The Cross-Border Spillovers of Aid Sanctions

Shannon P. Carcelli*
Department of Government and Politics
University of Maryland, College Park

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Abstract

Economic sanctions are increasingly utilized tools in global politics. Although much literature has analyzed the impacts of sanctions in targeted states, less work has considered the impact on neighboring states caught in the crossfire. I develop and test a theory of the cross-border spillovers of foreign aid sanctions. Generally, aid sanctions have a negative impact on neighboring states, as they depress the regional economy. However, when a state is a major recipient of foreign aid, neighboring sanctions may actually benefit its economy. This is because the sanctions cause more aid to be diverted to the neighbors instead of the sanctioned state. I test this theory using a mixed-methods approach. First, I use TIES data on a global sample to evaluate the theory on a macro-level scale. Second, I evaluate the mechanisms by examining the bureaucratic allocations of US foreign aid to sanctioned regions. I find that the benefits to neighboring states are highest when aid is organized through regional bureaus—further evidence for the regional substitution hypothesis. Finally, I qualitatively compare the impact of aid sanctions on Zimbabwe in the early 2000s in aid-dependent Zambia and non-aid-dependent South Africa. Donors and sanction-issuing states would do well to consider these unintentional consequences when designing sanctions regimes.

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1 Introduction

Economic sanctions are growing in use, but their consequences are not fully understood. Much of the literature focuses on consequences within the target state, such as economic growth (Whang et al. 2013), investment (Barry and Kleinberg 2015), and stability (Marinov 2005). However, global interdependence ensures that sanctions do not only effect the target state; neighboring states are also impacted by sanctions. For example, recent global sanctions on Russia may have negatively impacted the economy of Central Asian states, many of which rely on Russian remittances (Lillis 2022). In contrast, some states may actually benefit from sanctions being imposed on their neighbors—for example, by serving as pass-through trade entities (Lektzian and Biglaiser 2013). The overall impact on a regional economy is an important determination in developing sanctions policy, especially given the ability of third-party states to influence sanctions' effectiveness. But the academic literature has not provided a theory to explain this variation. What determines the impact of sanctions on a target's neighbors?

I argue that the type of sanction and the economy of the neighboring state combine to explain the wildly different impacts of sanctions. Specifically, neighboring states benefit when economic sanctions decrease economic competition from their targeted neighbors. Specifically, I argue that aid-dependent states should benefit when their neighbors are targeted with aid sanctions, as aid funding is diverted toward them instead. In contrast, states whose neighbors are sanctioned in ways that do not directly reduce their competition should suffer when sanctions are targeted in their neighborhood.

I evaluate this theory, using a mixed-methods approach, on the case of aid-related sanctions.[1] First, I use TIES data to examine the differential effects of aid sanctions on a neighboring state's economy. I find that aid sanctions harm neighboring economies in general but benefit the economies of aid-receiving neighbors. This economic boost is associated

[1]In the Appendix, I show preliminary evidence for other types of sanctions as well.

with a boost in foreign aid after neighbors are targeted with aid sanctions. In placebo tests, I find no evidence that other types of sanctions benefit aid-dependent neighbors in this way.

Second, I test the mechanisms by leveraging variation within the United States foreign aid bureaucracy. Aid agencies have two methods of structuring their expenditures. Regional bureaus, such as the USAID Bureau for Africa, have geographical restrictions for where they can spend foreign aid. In contrast, functional bureaus, such as the Bureau for Global Health, have more freedom to spread aid to outside regions. If the theory is correct, then regional bureaus should be more likely to divert aid to neighboring states in response to sanctions. In contrast, functional bureaus should be more free to divert that aid to another part of the world. Indeed, I find that when the US issues sanctions against a target state, that state's neighbors are much more likely to benefit from a boost in aid from regionally oriented bureaus.

Finally, I probe the mechanisms by tracing the case of global sanctions against Zimbabwe in the early 2000s. I compare the effects of the sanctions in neighboring Zambia (a highly aid-dependent state) and South Africa (a less aid-dependent state), expecting to find that the largely aid-related and targeted sanctions in Zimbabwe benefited Zambia but harmed South Africa. I find, as the theory suggests, that Zambia's foreign aid rose in relative parity with the aid cuts in Zimbabwe. This, along with other sanctions-related opportunities, helped Zambia grow its economy by more than 50% over the time period. In contrast, South Africa had little to gain, as it was not a major foreign aid recipient to begin with. Therefore, the crisis in Zimbabwe only served to hurt South Africa. I also find evidence of these effects in the contrasting foreign policy behaviors of the two states: South Africa pushed to limit the sanctions, while Zambia happily worked with the international community in naming and shaming its neighbor.

This article speaks directly to the economic sanctions literature, especially the growing literature on the indirect effects of sanctions (e.g. Andreas 2005). While some articles highlight positive cross-border externalities (Haidar 2017; Early 2012), others note negative

effects (Yang et al. 2004). These literatures largely do not speak to each other, and no work to date has directly theorized *under what conditions* sanctions should benefit neighboring states and when they should harm them.

The theory also speaks to other literature on sanctions effectiveness, which considers variation in types of sanctions (e.g. Bapat and Kwon 2015). In addition, I touch upon work in both the foreign aid and trade literatures, which have long been concerned with the role that sanctions and war can play in distorting and shifting aid and trade corridors (e.g. Yang et al. 2009). Finally, this work contributes to a literature on the determinants of foreign aid expenditures. Although scholars have long known that states consider geopolitics in delivering aid (Heinrich 2013; Bueno de Mesquita and Smith 2007), the substitution of aid within regional rivals is not well known. I show that aid donors, perhaps unwittingly, encourage aid-dependent states to benefit from their neighbors' economic misery.

2 Literature

The effects of sanctions on targeted states have been relatively well studied. Economic sanctions have been linked to various economic and political outcomes in targeted states.[2] That said, just because sanctions have an effect does not necessarily mean they are effective at achieving their stated goals. The ongoing debate about sanctions' effectiveness has yet to be fully resolved (Lacy and Niou 2004; Pape 1997; Hufbauer et al. 1990), with many scholars

[2]For economic outcomes, see Early and Peksen (2019); Lektzian and Patterson (2015); Neuenkirch and Neumeier (2015); Peksen and Son (2015); Allen and Lektzian (2013); Yang et al. (2009); Caruso (2003). For political, see Chyzh and Urbatsch (2021); Alexseev and Hale (2020); Frye (2019); Grossman et al. (2018); Afesorgbor and Mahadevan (2016); Neuenkirch and Neumeier (2016); Drury and Peksen (2014); Oechslin (2014); Escribà-Folch (2012); Peksen and Drury (2010); Marinov (2005). For a recent review of this literature, see Özdamar and Shahin (2021)

noting variation based on regime type, targeting, and other factors.[3] Most relevant to this paper, scholars have found variation in the effectiveness of different types of sanctions.[4] I build on this literature by arguing that the type of sanction is an important factor in the cross-border effects as well.

The effects of sanctions on third-party states are not as well theorized. A long-standing literature shows that third parties can influence the effectiveness of sanctions, through their decisions to defect from a sanctions regime.[5] Given this ability, it is reasonable to ask what might motivate third-party states to do so (Early 2015). If states face negative externalities from sanctions, that might impact their support and, therefore, sanctions effectiveness. Other literature focuses on the ability of sanctions to deter threats from third-party states, who witness their ill effects and fear the same thing happening to them (Miller 2014; Peterson 2014). Still more work suggests that third parties can take advantage of sanctioned states' temporary weakness, targeting them militarily (Peterson and Drury 2011).

A more recent literature looks more directly into the impacts of sanctions on the economies of neighboring states. Work by Hatipoglu et al. (2023), Onderco and van der Veer (2021), Giumelli (2017), Bove et al. (2023), Slavov (2007) and Yang et al. (2009, 2004) have noted the potential economic losses by states economically close to the senders and/or receivers of sanctions. This work highlights sanctions' negative economic impacts, which can sustain across borders. In contrast, other work has highlighted potential *positive* side effects

[3]Zarpli (2023); Bapat et al. (2013); Dizaji and van Bergeijk (2013); Whang et al. (2013); Allen (2008); McGillivray and Smith (2006); Blanchard and Ripsman (1999); Morgan and Schwebach (1995)

[4]Baldwin (2020); Felbermayr et al. (2020); Bapat and Kwon (2015); Drezner (2011); McGillivray and Smith (2006); Brooks (2002)

[5]Peterson (2021); Barry and Kleinberg (2015); Early (2015); Lektzian and Biglaiser (2013); McLean and Whang (2010); Drezner (2000); Hufbauer et al. (1990); Doxey (1980)

to third-party states. Haidar (2017) notes the increased regional investment after the Iran sanctions, and Early (2012) finds that allies of a state targeted by sanctions benefit from a trade boost. Barry and Kleinberg (2015) note that third-party states can provide indirect access to firms who still want to do business in the sanctioned state. Finally, Andreas (2005) finds that criminal enterprises in bordering states benefit from a new black market created by sanctions busters.

