Negative Binomial | |
|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) |
| *Variables* | | | | |
| Climate Disasters | -1.11*** | -0.985*** | -0.291*** | -0.273*** |
| | (0.231) | (0.275) | (0.095) | (0.096) |
| Year | -98.9*** | -85.6*** | | |
| | (25.9) | (29.8) | | |
| Year squared | 0.025*** | 0.021*** | | |
| | (0.006) | (0.007) | | |
| Polyarchy | | -0.869 | | -0.069 |
| | | (2.69) | | (0.415) |
| UNSC Member | | -0.971* | | -0.201 |
| | | (0.545) | | (0.123) |
| GDPPC (log) | | -0.233 | | 0.119 |
| | | (1.17) | | (0.249) |
| Trade/GDP | | -0.007 | | -0.003 |
| | | (0.009) | | (0.002) |
| FDI/GDP | | -0.011 | | -0.002 |
| | | (0.010) | | (0.002) |
| Debt/GNI | | 0.0006 | | 0.0006 |
| | | (0.005) | | (0.001) |
| Debt service/exports | | 0.009 | | -0.0002 |
| | | (0.009) | | (0.003) |
| ODA/GNI (log) | | -0.929* | | -0.136 |
| | | (0.521) | | (0.113) |
| US Ideal Point Diff. | | -0.345 | | -0.078 |
| | | (0.721) | | (0.160) |
| *Fixed Effects* | | | | |
| Year | | | Yes | Yes |
| Country | Yes | Yes | Yes | Yes |
| *Fit statistics* | | | | |
| Observations | 564 | 564 | 564 | 564 |

*Clustered standard errors in parentheses.*
*Significance levels:* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A5: Managing Director Fixed Effects

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | -1.16*** | -1.05** |
| | (0.170) | (0.254) |
| Polyarchy | | -1.26 |
| | | (2.78) |
| UNSC Member | | -1.28** |
| | | (0.281) |
| GDPPC (log) | | 0.102 |
| | | (1.73) |
| Trade/GDP | | -0.010 |
| | | (0.016) |
| FDI/GDP | | -0.002 |
| | | (0.018) |
| Debt/GNI | | -0.001 |
| | | (0.010) |
| Debt service/exports | | 0.007 |
| | | (0.013) |
| ODA/GNI (log) | | -0.870 |
| | | (0.974) |
| US Ideal Point Diff. | | -0.521 |
| | | (0.977) |
| *Fixed-effects* | | |
| Managing Director | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 537 | 537 |
| $R^2$ | 0.392 | 0.403 |

*Clustered (name & Country) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A6: Slow vs. Rapid-Onset Disasters

| Model: | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Variables* | | | | |
| Slow-Onset Disasters | -1.29** | 0.497 | | |
| | (0.521) | (3.18) | | |
| Fast-Onset Disasters | | | -0.705*** | -0.741*** |
| | | | (0.127) | (0.058) |
| Polyarchy | | -0.624 | | -0.482 |
| | | (2.11) | | (2.06) |
| UNSC Member | | -0.857 | | -0.811 |
| | | (0.540) | | (0.548) |
| GDPPC (log) | | -2.67* | | -2.81* |
| | | (1.45) | | (1.39) |
| Trade/GDP | | -0.006 | | -0.007 |
| | | (0.018) | | (0.018) |
| FDI/GDP | | -0.032* | | -0.030* |
| | | (0.017) | | (0.018) |
| Debt/GNI | | -0.003 | | -0.003 |
| | | (0.008) | | (0.008) |
| Debt service/exports | | 0.007 | | 0.007 |
| | | (0.017) | | (0.017) |
| ODA/GNI (log) | | 0.087 | | 0.079 |
| | | (0.587) | | (0.586) |
| US Ideal Point Diff. | | -0.311 | | -0.242 |
| | | (1.06) | | (1.04) |
| *Fixed-effects* | | | | |
| Year | Yes | Yes | Yes | Yes |
| Country | Yes | Yes | Yes | Yes |
| *Fit statistics* | | | | |
| Observations | 564 | 397 | 564 | 397 |
| $R^2$ | 0.391 | 0.449 | 0.392 | 0.451 |

*Signif. Codes: ***: 0.01, **: 0.05, *· 0.1*

Table A7: Loan Size Results. DV is measured in logged millions of USD.