It is clear that sanctions impact states that were not originally targeted for those sanctions. Sometimes these impacts are helpful to third-party states, and sometimes they are harmful. But what determines the direction and degree of these effects? Why do some states benefit from their neighbors' misery, while others fall into the same economic slump, and still others are barely affected at all? The literature lacks an overarching theory predicting the direction and degree of economic cross-border effects of sanctions. In the following section, I develop a theory of the political economy of cross-border aid sanctions.

3 Theory

I argue that the cross-border impact of sanctions depends upon the type of sanction and the economy of the neighboring state. Overall, economic sanctions are harmful to a regional economy: in an increasingly interdependent world, states' fortunes are tied. When sanctions harm the economy of a target state, consumption in that state will decrease, attenuating cross-border trade and remittances. Overall, this is likely to bring down the whole region. However, this impact is heterogeneous. States that compete economically with the sanctioned state will not feel those negative effects as strongly. In fact, they may receive benefits when their neighbors are targeted with sanctions.

This theory should apply to many cases of sanctions; however, the scope is more relevant to sanctions that are imposed suddenly, with little opportunity for regional actors to slowly adjust to the new economic reality. The application in this paper focuses on aid sanctions; the

implications for other types of sanctions, including sanctions targeted to specific individuals, requires further research. Finally, the theory focuses on states that are not *themselves* the targets of sanctions. Because of geographic spillover of global events, many states with sanctions in their regions are also themselves targeted with sanctions. These states will not be relevant to the theory. Below, I outline the theory and the testable hypotheses that I will examine later in the paper.

3.1 The Heterogeneous Impacts of Cross-Border Sanctions

Economic sanctions are heterogeneous policy tools, and different types of sanctions have different effects (Felbermayr et al. 2020). Specifically, sanctions that target a state's foreign aid income differ from those that target trade relationships. Similarly, the reactions of states whose economies depend on foreign aid are likely to differ from states that do not. In this paper, I focus on aid sanctions, which I define as any sanctions that target a state's likelihood of receiving foreign aid from international donors. Aid is commonly used for bargaining leverage in international disputes, and states that defect from international norms are often punished by threatening or limiting that aid.

The threat and imposition of aid sanctions almost certainly impact some states more than others. For example, states that are more aid-dependent might be more negatively impacted by aid sanctions. However, this paper is not about the effects of sanctions on targeted states. How might aid sanctions impact nearby states that were *not* targeted for sanctions? I argue that this depends on the extent to which these neighboring states were competing with the target state for foreign aid. When the international community targets a state with aid sanctions, the foreign aid that was originally sent to the target does not just disappear. Instead, it is often diverted elsewhere.

When aid can no longer be sent to a particular country, foreign aid bureaus can often shift that aid to other, similar countries—either within the region or with a similar topical focus. This could mean an increase in foreign aid to neighboring states. The first hypothesis,

therefore, predicts that a state's foreign aid will increase when its neighbor is targeted with aid-related sanctions.

Hypothesis 1: Aid-related sanctions in a target state should lead to an increase of foreign aid in neighboring states.

However, not all neighbors of sanctioned states will benefit equally from this shift. Specifically, a neighboring state that receives a lot of foreign aid will benefit more than states that are not aid recipients. At the extreme, neighboring states that receive no foreign aid at all are unlikely to benefit from a shift in aid into their borders. For example, if Mexico were targeted with foreign aid sanctions, it is unlikely that the aid that was once sent to Mexico would be diverted to the United States. Therefore, the US would suffer the economic costs of a poorer neighbor without the benefits of increased aid. On the other hand, Guatemala might see some benefits to Mexico being sanctioned. Foreign aid that was once sent to Mexico might go to Guatemala instead. Unlike the US, Guatemala might even *benefit* from this sanctions imposition. This leads to a related hypothesis, predicting varying levels of growth for neighbors with varying levels of aid dependence.

Hypothesis 2: Aid-related sanctions in a target state should have a positive economic impact on highly aid-receiving neighbors.

Finally, not all aid donors will behave the same way. The theoretical mechanisms focus on the constraints faced by foreign aid bureaucracies. Some foreign aid agencies have more freedom in reallocating aid than others. Therefore, some agencies will fit into the proposed theory better than others. Specifically, when bureaus are regionally focused—that is, their funding is tied to aid projects in a particular region—they are more likely to face geographic constraints over where they can allocate funding. When one country within the bureau's regional focus is targeted with sanctions, the agency must allocate its aid to other countries in the region—including neighbors of the sanctioned state. These regionally focused bureaus are therefore much more likely to increase aid to the neighbors of the sanctioned state.

In contrast, functional bureaus—those whose focus is a specific type of aid or prob-

lem—are less likely to face geographical constraints. For example, USAID's Bureau for Humanitarian Assistance can send foreign aid to any country undergoing a humanitarian crisis. When one country is targeted for sanctions, there is no reason for these bureaus to send aid to a country nearby—the funding is likely to be more geographically dispersed.

That said, there are reasons to believe that some functional agencies might stay within the region. For example, the Office of the Global AIDS Coordinator, tends to focus a lot of its aid on Sub-Saharan Africa, which was a major reason for its existence. Although some non-regional bureaus might still follow the trend described above, much of the results should be driven by bureaus with a regional basis. This variation between different types of bureaus offers an opportunity to test the theoretical mechanisms in greater detail. This leads to a third hypothesis.

Hypothesis 3: When a neighbor is targeted with aid-related sanctions, states should receive more foreign aid from regionally focused bureaus.

The third hypothesis requires more disaggregated data than the first two. In the following section, I describe the two datasets and the methods that I will use to examine these two sets of hypotheses.

4 Data and Statistical Methods

I developed two datasets to determine the cross-border impact of economic sanctions. The first dataset draws from existing data at the state level. The second introduces a hand-coded typology of United States foreign aid bureaus to determine how their expenditures change after sanctions imposition. The Threat and Imposition of Economic Sanctions (TIES) dataset, which I use for this analysis, is one of the few that includes aid sanctions as a category (Morgan et al. 2014).[6] The dependent variable of interest is either logged foreign aid levels

[6]The TIES dataset is one of many existing sanctions datasets. However, a majority of these do not include both aid and trade sanctions. This inclusion of both sanctions types

(for Hypotheses 1 and 3) or an annual measure of per-capita GDP, taken from World Bank data (WB 2022) (for Hypothesis 2).

4.1 Independent Variables: Country and Sanctions Types

The first set of hypotheses require a measure of economic needs of the country, as well as the type of sanction. In order to distinguish between high and low-aid-receiving states, I draw from OECD data on country-level aid inflows (OECD, Organization for Economic Cooperation and Development). I calculate the total aid that a country receives and divide it by the country's GDP. I then create a binary measure that distinguishes high and low aid-receiving states, coded as a 1 if the country falls above the mean level of aid and 0 otherwise.[7]

The third hypothesis requires a bureau-level measure of foreign aid funding. This measure is difficult to collect on a global level, because countries vary in the details of their foreign aid reporting. While some donor countries are meticulous about describing the specific agency and bureau of each foreign aid project, others are more lax in their reporting. Therefore, the OECD aid database does not provide consistent enough detail to distinguish between spending by regional and non-regional bureaus.

Fortunately, many countries report disaggregated data on their own initiative. The United States has been diligent in reporting its own aid expenditures for many years. Subagency data for many foreign aid projects has been reported by the US Agency for International Development (USAID) since 2001. Therefore, I use US data for Hypothesis 3 (EADS 2015). I drew from the names of US-reported subagencies to determine whether or not these

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allows for the placebo tests that I will employ later as further evidence for the theory.

[7]The variable is highly skewed, and therefore only about 30% of countries are coded as aid-dependent through this coding scheme. Therefore, in the Appendix I re-run the models with two alternative codings. The results are robust to all model specifications.

agencies were regionally focused. Bureaus whose name included a regional designator were coded as 1, and those without such a focus were 0. I omitted cases in which the bureau type was too difficult to determine, such as "Other" or "Not Applicable."[8]

According to USAID data, about 59% of aid projects are allocated through regionally based aid agencies. However, because these projects tend to be smaller, development-focused projects, their percentage of total funding is much lower. For example, much of the country's strategic and military aid is allocated through functional aid budgets rather than regional agencies. This type of aid represents a large proportion of US overseas spending. An average of 11% of US foreign aid funds are routed through regionally based agencies each year. The aid allocations to regional and non-regional agencies changes over time, but their differences are relatively consistent. Figure 1 charts the mean expenditures reported for each bureau type.

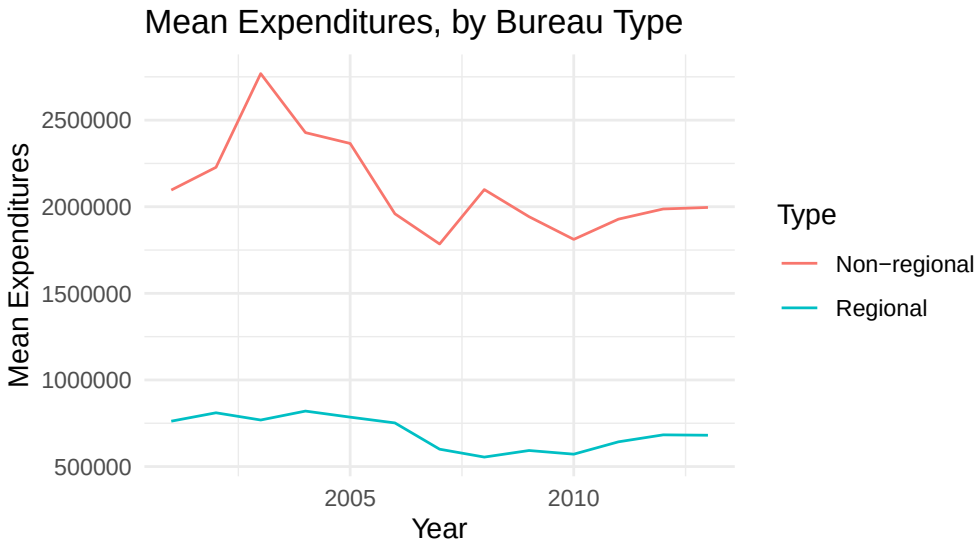

Figure 1: Mean aid allocations from regionally based and non-regional bureaus, according to US-reported data.

Bureaus also differ in where they are likely send their aid. Figure 2 shows which countries tend to have the highest proportion of aid from regional bureaus. For the median country,

[8]NAs represented just over 5% of projects during the time period under investigation.

20% of US foreign aid is delivered through a regional bureau. This number ranges from 0 (for Israel, Taiwan, and most island nations) to nearly 100% for states like Turkey and Ireland. The MENA region seems the most likely to receive aid through regional bureaus, though it is difficult to make any other systematic regional observations.[9]

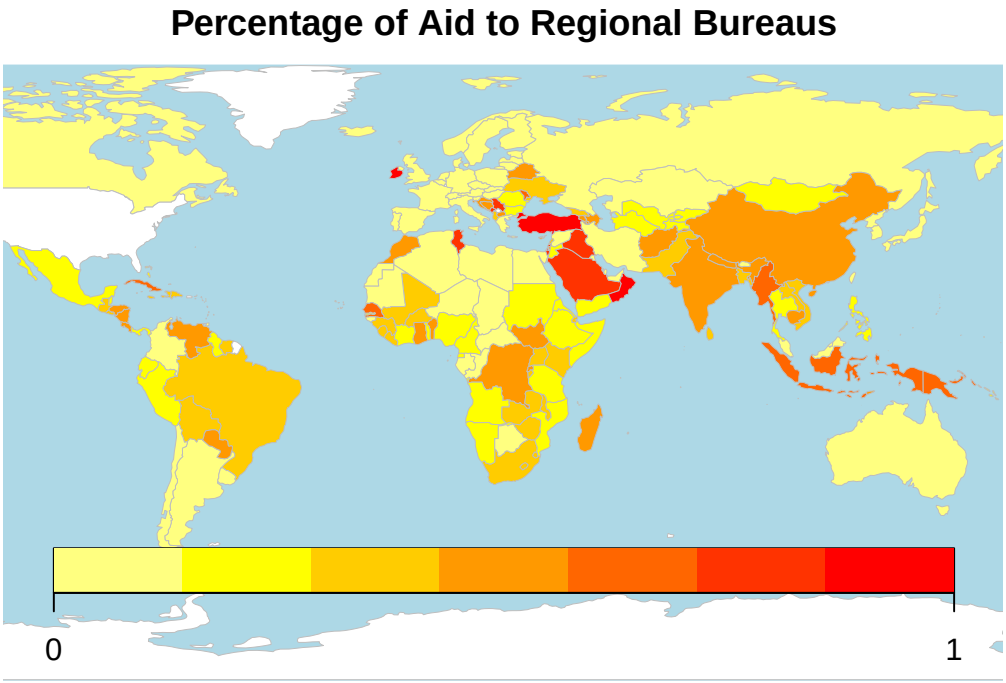

Figure 2: Mean aid allocations from regionally based and non-regional bureaus, according to US-reported data.

4.2 Estimating Equations

The first hypothesis predicts that more foreign aid will be delivered to states after their neighbors are targeted with foreign aid sanctions. This is a straighforward expectation and does not require an estimating equation. However, the conditional hypotheses require interactive models. The estimating equations below outline the methods for both the country-level and agency-level models. For country-level models, the dependent variable is per-capita GDP in

[9]Because of this, the results include a control for the MENA region, although they are robust with and without this control.

country i in time t. The independent and control variables in all models are lagged by one year. The first variable is a binary indicator for whether any neighboring state (denoted as state j) has been targeted by aid sanctions in year *t-1*.

$$GDP/capita_{it} = \beta_0 + \beta_1 AidSanction_{jt-1} + \beta_2 AidReceiving_{it-1} + \beta_3 AidSanction_{jt-1} * AidReceiving_{it-1} + controls_{it-1} + state_i + year_t + \epsilon_{it}$$

β_1 represents the coefficient of neighboring sanctions on per-capita GDP for low-aid-receiving states. I expect this coefficient to be negative: states whose economies are not linked to foreign aid should not benefit from, and are likely to be harmed by, sanctions on a neighboring state. β_2 represents the effect of being aid-receiving on per-capita GDP. Although the theory does not make predictions for this coefficient, it is likely that aid-receiving states should have a lower per-capita GDP.

Finally, β_3, the interaction coefficient, represents the impact of neighboring sanctions on high-aid-receiving states. I expect these coefficients to be positive: states whose economies stand to benefit from their neighbors' pain should experience an increase in aid and per-capita GDP when their neighbor is targeted with sanctions. The models focus on the subset of states that were not themselves targeted for aid sanctions in the same year. I use OLS regression with standard errors clustered on the country level. The Appendix reports robust results using hierarchical models.

The agency-level models also require an interaction coefficient. The dependent variable is total aid expenditures to state i from bureau b in year t. The dependent variable is logged due to the skewed nature of the data. In these models, β_1 represents the increase in aid spending for non-regional aid bureaus after the US targets a neighboring states (state j) for aid sanctions. This coefficient might be slightly positive, but it could also be null. The baseline aid spending for regional bureaus in states not impacted by neighboring sanctions is represented by β_2.

$$Log(Aid)_{ibt} = \beta_0 + \beta_1 AidSanction_{jt-1} + \beta_2 Regional_{bt-1} + \beta_3 AidSanction_{jt-1} * Regional_{bt-1} + controls_{ibt-1} + state_i + year_t + bureau_b + \epsilon_{ibt}$$

Finally, β_3 represents the interaction: the impact of neighboring sanctions on US aid spending by regional bureaus. I expect this coefficient to be positive and significant. The models include a battery of controls as well as state, year, and bureau fixed effects. Standard errors are again clustered on the country level.[10] Due to the large number of possible US aid bureaus (191), I limited the data size by only including bureau-country dyads that had positive levels of aid spending. The control variables are summarized in the Appendix.

5 Results

As expected, the type of sanction and economy of the neighboring state determines the cross-border impact of sanctions. Aid sanctions have differential effects for high- and low-aid-receiving neighbors. In the US case, I find that this is especially pronounced for aid that comes from regionally based aid bureaus, as the theoretical mechanisms would suggest.

5.1 Country-Level Models

Table 1 shows the results for the country-level models. Models 1-2 show results for Hypothesis 1, and 3-5, Hypothesis 2. Overall, states whose neighbors are targeted with aid sanctions receive a boost in foreign aid, as Hypothesis 1 predicts. On average, the smallest coefficient (0.36) predicts that when a state's neighbor is targeted with aid-related sanctions, foreign aid to that state increases by 1.4 million USD.

Similarly, the results show some evidence for Hypothesis 2. Neighbors to sanctioned states that are not beneficiaries of trade tend to see an overall economic slump. However, states

[10]Results are robust with clustering on subagency level instead.

whose economies are especially dependent on foreign aid are immunized from the negative effects of neighboring sanctions. If anything, the positive interaction coefficient suggests that these states' economies *benefit* when their neighbors are targeted, probably due to foreign aid being diverted to them instead of their misbehaving neighbor. These results are not statistically significant in Model 5; however, the extremely high R^2 in that models suggests that the two-way fixed effects might be drowning out much of the variation.[11] Additionally, as the theory suggests, not all aid agencies are likely to increase aid to neighbors, and not all of the targeted state's donors are necessarily taking part in the sanctions.