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | 0.083 | 0.098 |
| | (0.071) | (0.065) |
| Polyarchy | | 0.673 |
| | | (0.683) |
| UNSC Member | | -0.086 |
| | | (0.177) |
| GDPPC (log) | | 0.615** |
| | | (0.239) |
| Trade/GDP | | -0.004** |
| | | (0.001) |
| FDI/GDP | | 0.002 |
| | | (0.002) |
| Debt/GNI | | 0.006*** |
| | | (0.002) |
| Debt service/exports | | 0.003 |
| | | (0.003) |
| ODA/GNI (log) | | 0.092 |
| | | (0.140) |
| US Ideal Point Diff. | | -0.211** |
| | | (0.098) |
| *Fixed-effects* | | |
| Year | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 468 | 468 |
| $R^2$ | 0.913 | 0.921 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A8: Predicting Program Participation

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | -0.001 | -0.002 |
| | (0.001) | (0.002) |
| Polyarchy | | 0.538*** |
| | | (0.158) |
| UNSC Member | | -0.035 |
| | | (0.034) |
| GDPPC (log) | | -0.095** |
| | | (0.038) |
| Trade/GDP | | -0.0005 |
| | | (0.0003) |
| FDI/GDP | | 0.0007 |
| | | (0.0006) |
| Debt/GNI | | 0.0001 |
| | | (0.0002) |
| Debt service/exports | | 0.0005 |
| | | (0.0008) |
| ODA/GNI (log) | | 0.062** |
| | | (0.026) |
| US Ideal Point Diff. | | 0.011 |
| | | (0.030) |
| *Fixed-effects* | | |
| Country | Yes | Yes |
| Year | Yes | Yes |
| *Fit statistics* | | |
| Observations | 3,480 | 3,480 |
| $R^2$ | 0.316 | 0.337 |

*Clustered (Country & Year) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Figure A4: Comparing program types across disaster and non-disaster contexts

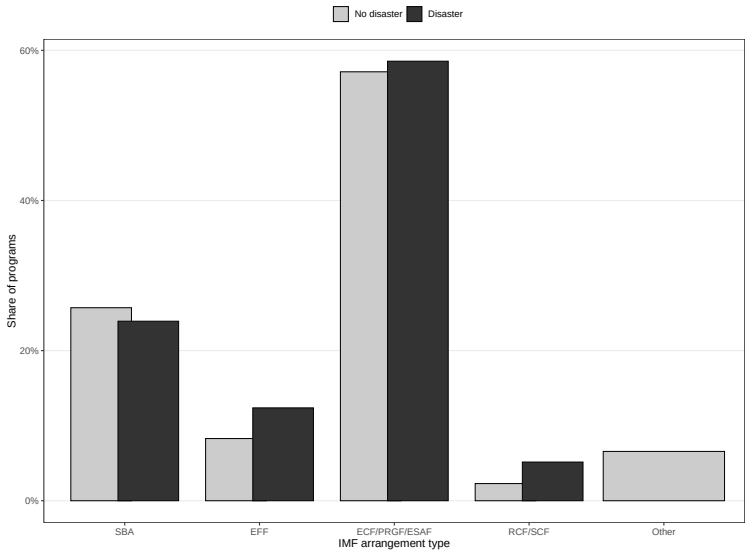



Figure A5: Comparing conditionality types across disaster and non-disaster contexts

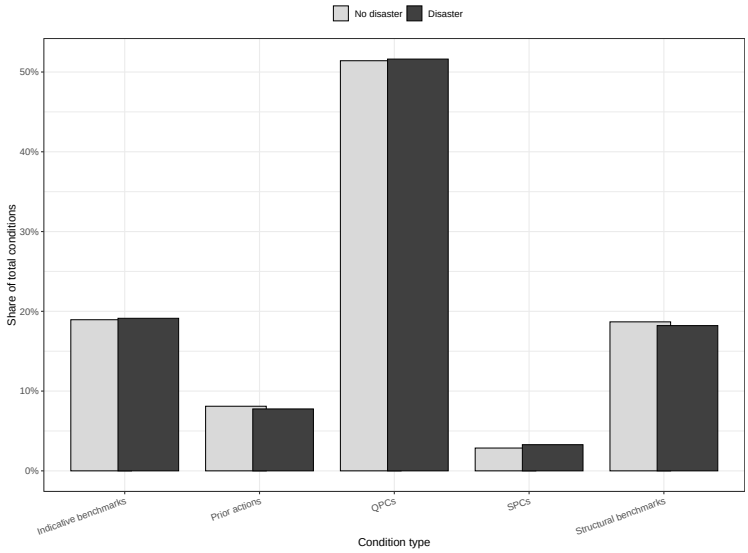


Figure A6: Comparing conditionality categories across disaster and non-disaster contexts