It is difficult to interpret the coefficients of an interaction model in a vacuum, so in Figure 3, I present the predicted per-capita GDP values from Model 3. In this figure, it becomes clear that the interaction coefficient may not be reflecting a *benefit* from sanctions so much as a *neutralizing* of the negative effects for high-aid-receiving states. For low-aid-receiving states (the red line), the imposition of aid sanctions on a neighboring state is associated with a very large decrease in per-capita GDP—from a mean of around $12,000 to $5,000. In contrast, states with an aid-based economy are relatively insulated from these ill effects. Whether or not their neighbors are targeted with aid sanctions, their per-capita GDP remains around $1,500.

This lack of positive impact is understandable for several reasons. First, as a long literature in foreign aid makes clear, aid often does not have a positive effect on development (Easterly 2006). Even when it does, this effect is often felt within only a year (Sachs 2006). Insofar as this aid is directed toward geopolitical, rather than development, goals, it is even less likely to show an immediate economic effect (Easterly and Pfutze 2008). However, the fact that an increase in foreign aid manages to insulate aid-dependent states is itself an important finding. In the case study, I will be able to better determine how this mechanism plays out.

[11]The random-effects models reported in the Appendix provide more robust results.

Table 1: Coefficients on OLS models with standard errors clustered by state. DV on Models 1-2 is log of total foreign aid inflows, examining Hypothesis 1. Models 3-5 DV is GDP/capita, examining Hypothesis 2. Note the interaction term in the last models.

	Dependent variable:				
	Logged Aid (million USD)		Per-Capita GDP (thousand USD)		
	(1)	(2)	(3)	(4)	(5)
Neighbor Aid Sanction	0.85^{***}	0.36^{**}	-7.08^{***}	-7.28^{***}	-0.52
	(0.24)	(0.18)	(2.10)	(2.09)	(0.32)
High Aid Receiver			-10.32^{***}	-4.04^{***}	-0.60^{*}
			(2.05)	(1.01)	(0.32)
Neighbor Aid Sanction			6.79^{***}	5.04^{***}	0.36
x Aid-Receiver			(2.11)	(1.83)	(0.37)
Neighbor Aid Threat	-0.40^{***}	-0.03		2.71^{**}	0.54^{**}
	(0.12)	(0.13)		(1.30)	(0.24)
Aid Inflows				-0.01^{***}	0.0002
				(0.002)	(0.001)
War	-0.0000	-0.05		-0.01	-1.32^{***}
	(0.001)	(0.06)		(0.01)	(0.35)
Infant Mortality	0.03^{***}	0.01^{*}		-0.14^{***}	0.12^{***}
	(0.003)	(0.01)		(0.02)	(0.03)
FDI	-0.01^{**}	-0.01^{***}		0.07	0.01
	(0.004)	(0.003)		(0.07)	(0.01)
GDP	-0.00^{**}	-0.00		0.00^{***}	0.00^{***}
	(0.00)	(0.00)		(0.00)	(0.00)
Constant	1.58^{***}	36.22	12.15^{***}	19.81^{***}	905.08^{***}
	(0.38)	(39.82)	(2.04)	(3.29)	(248.79)
Fixed Effects		Country, Year			Country, Year
Observations	3490	3490	4376	3663	3663
Mult. R-2	0.27	0.583	0.086	0.298	0.951
Note:					*p<0.1; **p<0.05; ***p<0.01

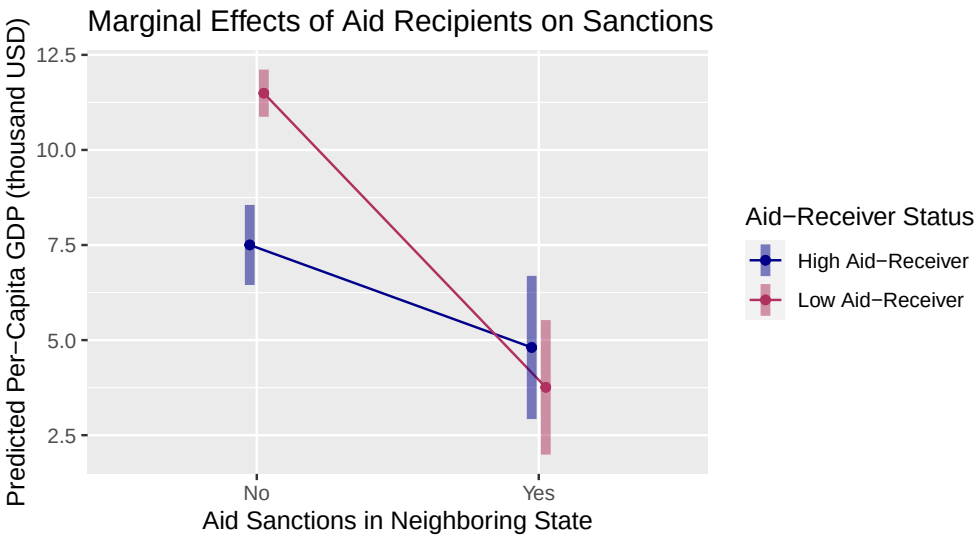

Figure 3: Predicted per-capita GDP values for states with and without neighboring aid sanctions.

5.2 Agency-Level Models

Another explanation for the lack of robustness in the country-levels models is the variation highlighted in Hypothesis 3. Foreign aid agencies vary in their allocation decisions following sanctions. Some bureaus—those with a geographical focus—are much more likely to drive foreign aid to neighboring states. Table 2 provides some evidence for this mechanism. The coefficient on Model 1 suggests that the United States sends around $2 million more aid to neighbors of US sanctions targets than to non-neighbors. The interaction coefficients in Models 2-4 show that this outcome is driven largely by regionally oriented aid bureaus, although some models also show that non-regional bureaus may increase their funding to targets' neighbor as well.

Once again, because interaction coefficients are difficult to interpret, Figure 4 shows predicted values from Model 2. For all dyad-years, the mean spending by regional bureaus is higher than non-regional—probably a reflection of the fact that there are fewer regionally oriented bureaus for each dollar spent. Both bureau types increase their aid funding to states whose neighbors are targeted with US aid sanctions. However, this increase is much more pronounced for regionally oriented aid bureaus. Their mean (logged) spending increase from

Table 2: Coefficients on OLS models with standard errors clustered by state. Sample is limited to US foreign aid and US-imposed aid sanctions.

	Dependent variable:			
	Logged Aid			
	(1)	(2)	(3)	(4)
Neighbor Aid Sanction	1.02**	0.56***	0.36**	−0.09
	(0.43)	(0.19)	(0.16)	(0.15)
Regional Bureau		2.35***	2.27***	4.00***
		(0.18)	(0.17)	(0.37)
Neighbor Aid Sanction		1.21**	1.64***	1.41***
x Regional		(0.55)	(0.40)	(0.44)
Aid Inflows (mil USD)			48.60	84.40
			(174.03)	(69.99)
War			−0.0001	0.01***
			(0.0003)	(0.001)
Infant Mortality			0.004	0.01*
			(0.003)	(0.005)
FDI (mil USD)			−2,126.18	−1,233.46
			(3,343.07)	(1,983.77)
GDP (tril USD)			0.04	−0.68
			(0.05)	(0.61)
GDP/capita (tril USD)			−43.80***	−1.37
			(6.25)	(18.13)
MENA			0.54*	−1.75***
			(0.28)	(0.14)
Constant	12.21***	12.72***	12.78***	3.55***
	(0.14)	(0.07)	(0.17)	(0.69)
Fixed Effects				Country, Year, Bureau
Observations	15881	13917	13041	13041
Mult. R-2	0.001	0.076	0.099	0.451
Note:				*p<0.1; **p<0.05; ***p<0.01

15 to 17 million, while non-regional agencies hover around 12 million for all states.

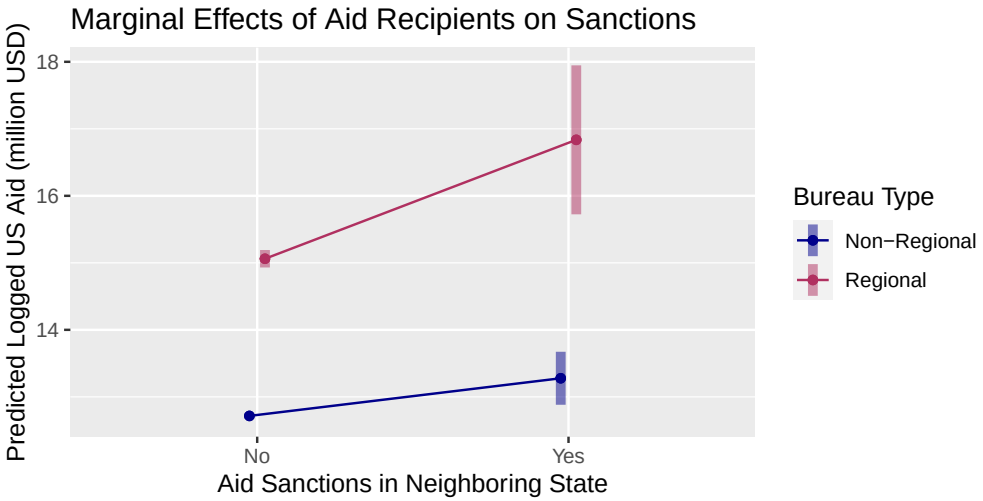

Figure 4: Predicted US aid for states with and without neighboring aid sanctions.