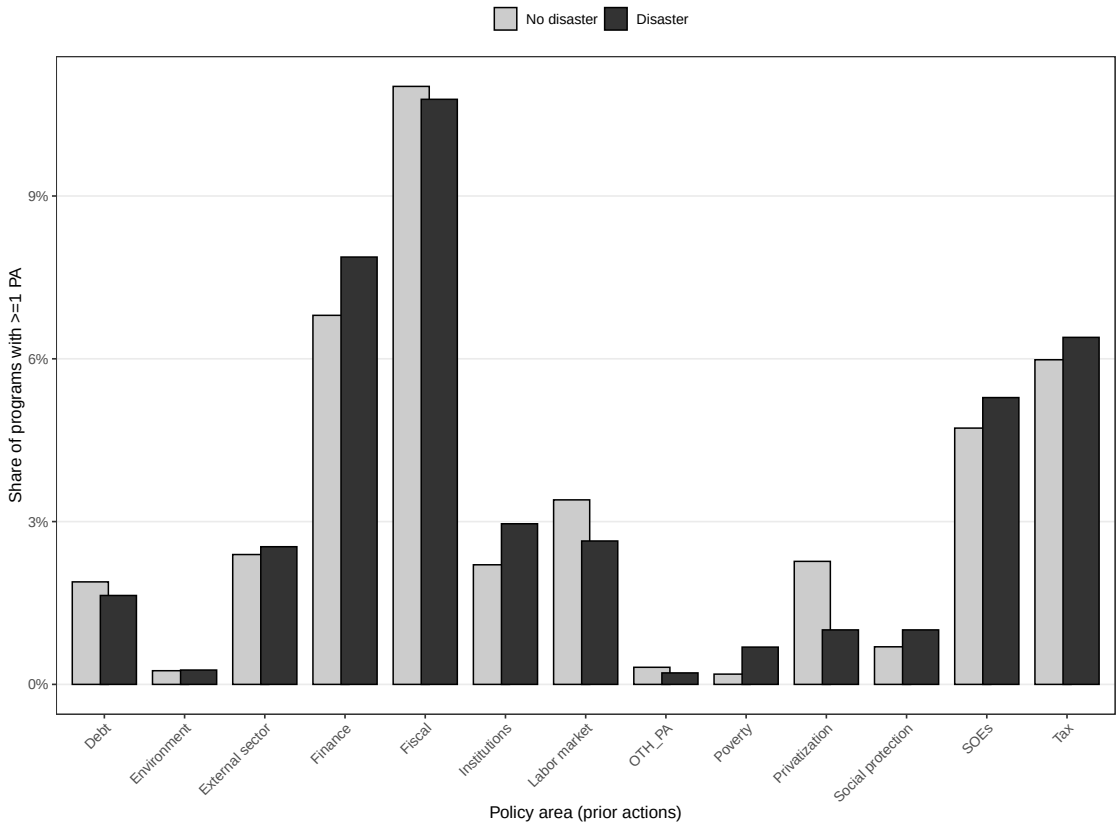


Table A9: Placebo Tests

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Geophysical Disasters | -0.019 | 0.092 |
| | (0.467) | (0.473) |
| Polyarchy | | -1.46 |
| | | (1.82) |
| UNSC Member | | -0.997* |
| | | (0.549) |
| GDPPC (log) | | -1.15 |
| | | (1.62) |
| Trade/GDP | | -0.004 |
| | | (0.011) |
| FDI/GDP | | -0.005 |
| | | (0.010) |
| Debt/GNI | | 0.006 |
| | | (0.004) |
| Debt service/exports | | -0.012 |
| | | (0.010) |
| ODA/GNI (log) | | -0.468 |
| | | (0.558) |
| US Ideal Point Diff. | | 0.514 |
| | | (0.712) |
| *Fixed-effects* | | |
| Year | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 564 | 564 |
| $R^2$ | 0.390 | 0.397 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A10: Replace Conditions Count DV With Number of Loan Condition Categories