Overall, the country-level and agency-level results suggest a substitution effect benefiting the aid-receiving neighbors of states targeted with aid sanctions. In order to ensure that this is not an artifact of the data, I now turn to placebo tests, replicating the country-level results using different types of sanctions and different types of states.

5.3 Placebo Tests: Sanctions-Economy Mismatch

The theory predicts that aid sanctions should benefit neighboring aid-receiving states. It does *not* predict that trade sanctions will benefit aid-receiving neighbors, nor that aid sanctions will benefit trade-dependent neighbors. In Table 3, I examine whether the data reflect that negative expectation. As expected, the interaction terms in all of these models are null. When a neighboring trade-dependent state is a target for aid sanctions, its economy does not benefit, and the same is true for aid-receiving states whose neighbors receive trade sanctions.

Table 3

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Aid Sanction	−5.21***	−0.73		−0.41
	(1.84)	(0.48)		(0.36)
Trade-Dependent	5.54***	0.75		
	(1.69)	(0.70)		
Neighbor Aid Sanction	−2.17	0.68		
x Trade-Dependent	(2.02)	(0.68)		
Neighbor Trade Sanction		0.13	1.10	0.41
		(0.26)	(2.03)	(0.34)
Aid-Dependent			−8.93***	−0.51*
			(1.76)	(0.26)
Neighbor Trade Sanction			−1.34	−0.17
x Aid-Dependent			(2.05)	(0.47)
Total Aid		−0.0003		
		(0.0004)		
Neighbor Aid Threat		0.25		
		(0.22)		
Total Exports				−0.00
				(0.00)
War		−1.01***		−1.43
		(0.39)		(1.71)
Infant Mortality		0.15***		0.15***
		(0.03)		(0.03)
FDI		0.01		0.01
		(0.01)		(0.01)
GDP		0.00***		0.00
		(0.00)		(0.00)
Neighbor Trade Threat				−0.31
				(0.46)
Constant	8.89***	681.76**	10.75***	973.74
	(1.67)	(276.60)	(1.75)	(1,198.42)
Fixed Effects				Country, Year
Observations	2661	2395	4376	2420
Mult. R-2	0.058	0.948	0.066	0.948
Note:				*p<0.1; **p<0.05; ***p<0.01

6 Case Study: Zimbabwe and its Neighbors

The large-n analysis above provides some confirmation of the theoretical trends. However, to show the mechanisms at work, I now more carefully trace the theory within a single case. I selected a case that maximizes variation on the independent variables: a state that was hit with aid sanctions, and that has neighbors receiving various levels of foreign aid. This allows me, within the same case, to compare the economic effects for both types of countries. This does not perfectly constitute a "most-similar design," because the high- and low-aid-receiving neighbors will never be entirely similar. However, in this case, because both states were impacted by the same sanctions event within the same neighboring state, the differential cross-border effects are worth examining.

This case focuses on the cross-border consequences of international sanctions in Zimbabwe, focusing on its neighbors Zambia and South Africa. In 2000, Zimbabwe held an election in which a strong minority party had a chance to succeed. The international community sent election observers, who witnessed widespread violence, fraud, and corruption in the election process. They pointed out areas of vulnerability in the election process and pushed the government to improve the management of elections. Instead of heeding the observers' advice, President Mugabe omitted future election observers from the country, and in 2002, he unceremoniously evicted a group of European observers (Dendere 2022).

This anti-democratic activity, combined with a controversial land reform policy, drove the international community to issue sweeping sanctions against Zimbabwe. The EU had been openly discussing targeted sanctions since 2000, which likely reduced the sanctions' effectiveness by giving targets an opportunity to withdraw their soon-to-be-frozen assets (Grebe 2010). However, EU leadership was unable to agree on a sanctions regime until 2002, after the ouster of the election monitors. The initial EU sanctions targeted only Mugabe and twenty other regime members. They consisted of individual travel restrictions, and asset freezes. Most EU member states also limited their foreign aid to Zimbabwe (ICG 2002a, p. 15).

Month earlier, the US Congress had issued its own set of sanctions, including aid and travel restrictions, and an arms embargo. At the same time, because of failure to repay previous loans and following US wishes, the IMF cut off Zimbabwe from debt restructuring.[12] To add insult to injury, the Commonwealth of Nations suspended Zimbabwe from its membership, leading to more limits on foreign assistance. This combination of targeted actions led to a Zimbabwe that was economically separated from much of the world. The sanctions may also have had a chilling effect, making foreign investors skeptical of opening businesses in the country (Dendere 2022, p. 81). In combination with disastrous fiscal and monetary policies, the sanctions led the country and the region into an economic hole.

Zimbabwe provides a good case for this research. First, the sanctions were issued for reasons internal to the regime, which are less likely to permeate across borders than, for example, a human rights violation that creates a refugee crisis.[13] This biases against finding overwhelming evidence of cross-border spillovers because the cross-border consequences are more likely to be related to the sanctions themselves, rather than the events that precipitated the sanctions.

As mentioned above, this case is also useful due to the variation in the economies of Zimbabwe's neighbors. Specifically, Zambia, to the northwest of Zimbabwe, was likely the poorest of the country's direct neighbors, with a per-capita GDP of less than 800 USD in 2000. In contrast, South Africa was one of the most active economies in the region, with billions of dollars in trade and FDI in the early 2000s, and a per-capita GDP of nearly 5000

[12]This decision by the IMF was mainly due to lack of repayment, although the US sanctions legislation also banned the IMF from resuming payment until the situation improved in Zimbabwe.

[13]Though it is worth noting that some politically motivated violence in the mid-2000s, did lead to some migration, especially into South Africa. If anything, this should have made South Africa *more*, not *less* likely to act.

USD. The two states' economic and political responses to the sanctions on Zimbabwe followed patterns that would be expected by the theory, but the details are worth considering.

6.1 Theoretical Expectations

The sanctions against Zimbabwe were mainly targeted in nature. However, to the extent that general sanctions did exist, they mainly covered foreign aid and did not involve trade restrictions.[14] Therefore, the theory would suggest that Zimbabwe's aid-dependent neighbor(s) would stand to benefit from these sanctions while others would not. As foreign aid that would be directed to Zimbabwe decreased, it was likely to be re-directed elsewhere in the region. Therefore, I expect Zambia, Zimbabwe's most aid-dependent neighbor, to benefit disproportionatly from the global sanctions regime.

In contrast, Zimbabwe's least aid-dependent neighbor is South Africa. By 2002, South Africa was already quite integrated into the global economy and did not rely much on foreign aid for its livelihood. Additionally, South Africa was one of Zimbabwe's most active trade partners—therefore, any economic downturn in Zimbabwe was likely to harm, rather than help, South Africa's economy. The theory would predict that South Africa's economy did not benefit, and probably suffered, from the global imposition of sanctions in Zimbabwe.

Although the theory and quantitative analysis focus on economic outcomes, this case also provides the opportunity to examine more qualitative evidence. If the theory is correct, them Zimbabwe's aid-dependent neighbor (Zambia) should be much more favorable toward the sanctions regime than South Africa. In contrast to Zambia, South Africa had very little to gain by the types of sanctions that were being levied against Zimbabwe. If anything, South Africa's trade with Zimbabwe was being harmed by the sanctions. South Africa had every incentive to downplay the crisis in Zimbabwe, hoping that Western sanctions would

[14]The only major exceptions include the limitation on travel, including the US expulsion of Zimbabwean airlines, and weapons bans.

be lifted sooner rather than later. In contrast, Zambia had every reason to believe that its good luck would continue as long as the sanctions did.

6.2 South Africa

As one of the most developed states in the region, South Africa had a lot to lose from Zimbabwe's economic woes and little to gain. South Africa was not an aid-dependent state, and would be better classified as trade-dependent, with trade accounting for 46% of its GDP (WB 2000). After the end of Apartheid, South Africa became an attractive trade and investment destination, absorbing 85% of regional FDI by the early 2000s (Adelmann 2004, p. 255). South Africa's economy was by no means dependent on Zimbabwe, but its proximity certainly increased economic interdependence. By 2000, Zimbabwe was a major importer for South Africa, leading to a large economic downside to sanctions. After the sanctions were imposed, South Africa lost out on at least 5-7 billion Rand per year of direct trade with Zimbabwe, or 1.3% of GDP (Adelmann 2004, p. 266), though some sources estimate losses of up to $36 billion (ICG 2002b).[15]

Despite these losses, the sanctions did not destroy South Africa's economy: in fact, South Africa experienced over 23% economic growth during this period (WB 2000). However, there is little evidence that its economy benefited from the sanctions in Zimbabwe. Perhaps the most likely area for South Africa to benefit would be in foreign direct investment (FDI). Although none of the sanctions explicitly limited investment in Zimbabwe, there was a general sense among the business community that investors were held back by the sanctions (Dendere 2022, p. 81). Therefore, due to the overlap in economic outputs, especially in the mining sectors, it is reasonable to believe that South Africa might have benefited from some of that change in investment.

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[15]It is worth noting that the pair had just signed a bilateral free trade agreement in 2000 (Adelmann 2004, p. 255).

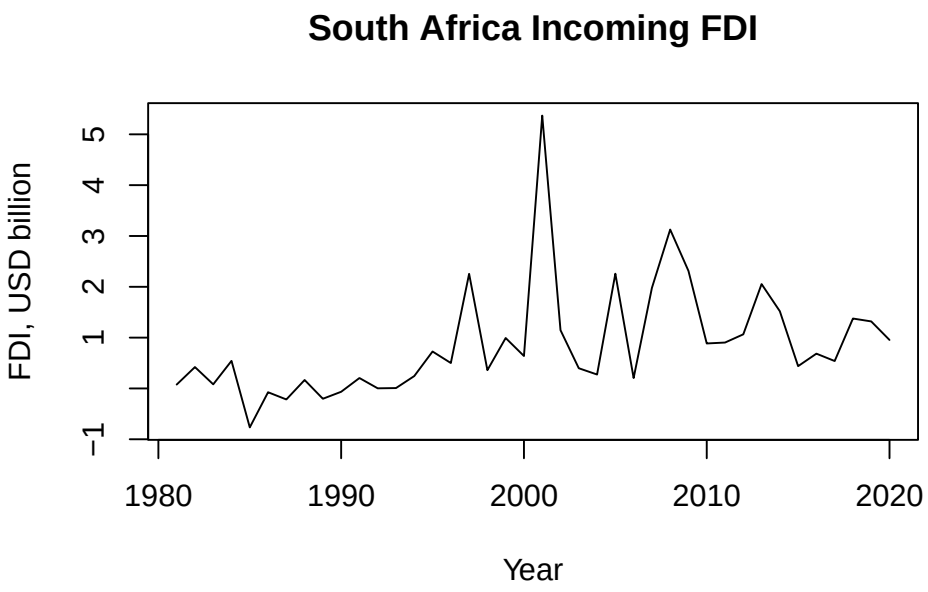

Figure 5: Foreign direct investment in South Africa

Figure 5 tracks South Africa's incoming FDI over time, according to World Bank data (WB 2022). FDI was predictably low during the 1980s and early 1990s, when global divestment and Apartheid-related sanctions kept businesses out of the country. It increased in the late 1990s. The spike in FDI in 2001 could be partially attributable to early sanctions; however, nearly all of that 2001 spike was attributable to a single sale: the takeover of DeBeers by the firm Anglo America, and at least half of it is simply a reflection of accounting transactions (Arvanitis 2005). With the exception of the 2001 spike, the FDI infrastracture after the sanctions were imposed is very similar to the rest of the post-Aparteid era. This suggests that the sanctions in Zimbabwe were not driving businesses to invest in South Africa.

Perhaps the best evidence that sanctions didn't benefit South Africa is the country's political response. President Mbeki adopted a policy of "quiet diplomacy," in which he refused to publicly rebuke Mugabe but privately pushed for policy change. This policy was highly criticized at the time, attracting condemnation from world leaders (Wintour and Elliott 2008). This policy was viewed as inexplicable by many in the international community,

who could not understand why South Africa would not stand with the rest of the Western world in pushing back against Mugabe (Adelmann 2004). This behavior, however, makes sense in light of the theory: South Africa had an economic incentive to limit the sanctions in Zimbabwe.

As a member of the UN Security Council (UNSC), South Africa specifically voted against multilateral sanctions against Zimbabwe in 2008. Spurred by an influx of migrants from Zimbabwe into neighboring countries, twelve UNSC members, including two African states, introduced a draft resolution in 2008 laying out a set of targeted sanctions and an arms embargo against Zimbabwe. South Africa strongly opposed the measures, arguing that it was currently undertaking a promising round of negotiations in Zimbabwe and accusing the international community of imposing in regional affairs (UNSC 2008).

The lack of support by South Africa reinforces the overall economic picture: South Africa had little to gain, and much to lose, over the sanctions regime against Zimbabwe. Because the sanctions did not target the Zimbabwe trade sector (and, probably, because Zimbabwe was not much competition to South Africa to begin with), South Africa did not have the opportunity to take advantage of the sanctions. Instead, South Africa paid the costs of neighboring a pariah state without any benefits. In this light, the policy of "quiet diplomacy" is not surprising.

6.3 Zambia

At the time of the sanctions, Zambia was one of the most aid-dependent states in the region, with over 20% of its GNI coming from foreign aid (Masaki 2018a). As the theory would suggest, Zambia's economy grew by quite a lot after the onset of aid sanctions against neighboring Zimbabwe. Zambia's per-capita GDP grew by 57% between 2000 and 2010, shooting from USD 773 to 1,214. At the same time, Zimbabwe's economy stagnated, dropping from

a per-capita GDP of USD 1,686 to 1,110.[16] Zambia's economy stood to benefit from the sanctions in Zimbabwe in a few ways. First, as the theory directly predicts, it was likely to receive an aid boost as donors moved aid that may have otherwise gone to Zimbabwe to Zambia instead. The data bear out this expectation.

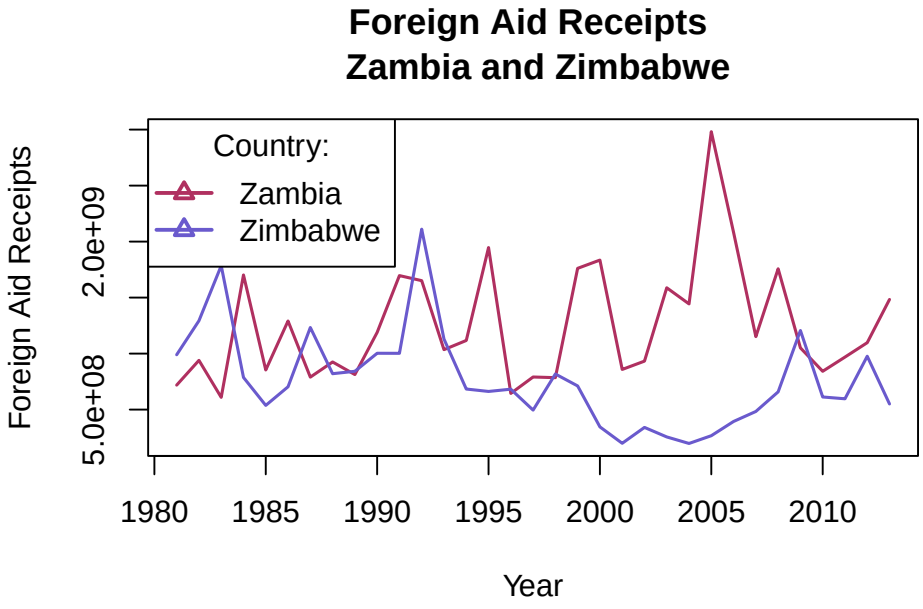

Figure 6: Foreign aid commitments to Zambia and Zimbabwe.

Foreign aid commitments to Zimbabwe and Zambia are plotted in Figure 6.[17] Before Zimbabwe's political controversies, the two countries' foreign aid levels were very similar, and their trends were similar as well. But beginning in 1999, after Zimbabwe began its controversial new land policies but before the ejection of election monitors, the two countries' aid fortunes diverged. Although sanctions were not officially announced, Zimbabwe began receiving a great deal less foreign aid than it had in previous year. At the same time,

[16]Data from World Bank World Development Indicators (WB 2022).

[17]Data are from Tierney et al. (2011).

Zambia's foreign aid *increased* by a similar amount, suggesting that some of the aid that would have gone to Zimbabwe was being sent there instead. This trend would continue until 2009, after a unity government was established leading to a momentary renewal of hope for Zimbabwean democracy.[18]

Zambia also benefited from a large-scale debt cancellation, to which Zimbabwe had no access due to sanctions. In 2006, Zambia was one of 19 countries to be part of a Multilateral Debt Relief Initiative, which canceled its debt with the World Bank, IMF, and African Development Fund (IMF 2017). It is difficult to say whether Zambia would have been chosen for this initiative in the absence of Zimbabwe's sanctions. What is clear, however, is that Zimbabwe was not chosen, being ineligible for debt restructuring from these institutions. Whatever funding might have gone toward Zimbabwe was distributed to the other beneficiaries instead. This debt cancellation was a huge boon to the Zambian economy.