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | -0.286 | -0.223 |
| | (0.171) | (0.160) |
| Polyarchy | | -0.805 |
| | | (1.34) |
| UNSC Member | | -0.344 |
| | | (0.247) |
| GDPPC (log) | | 0.209 |
| | | (0.653) |
| Trade/GDP | | -0.004 |
| | | (0.003) |
| FDI/GDP | | -0.008** |
| | | (0.003) |
| Debt/GNI | | -0.0009 |
| | | (0.003) |
| Debt service/exports | | 0.007 |
| | | (0.009) |
| ODA/GNI (log) | | -0.095 |
| | | (0.165) |
| US Ideal Point Diff. | | -0.332 |
| | | (0.234) |
| *Fixed-effects* | | |
| Year | Yes | Yes |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 564 | 564 |
| $R^2$ | 0.394 | 0.405 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A11: Climate Disasters Disaggregated

| Model: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| *Variables* | | | | | | | | | | |
| Drought | -1.29** | 0.497 | | | | | | | | |
| | (0.521) | (3.18) | | | | | | | | |
| Storms | | | -3.83*** | -3.61 | | | | | | |
| | | | (1.04) | (2.21) | | | | | | |
| Extreme Temps | | | | | -0.102*** | -0.125*** | | | | |
| | | | | | (0.010) | (0.013) | | | | |
| Wildfires | | | | | | | -1.35 | 0.709 | | |
| | | | | | | | (1.78) | (2.42) | | |
| Floods | | | | | | | | | -0.524*** | -0.554*** |
| | | | | | | | | | (0.106) | (0.048) |
| Polyarchy | | -0.624 | | -0.754 | | -0.560 | | -0.688 | | -0.483 |
| | | (2.11) | | (2.19) | | (2.03) | | (2.20) | | (2.07) |
| UNSC Member | | -0.857 | | -0.900 | | -0.965 | | -0.858 | | -0.810 |
| | | (0.540) | | (0.541) | | (0.611) | | (0.545) | | (0.548) |
| GDPPC (log) | | -2.67* | | -2.72* | | -2.69* | | -2.68* | | -2.80* |
| | | (1.45) | | (1.36) | | (1.37) | | (1.37) | | (1.39) |
| Trade/GDP | | -0.006 | | -0.006 | | -0.006 | | -0.006 | | -0.007 |
| | | (0.018) | | (0.018) | | (0.018) | | (0.018) | | (0.018) |
| FDI/GDP | | -0.032* | | -0.032* | | -0.033* | | -0.032* | | -0.031* |
| | | (0.017) | | (0.017) | | (0.017) | | (0.017) | | (0.018) |
| Debt/GNI | | -0.003 | | -0.004 | | -0.003 | | -0.003 | | -0.003 |
| | | (0.008) | | (0.008) | | (0.008) | | (0.008) | | (0.008) |
| Debt service/exports | | 0.007 | | 0.007 | | 0.007 | | 0.007 | | 0.007 |
| | | (0.017) | | (0.018) | | (0.017) | | (0.017) | | (0.017) |
| ODA/GNI (log) | | 0.087 | | 0.094 | | 0.115 | | 0.090 | | 0.078 |
| | | (0.587) | | (0.575) | | (0.580) | | (0.585) | | (0.586) |
| US Ideal Point Diff. | | -0.311 | | -0.317 | | -0.487 | | -0.316 | | -0.246 |
| | | (1.06) | | (1.05) | | (0.935) | | (1.07) | | (1.04) |
| *Fixed-effects* | | | | | | | | | | |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Fit statistics* | | | | | | | | | | |
| Observations | 564 | 397 | 564 | 397 | 564 | 397 | 564 | 397 | 564 | 397 |
| $R^2$ | 0.391 | 0.449 | 0.391 | 0.450 | 0.392 | 0.453 | 0.390 | 0.449 | 0.391 | 0.451 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A12: Prior Actions at Program Initiation and Revision

| | Program Initiation | | Program Revision | |
|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) |
| *Variables* | | | | |
| Climate Disasters | -13.8** | -13.8* | -0.947*** | -0.708*** |
| | (4.82) | (6.49) | (0.263) | (0.115) |
| Polyarchy | | 7.81* | | -0.469 |
| | | (4.28) | | (4.32) |
| UNSC Member | | -0.571 | | 0.303 |
| | | (0.963) | | (0.847) |
| GDPPC (log) | | -1.58 | | -0.354 |
| | | (1.42) | | (1.34) |
| Trade/GDP | | -0.003 | | 0.015 |
| | | (0.010) | | (0.011) |
| FDI/GDP | | -0.203** | | 0.009 |
| | | (0.087) | | (0.011) |
| Debt/GNI | | -0.028* | | -0.018* |
| | | (0.016) | | (0.009) |
| Debt service/exports | | 0.016 | | 0.009 |
| | | (0.042) | | (0.020) |
| ODA/GNI (log) | | -0.406 | | -1.24 |
| | | (0.962) | | (0.770) |
| US Ideal Point Diff. | | -0.138 | | 0.911 |
| | | (1.49) | | (0.945) |
| *Fixed Effects* | | | | |
| Year | Yes | Yes | Yes | Yes |
| Country | Yes | Yes | | |
| Program ID | | | Yes | Yes |
| *Fit statistics* | | | | |
| Observations | 204 | 204 | 468 | 468 |
| $R^2$ | 0.551 | 0.574 | 0.632 | 0.644 |