A second benefit was not directly theorized but also fits the model: Zambia's tourism industry benefited from the sanctions. Victoria Falls, a popular tourist destination and UNESCO Heritage Site, sits on the border between the two countries. As countries like the US began blocking Zimbabwean airlines from their airports and limiting visas, Zambia became a more attractive destination from which to view the falls. This led to the number of tourists in Zambia doubling between 2003 and 2005 (OECD and Bank 2007, p. 550). According to statistics from the UN's World Tourism Organization (UNWTO), tourism revenues in Zambia increased decisively due to the sanctions, resulting in a lasting tourism sector (Division 2010).

These benefits can explain why the Zambian government was so outspoken against Zimbabwe and favorable to global sanctions. Unlike South Africa, Zambia was more than willing

[18]Despite the overall uptick in aid, many EU countries did not support this unity government, instead closing their embassies and reducing aid (Dendere 2022, p. 82). Indeed, the increase in aid did not last long.

to speak out against the atrocities underway in Zimbabwe. President Mwanawasa openly criticized Mbeki's policy of "quiet diplomacy," comparing it to a "sinking Titanic" (Reuters 2007). Zambia was also the first to organize the region against South Africa, calling for a Zimbabwe Summit among the Southern African Development Community (AlJazeera 2008).

Zambia enjoyed some international acclaim for its courage in standing up to its bullying neighbor. Although standing up to bullies is admirable, the theory suggests that this behavior may be evidence of Zambia following its owns interests. The longer the sanctions against Zimbabwe lasted, the more foreign aid Zambia could collect instead of its regional rival. Like South Africa, Zambia seems to have followed its economic interests in its approach to the sanctions.

7 Conclusion

Economic sanctions do not only impact the targeted state; they have far-reaching effects across international borders. In this paper, I find that these effects can be both negative and positive for states bordering sanctioned neighbors. Although economic sanctions can negatively impact neighboring states, they can provide an opportunity as well. When sanctions impact an area in which a state already has an advantage, that state can benefit from its neighbors being targeted.

Per-capita GDP is a blunt measure; future work should consider other effects of sanctions on neighboring states. For example, the political implications of these findings remain an open question. As the case study showed, economic incentives seem to drive states' reactions to the sanctions. To what extent does that impact the effectiveness of sanctions? For example, if some neighbors are hoping that the sanctions never end, it is possible that they could seek to uncover more sanctionable behavior by their neighbors. This is worth considering when making the decision to levy sanctions to begin with and to continue imposing them.

The domestic implications are also interesting. For example, if sanctions in a neighboring

state disproportionately benefit certain economic sectors, they may create new forms political coalitions. As these coalitions compete with existing political leadership, the results could be unpredictable, as leaders have to shift their policies to accommodate new preferences. This is especially alarming given the fact that sanctions eventually end (Attia and Grauvogel 2022), leading to even more unpredictability.

Similarly, if aid sanctions increase aid in neighboring states, they could impact things like inequality and democratization in those states. For example, in the Zambia case, it is worth considering *where* the increased foreign aid expenditures were applied. Work by Masaki (2018b) highlights the politicization of foreign aid in Zambia. If the increase in aid only serves to support the leading parties' constituents, then the cross-border impacts of sanctions may not be fairly applied. The political and geographic distribution of these economic effects is worth considering in future research: it is possible that some sub-state regions are harmed by neighboring sanctions while others benefit.

As policymakers continue to increase their reliance on economic statecraft and soft power, it is important that they consider the full implications of these policies. Sanctions, aid, and trade are not bilateral, even when they appear to be. Instead, they can have regional or even global externalities. In order to ensure policies do not have unintended consequences, it is important to better understand the use and consequences of these tools.

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8 Appendix

Table 4 summarizes the independent and control variables.

8.1 Summary Statistics

Table 4: Summary of independent and control variables.

Statistic	N	Mean	St. Dev.	Min	Max
Neighbor Aid Sanc.	7,877	0.12	0.33	0	1
Neighbor Trade Sanc.	7,877	0.23	0.42	0	1
Aid-Dependent	7,648	0.27	0.44	0	1
Trade-Dependent	3,721	0.41	0.49	0	1
Total Aid	15,327	60.35	169.42	−997.48	996.26
War	12,752	477.73	260.67	2	990
Infant Mortality	8,508	52.27	46.55	1.60	278.20
FDI	6,465	5.99	49.93	−1,275.19	1,709.77
GDP (mil USD)	7,648	16,268	83,116	1.9	1,997,450

8.2 Alternative Measures of Trade and Aid Dependence

Tables 5 and 6 report robust results (with the exception of the 2FE aid model) using a measure of aid and trade dependence that labels the variable as a 1 if the state falls above the median, rather than the mean. Additionally, Tables 7 and 8 show robust results using a continuous measure of trade dependence.

Table 5: Alternate measure of aid dependence: 1 if greater than median.

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Aid Sanction	-4.03^{***}	-9.75^{***}	-10.48^{***}	-0.12
	(1.19)	(2.98)	(3.35)	(0.52)
Aid-Dependent	-13.02^{***}	-14.48^{***}	-9.05^{***}	1.11
	(2.30)	(2.58)	(2.02)	(0.97)
Neighbor Aid Sanction		9.10^{***}	7.38^{***}	-0.48
x Aid-Dependent		(2.91)	(2.65)	(0.62)
Neighbor Aid Threat			2.47^{**}	0.49^{*}
			(1.19)	(0.25)
Neighbor Trade Sanction			1.08	0.15
			(1.55)	(0.23)
Aid Inflows			0.0003	-0.001
			(0.002)	(0.001)
War			-0.01	-1.31^{***}
			(0.01)	(0.33)
Infant Mortality			-0.10^{***}	0.11^{***}
			(0.02)	(0.03)
FDI			0.06	0.01
			(0.06)	(0.01)
GDP			0.00^{***}	0.00^{***}
			(0.00)	(0.00)
Constant	16.42^{***}	17.15^{***}	21.57^{***}	895.80^{***}
	(2.53)	(2.66)	(3.31)	(234.40)
Fixed Effects				Country, Year
Observations	4376	4376	3663	3663
Mult. R-2	0.194	0.205	0.323	0.951
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 6: Alternate measure of trade dependence: 1 if greater than median.

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Trade Sanction	1.12	−1.24	0.58	−0.39
	(1.90)	(1.70)	(1.65)	(0.41)
Trade-Dependent	6.04***	4.09***	−4.00**	0.20
	(1.73)	(1.51)	(1.76)	(0.75)
Neighbor Trade Sanction		6.60**	6.15***	1.93**
x Trade-Dependent		(2.74)	(2.12)	(0.97)
Neighbor Trade Threat			−0.75	−0.31
			(0.89)	(0.44)
Neighbor Aid Sanction			−4.72**	−0.26
			(1.88)	(0.34)
Total Exports			0.00	−0.00
			(0.00)	(0.00)
War			−0.01	−1.37
			(0.01)	(1.66)
Infant Mortality			−0.18***	0.16***
			(0.03)	(0.03)
FDI			0.01	0.01
			(0.04)	(0.01)
GDP			0.00	0.00
			(0.00)	(0.00)
Constant	7.25***	8.07***	20.65***	937.35
	(1.48)	(1.63)	(3.63)	(1,166.05)
Fixed Effects				Country, Year
Observations	2661	2661	2395	2395
Mult. R-2	0.037	0.046	0.319	0.948
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 7: Alternate (continuous) measure of aid dependence.

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Aid Sanction	-5.53^{***}	-6.73^{***}	-7.23^{***}	-0.59^{**}
	(1.55)	(2.01)	(2.23)	(0.30)
Aid-Dependent	$-121{,}110.50^{***}$	$-131{,}714.20^{***}$	$-23{,}748.80$	$-12{,}531.30^{**}$
	(29,503.11)	(32,668.55)	(15,772.18)	(6,212.44)
Neighbor Aid Sanction		$72{,}222.77^{**}$	$58{,}326.70^{**}$	5,091.20
x Aid-Dependent		(32,143.15)	(29,095.27)	(4,473.06)
Neighbor Aid Threat			2.68^{**}	0.53^{**}
			(1.25)	(0.25)
Neighbor Trade Sanction			1.10	0.19
			(1.61)	(0.23)
Aid Inflows			-0.01^{***}	0.0005
			(0.002)	(0.001)
War			-0.01	-1.33^{***}
			(0.01)	(0.34)
Infant Mortality			-0.14^{***}	0.12^{***}
			(0.03)	(0.03)
FDI			0.06	0.01
			(0.07)	(0.01)
GDP			0.00^{***}	0.00^{***}
			(0.00)	(0.00)
Constant	11.50^{***}	11.64^{***}	19.22^{***}	911.77^{***}
	(1.92)	(1.96)	(3.08)	(244.64)
Fixed Effects				Country, Year
Observations	4376	4376	3663	3663
Mult. R-2	0.07	0.072	0.292	0.951
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 8: Alternate (continuous) measure of trade dependence.