*Significance levels:* *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A13: Mechanisms Tests

| Model: | (1) | (2) | (3) |
|---|---|---|---|
| *Variables* | | | |
| Climate Disasters | 7.13 | -1.32** | -1.20 |
| | (4.66) | (0.592) | (0.750) |
| Article IV Climate Mentions | -0.001 | | |
| | (0.003) | | |
| Climate Disasters × Article IV Climate Mentions | -0.051** | | |
| | (0.024) | | |
| Country Climate Laws | | -0.0003 | |
| | | (0.0003) | |
| Climate Disasters × Country Climate Laws | | 0.0002 | |
| | | (0.001) | |
| G5 Climate Laws | | | -0.012 |
| | | | (0.007) |
| Climate Disasters × G5 Climate Laws | | | -0.0003 |
| | | | (0.028) |
| Polyarchy | -2.60 | -2.21 | -2.12 |
| | (2.89) | (2.82) | (2.80) |
| UNSC Member | -0.752 | -1.10* | -1.14* |
| | (1.19) | (0.582) | (0.593) |
| GDPPC (log) | -0.460 | -2.22 | -2.13 |
| | (2.01) | (1.72) | (1.69) |
| Trade/GDP | -0.018*** | -0.011 | -0.011 |
| | (0.007) | (0.008) | (0.008) |
| FDI/GDP | 0.005 | -0.011 | -0.012 |
| | (0.007) | (0.011) | (0.012) |
| Debt/GNI | 0.013** | 0.013*** | 0.012*** |
| | (0.006) | (0.004) | (0.004) |
| Debt service/exports | 0.024 | 0.005 | 0.005 |
| | (0.053) | (0.011) | (0.011) |
| ODA/GNI (log) | -0.836 | -1.30** | -1.30** |
| | (0.747) | (0.555) | (0.551) |
| US Ideal Point Diff. | -0.037 | -0.502 | -0.516 |
| | (0.726) | (0.535) | (0.529) |
| *Fixed-effects* | | | |
| Country | Yes | Yes | Yes |
| *Fit statistics* | | | |
| Observations | 265 | 564 | 564 |
| $R^2$ | 0.516 | 0.372 | 0.373 |

*Clustered (Country) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A14: IEAs Measure Mechanism Tests

| Model: | (1) | (2) |
|---|---|---|
| *Variables* | | |
| Climate Disasters | -2.91 | -3.44 |
| | (5.06) | (5.21) |
| Country IEAs | 0.001 | |
| | (0.003) | |
| Polyarchy | -2.40 | -1.22 |
| | (3.01) | (2.85) |
| UNSC Member | -0.868 | -0.977** |
| | (0.544) | (0.489) |
| GDPPC (log) | -1.75 | -0.868 |
| | (1.54) | (1.25) |
| Trade/GDP | -0.016*** | -0.013** |
| | (0.006) | (0.006) |
| FDI/GDP | -0.008 | -0.011 |
| | (0.010) | (0.010) |
| Debt/GNI | 0.006 | 0.002 |
| | (0.004) | (0.004) |
| Debt service/exports | 0.030* | 0.027* |
| | (0.017) | (0.014) |
| ODA/GNI (log) | -0.585 | -0.674 |
| | (0.566) | (0.553) |
| US Ideal Point Diff. | 0.437 | 0.448 |
| | (0.818) | (0.791) |
| Climate Disasters × Country IEAs | 0.004 | |
| | (0.013) | |
| G5 IEAs | | 0.043*** |
| | | (0.015) |
| Climate Disasters × G5 IEAs | | 0.032 |
| | | (0.074) |
| *Fixed-effects* | | |
| Country | Yes | Yes |
| *Fit statistics* | | |
| Observations | 564 | 564 |
| $R^2$ | 0.365 | 0.375 |

*Clustered (Country) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A15: Predicting Number of Conditions, Controlling for Quality of Government. The measure of quality of government is constructed by the Quality of Government Institute and comprises the mean value of the variables Corruption, Law and Order, and Bureaucratic Quality scaled 0-1. These variables are drawn from the International Country Risk Guide (compiled by the PRS group), an authoritative geopolitical risk data series.