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Trade Sanction	1.12	−1.24	0.58	−0.39
	(1.90)	(1.70)	(1.65)	(0.41)
Trade-Dependent	6.04***	4.09***	−4.00**	0.20
	(1.73)	(1.51)	(1.76)	(0.75)
Neighbor Trade Sanction		6.60**	6.15***	1.93**
x Trade-Dependent		(2.74)	(2.12)	(0.97)
Neighbor Trade Threat			−0.75	−0.31
			(0.89)	(0.44)
Neighbor Aid Sanction			−4.72**	−0.26
			(1.88)	(0.34)
Total Exports			0.00	−0.00
			(0.00)	(0.00)
War			−0.01	−1.37
			(0.01)	(1.66)
Infant Mortality			−0.18***	0.16***
			(0.03)	(0.03)
FDI			0.01	0.01
			(0.04)	(0.01)
GDP			0.00	0.00
			(0.00)	(0.00)
Constant	7.25***	8.07***	20.65***	937.35
	(1.48)	(1.63)	(3.63)	(1,166.05)
Fixed Effects				Country, Year
Observations	2661	2661	2395	2395
Mult. R-2	0.037	0.046	0.319	0.948
Note:				*p<0.1; **p<0.05; ***p<0.01

8.3 Hierarchical Models

Tables 9 and 10 demonstrate the robustness of the main findings using hierarchical models.

Table 9: Hierarchical aid models.

	Dependent variable:		
	Per-Capita GDP (thousand USD)		
	(1)	(2)	(3)
Neighbor Aid Sanction	-0.94^{***}	-0.91^{***}	-1.03^{***}
	(0.26)	(0.22)	(0.29)
Aid-Dependent	$-7{,}150.19^{*}$	$-8{,}543.46^{**}$	$-10{,}608.96^{***}$
	(3,778.62)	(3,518.46)	(3,376.61)
Neighbor Aid Sanction x		$14{,}125.20^{*}$	9,367.71
x Aid-Dependent		(7,677.86)	(7,235.14)
Neighbor Aid Threat			1.00^{***}
			(0.19)
Neighbor Trade Sanction			-0.37^{*}
			(0.19)
Total Aid			0.001^{**}
			(0.0004)
War			-0.02^{**}
			(0.01)
Infant Mortality			-0.01^{***}
			(0.003)
FDI			0.04^{***}
			(0.01)
GDP			0.00^{***}
			(0.00)
Constant	8.92^{***}	8.86^{***}	16.32^{***}
	(1.29)	(1.29)	(3.17)
Observations	4,376	5,542	3,663
Log Likelihood	$-14{,}115.36$	$-17{,}450.88$	$-10{,}586.70$
Akaike Inf. Crit.	28,240.73	34,913.76	21,199.41
Bayesian Inf. Crit.	28,272.65	34,953.48	21,280.09
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 10: Hierarchical trade models

	Dependent variable:		
	Per-Capita GDP (thousand USD)		
	(1)	(2)	(3)
Neighbor Trade Sanction	0.09	-1.13^{***}	-0.93^{***}
	(0.19)	(0.26)	(0.28)
Trade-Dependent	6.96^{***}	6.03^{***}	4.17^{***}
	(0.33)	(0.35)	(0.36)
Neighbor Trade Sanction		3.97^{***}	2.97^{***}
x Trade-Dependent		(0.61)	(0.55)
Neighbor Aid Sanction			-0.005
			(0.20)
Neighbor Trade Threat			0.02
			(0.14)
Total Aid			0.0001
			(0.0003)
War			-0.01^{**}
			(0.01)
Infant Mortality			0.01^{***}
			(0.004)
FDI			0.04^{***}
			(0.01)
GDP			0.00^{***}
			(0.00)
Constant	5.75^{***}	6.10^{***}	11.38^{***}
	(1.38)	(1.38)	(3.03)
Observations	3,468	3,468	3,150
Log Likelihood	$-10{,}331.88$	$-10{,}310.26$	$-8{,}971.04$
Akaike Inf. Crit.	20,673.76	20,632.52	17,968.08
Bayesian Inf. Crit.	20,704.51	20,669.42	18,046.80

Note: *p<0.1; **p<0.05; ***p<0.01

8.4 Trade Sanctions

In addition to aid sanctions' effect on aid-dependent states, the theory would also predict that trade sanctions benefit trade-dependent neighbors. Table 11 provides evidence for this part of the theory. Overall, trade sanctions neither positively nor negatively impact the economy of neighboring states. This is true for all states, as exhibited in Model 1, and also for states with little trade, as exhibited by Models 2-4. However, for trade-dependent neighbors, trade sanctions consistently *improve* per-capita GDP.

Similar to the previous models, to interpret the coefficients, Figure 7 shows predicted per-capita GDP values for trade-dependent and non-trade-dependent states. As expected, when a non-trade-dependent state finds its neighbor targeted with trade sanctions, a downturn in the regional economy creates negative repercussions for that state. In contrast, trade-dependent states actually *benefit* when their neighbors are targeted with trade-specific sanctions, with a predicted change in per-capita GDP from around 12,000 USD to over 17,000 USD.

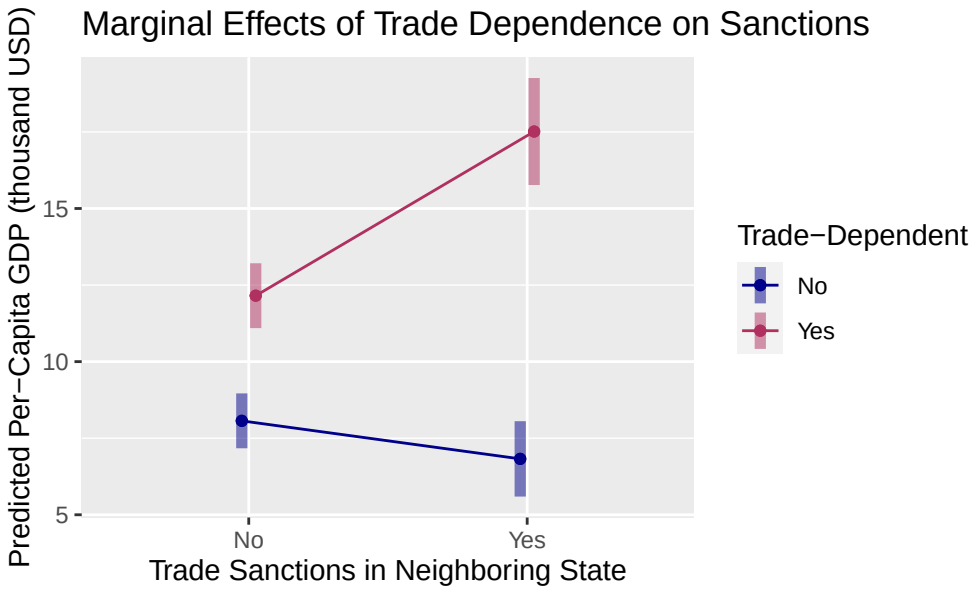

Figure 7

Table 11: Coefficients on OLS models with standard errors clustered by state. Positive interaction coefficients suggest that trade-related sanctions in neighboring states, if anything, improve the economy for trade-dependent states.

	Dependent variable:			
	Per-Capita GDP (thousand USD)			
	(1)	(2)	(3)	(4)
Neighbor Trade Sanction	1.12	−1.24	0.58	−0.39
	(1.90)	(1.70)	(1.65)	(0.41)
Trade-Dependent	6.04***	4.09***	−4.00**	0.20
	(1.73)	(1.51)	(1.76)	(0.75)
Neighbor Trade Sanction x Trade-Dependent		6.60**	6.15***	1.93**
		(2.74)	(2.12)	(0.97)
Neighbor Trade Threat			−0.75	−0.31
			(0.89)	(0.44)
Neighbor Aid Sanction			−4.72**	−0.26
			(1.88)	(0.34)
Total Exports			0.00	−0.00
			(0.00)	(0.00)
War			−0.01	−1.37
			(0.01)	(1.66)
Infant Mortality			−0.18***	0.16***
			(0.03)	(0.03)
FDI			0.01	0.01
			(0.04)	(0.01)
GDP			0.00	0.00
			(0.00)	(0.00)
Constant	7.25***	8.07***	20.65***	937.35
	(1.48)	(1.63)	(3.63)	(1,166.05)
Fixed Effects				Country, Year
Observations	2661	2661	2395	2395
Mult. R-2	0.037	0.046	0.319	0.948
Note:				*p<0.1; **p<0.05; ***p<0.01