| Model: | (1) |
|---|---|
| *Variables* | |
| Climate Disasters | -1.39*** |
| | (0.453) |
| Polyarchy | -1.40 |
| | (1.90) |
| UNSC Member | -0.954 |
| | (0.560) |
| GDPPC (log) | -1.31 |
| | (1.65) |
| Trade/GDP | -0.005 |
| | (0.011) |
| FDI/GDP | -0.005 |
| | (0.010) |
| Debt/GNI | 0.006 |
| | (0.004) |
| Debt service/exports | -0.012 |
| | (0.011) |
| ODA/GNI (log) | -0.462 |
| | (0.557) |
| US Ideal Point Diff. | 0.550 |
| | (0.710) |
| Quality of Government | 0.468 |
| | (4.03) |
| *Fixed-effects* | |
| Country | Yes |
| Year | Yes |
| *Fit statistics* | |
| Observations | 564 |
| $R^2$ | 0.399 |

*Clustered (Country & Year) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

# Table A16: Modeling Changing Attention Over Time

| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Variables* | | | | | | |
| Climate Disasters | -1.34*** | -1.41*** | | | | |
| | (0.316) | (0.360) | | | | |
| 2001 | -0.273 | -0.244 | | | | |
| | (1.07) | (1.10) | | | | |
| 2002 | -0.922 | -0.825 | | | | |
| | (1.08) | (1.10) | | | | |
| 2003 | -1.33 | -1.18 | | | | |
| | (1.32) | (1.35) | | | | |
| 2004 | -1.12 | -1.04 | | | | |
| | (1.22) | (1.27) | | | | |
| 2005 | -1.81 | -1.53 | | | | |
| | (1.12) | (1.24) | | | | |
| 2006 | -2.02* | -1.65 | | | | |
| | (1.19) | (1.34) | | | | |
| 2007 | -2.91** | -2.80** | | | | |
| | (1.17) | (1.29) | | | | |
| 2008 | -4.13*** | -3.76*** | | | | |
| | (0.985) | (1.22) | | | | |
| 2009 | -3.29*** | -2.80* | | | | |
| | (1.15) | (1.53) | | | | |
| 2010 | -3.76*** | -3.37*** | | | | |
| | (1.08) | (1.28) | | | | |
| 2011 | -3.99*** | -3.40*** | | | | |
| | (1.02) | (1.25) | | | | |
| 2012 | -3.76*** | -3.01** | | | | |
| | (0.917) | (1.23) | | | | |
| 2013 | -3.20*** | -2.46** | | | | |
| | (0.942) | (1.20) | | | | |
| 2014 | -2.27 | -1.76 | | | | |
| | (1.39) | (1.68) | | | | |
| 2015 | -2.51** | -1.93 | | | | |
| | (1.21) | (1.51) | | | | |
| 2016 | -2.09* | -1.39 | | | | |
| | (1.12) | (1.42) | | | | |
| 2017 | -2.79*** | -2.15* | | | | |
| | (0.885) | (1.20) | | | | |
| 2018 | -2.25** | -1.74 | | | | |
| | (1.12) | (1.42) | | | | |
| 2019 | -2.68*** | -2.09 | | | | |
| | (0.997) | (1.31) | | | | |
| Polyarchy | | -1.33 | | -0.690 | | -0.855 |
| | | (2.53) | | (2.44) | | (2.47) |
| UNSC Member | | -0.957 | | -0.594 | | -0.529 |
| | | (0.613) | | (1.07) | | (1.06) |
| GDPPC (log) | | -1.29 | | -1.62 | | -0.128 |
| | | (1.55) | | (3.09) | | (3.09) |
| Trade/GDP | | -0.005 | | -0.008 | | -0.009 |
| | | (0.009) | | (0.006) | | (0.006) |
| FDI/GDP | | -0.005 | | -0.002 | | -0.004 |
| | | (0.011) | | (0.008) | | (0.007) |
| Debt/GNI | | 0.006 | | 0.006 | | 0.002 |
| | | (0.005) | | (0.006) | | (0.006) |
| Debt service/exports | | -0.012 | | 0.084* | | 0.096* |
| | | (0.011) | | (0.050) | | (0.052) |
| ODA/GNI (log) | | -0.464 | | -0.098 | | 0.036 |
| | | (0.496) | | (0.514) | | (0.503) |
| US Ideal Point Diff. | | 0.545 | | 1.37* | | 1.27** |
| | | (0.784) | | (0.731) | | (0.632) |
| Year | | | 0.194 | 0.274** | | |
| | | | (0.120) | (0.122) | | |
| Article IV Climate Mentions | | | 0.384 | 1.69 | -0.065 | -0.068 |
| | | | (3.90) | (4.25) | (0.044) | (0.046) |
| Year × Article IV Climate Mentions | | | -0.0002 | -0.0008 | | |
| | | | (0.002) | (0.002) | | |
| Post-2009 | | | | | -0.437 | -0.149 |
| | | | | | (0.690) | (0.710) |
| Post-2009 × Article IV Climate Mentions | | | | | 0.067 | 0.070 |
| | | | | | (0.044) | (0.046) |
| *Fixed-effects* | | | | | | |
| Country | Yes | Yes | Yes | Yes | Yes | Yes |
| *Fit statistics* | | | | | | |
| Observations | 564 | 564 | 265 | 265 | 265 | 265 |
| $R^2$ | 0.392 | 0.399 | 0.498 | 0.527 | 0.496 | 0.522 |

*Clustered (Country) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

# 5 Interviews

To help confirm that staff are driving the Fund's climate action and better explain bureaucrats' incentives and motivations, we completed eight interviews with IMF personnel involved in negotiating, approving, and implementing loan programs. We initially reached out to around three dozen bureaucrats who we identified as having worked as mission chiefs or resident representatives in countries that experienced climate disasters during the period under study. We also contacted several current and former Executive Directors since these individuals represent member states on the IMF Executive Board — the institution's highest decision-making body. We then utilized snowball sampling, speaking with individuals referred to us by prior interviewees. The individuals interviewed and questions asked of them appear below.

| **Position** | **Date** |
|---|---|
| Former mission chief and director of Strategy, Policy, and Review (SPR) department | June 2021 |
| Former director of European department | June 2021 |
| Former mission chief and department head | July 2021 |
| Former Executive Director | August 2021 |
| Current Executive Director | September 2021 |
| Former resident representative | October 2024 |
| Former resident representative | November 2024 |
| Former resident representative | November 2024 |

Table A17: **Interview research summary.** All interviews were completed by authors. Initial contact occurred over email. Identities were anonymized at the request of our interviewees.

**Question List**

- How is the IMF thinking about climate change in its work? What the appropriate policy tools for the Fund to deploy to address climate change, if any? To what extent should the Fund be involved on climate and environmental issues, in your view?
- Where did the initial impetus to think about climate come from at the Fund? From IMF leadership? From Fund staff? From member states? From observation of climate in the public zeitgeist?
- Is there variation across states in the extent to which member states are attuned to climate, or to which they prioritize climate in their conversations with the Fund?
- To what extent is the Fund prioritizing physical climate risks versus transition risk?
- To what extent does the Fund see climate as a short-to-medium term macroeconomic issue? Have there been changes in the Fund's thinking about climate change's time scale?

# 6 Latent Semantic Scaling Details

Latent semantic scaling (LSS) is a weakly supervised text analysis approach. The researcher specifics a set of 'seed words' with known polarity on the dimension of interest. The polarity of the words in this dictionary is used to estimate the polarity of all other terms in the corpus's document-feature matrix (DFM) based on their semantic similarity (vector space distance between word embeddings) to the seed words (Watanabe 2021). The estimated polarity of terms in the DFM is then utilized to predict polarity at the document-level (in this case, at the condition level). We construct a corpus of the texts of all IMF conditions from 1978-2021, using data from Kentikelenis, Stubbs and King (2016) and pre-processing to remove punctuation, symbols, stop words, numbers, and extremely rare words (those that occur less than 15 times in the corpus). We also lowercase all conditions.

To generate the dictionary of seed words in the easy and difficult conditions, we utilized an approach based on both our expert reading of IMF texts and artificial intelligence-assisted coding. First, we established the set of seed words that we expected to be associated with ease and difficulty based on our readings of text to create a benchmark. Second, we developed a prompt which was provided to chatGPT 3.5 along with a random sample of 100 conditions to generate approximately 50 easy and difficult seed words.[1] We recover similar results using both our human-generated and AI-generated seed words. AI-generated seed words resulted in more precise estimates, so we present these results in the main text. These seed words are shown in Table A18. Our dictionary of seed words is similar to the approach used by Kramarz et al. (2025), however, it would be inappropriate to directly employ their seed words because they are specific to the World Bank context, and as we discuss in the main text, our conceptual definition of "difficulty" is different from their main quantity of interest: "stringency." As we discuss in the main text, these institutions have substantively different mandates, and conditions implemented in the WB are generally easier to implement than those included in IMF loans (Clark and Dolan 2021). In many other respects, though, our empirical approach to employing LSS is similar.

We estimate term polarity over 300 iterations of the LSS model. The estimated polarity of terms is illustrated in Figure A7, where words are arrayed from most difficult to easiest on the x-axis and term frequency appears on the y-axis. The 'easiest' and 'hardest' terms are shown in Table A19: more positive LSS scores indicate easier terms and more negative LSS scores indicate harder terms. These term-level polarity estimates are used to predict the condition-level difficulty, which is then summed across all of the conditions a country receives in a given year to a country-year difficulty score. To predict the polarity of conditions on the easy-difficult dimension, we specify a minimum number of words of 10, which prevents short conditions from receiving extremely large negative or positive scores. Without this specification, polarity for short conditions would take on extreme values because the polarity of documents is predicted based on the polarity of words weighted by their frequency. These polarity scores become the dependent variable for the estimation of the models in Table 2. The condition-level measure of difficulty ranges from -5.3750 to 6.4905 with a mean of 0 and a median of -0.1279. The country-year level difficulty score ranges from -30.3592 to 46.7834 with a mean of 1.4129 and a median of 0.5558.

[1] Multiple iterations of prompts, text samples, number of seed words, and numbers of text included in the sample were tested and results were similar in each case. For example, one such AI prompt was to generate words that "require subjective judgment about implementation" after reading in condition texts.

Table A18: LSS Seed Words

| Easy | | Hard | |
|---|---|---|---|
| complete | amend | audits | gas |
| finalize | submission | liquidation | auction |
| develop | establishment | merger | operations |
| publish | have | deposits | balance |
| establish | select | receivership | wealth |
| submit | establish | resolution | electricity |
| process | presentation | bond | petroleum |
| lower | issue | compliance | treasury |
| introduce | workshop | tariff | committee |
| complete | report | bonus | interest |
| review | disseminate | privatization | bank |
| confirm | guidelines | valuation | policy |
| initiate | | legislation | tariffs |
| passage | | budget | customs |
| provide | | procurement | deposit |
| rationalize | | infrastructure | credit |
| recommend | | debt | rate |
| present | | tax | congress |
| float | | appropriation | constitution |
| approval | | enforcement | constitutional |
| presentation | | arrears | parliament |
| passage | | contractual | parliamentary |
| establishing | | commitment | |
| recommendation | | function | |
| bring | | taxpayer | |
| publish | | treatment | |
| submit | | escrow | |
| legal | | guarantees | |

Figure A7: Difficulty scores of words

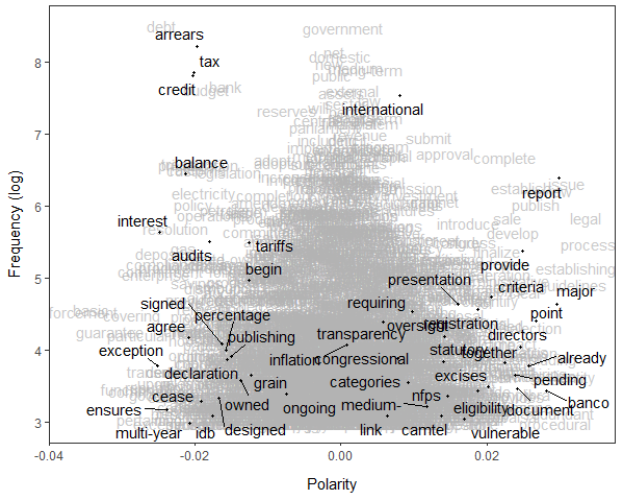


Table A19: LSS Scores of Easiest and Hardest Terms

(a) Easiest Terms

| Term | LSS Score |
|---|---|
| process | 0.034 |
| legal | 0.034 |
| entity | 0.033 |
| establishing | 0.032 |
| guidelines | 0.032 |
| issue | 0.031 |
| redundant | 0.030 |
| report | 0.030 |
| major | 0.030 |
| procedural | 0.030 |

(b) Hardest Terms

| Term | LSS Score |
|---|---|
| republic | -0.026 |
| pertaining | -0.026 |
| commence | -0.027 |
| good | -0.027 |
| particular | -0.028 |
| covering | -0.029 |
| function | -0.029 |
| guarantee | -0.032 |
| basic | -0.034 |
| enforcement | -0.037 |

Figure A8: Conditions become easier over time