

Complementary Multilateralism Rethinking the International Development Regime*

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Abstract

International development institutions provide a range of benefits to their donors, from a cloak of legitimacy behind which to pursue private goals to a means of coordinating the provision of global public goods. This paper develops a model of the demand for such institutions, starting from the premise that states pursue institutions to provide benefits that are unlikely to be attainable from bilateral activity. The model compares situations of pure public goods provision to those of public goods with high private co-benefits. Ceding power to an institution is incentive compatible for donors when the benefits of public goods provision are high and the private co-benefits are low. This occurs because the benefit of the institution depends on mutual cooperation to overcome the free-rider problem. When private co-benefits are high, states will be unwilling to give up control. This second situation reproduces the non-cooperative power structure within the institution, limiting its usefulness for overcoming free riding. It is incentive compatible for states to develop a mix of institutions, with state control low when public goods provision is the main goal and high when private co-benefits are significant. The latter type is unlikely to be effective in providing public goods. The model is then used to examine three institutions that provide variation on both purpose and level of state control: the World Bank, Green Climate Fund, and Gavi, the vaccine alliance.

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The landscape of bilateral and multilateral actors working in international development has never been more complex. The Development Assistance Committee (DAC), a group of bilateral donors in the Organization for Economic Cooperation and Development (OECD), has seen membership grow from twelve states at its creation in 1961 to thirty today. Donor countries from outside this group have also increased, perhaps most notably with the rise of China as a major player in international development. Multilateral organizations that have existed for decades, such as the World Bank, are confronting the need to adapt to the changing circumstances of international development. New institutions like the Green Climate Fund struggle to tackle emerging global issues. Regional development banks have increased in both number and importance. Significant growth in trust funds financed directly by donor countries but administered by multilateral organizations has blurred traditional lines between bilateral and multilateral efforts.

The current international development regime, with all its complexity, is likely suboptimal for donor states (Gulrajani, 2016). Many development institutions were developed decades ago, when the motivations of donor countries were defined by the geopolitics of the Cold War, and these institutions have been slow to change (Allison and Zelikow, 1999; Weaver, 2008). Others have been created to fill a perceived gap by various donors. While a decision may be optimal at the time it is taken, given constraints of the existing regime, there is a widespread belief that this approach has not led to an overall optimal outcome for regime design. This has led the development policy community to focus on institutional reform and the future of international development banks.¹

This study develops a theory of *complementary multilateralism* for international development. It begins from the assumption that any proposed structure of the development regime must be incentive compatible for donor states, who seek to maximize their utility by using

¹Bhattacharya et al. (2018); Center for Global Development Report, “Multilateral Development Banking for this Century’s Development Challenges: Five Recommendations to Shareholders of the Old and New Multilateral Development Banks,” October 2016.

a mix of bilateral and multilateral development channels. They will use an institution only when the institution provides benefits beyond what could be achieved through bilateral action and these benefits exceed the cost of bargaining and maintenance. In this way, institutions are conceived as complements to, rather than as substitutes for, bilateral development policies. The resulting regime has the potential to increase development outcomes while maintaining donor incentive-compatibility.

Institutions are modeled as providing two different categories of benefits to donor states. First, they can serve as a commitment device to overcome under provision from free-riding and better provide public goods. Second, they can provide network effects that are not available through unilateral action and increase with institutional size or membership. This latter category may include items like legitimacy, risk-sharing, or economies of scale and scope. Importantly, it can include goods for which there are private benefits to donor states and can exclude non-members from receiving the network benefits.

Separating these two types of benefits provides important insights for institutional design that have not received much attention. Different structures are needed to provide these different benefits in a way that is both effective and incentive compatible. In providing a public good states will need to tie their hands, agreeing to forego the dominant strategy of free-riding in exchange for other states doing the same. Sufficient authority must be delegated to the institution for this to be credible. The point of the institution is to prevent states from pursuing their individually optimal strategy; it is therefore important not to simply reproduce the non-cooperative power structure within the institution. This has become increasingly relevant with the rise of powerful private donors; foundations and corporations are not likely to finance an institution if they fear the resources will be coopted to serve the private interests of powerful states.

When using an institution to pursue network effects, states may be worse off if they delegate too much authority to the institution. For instance, a state may want the institution to provide legitimacy for pursuing private benefits that could be pursued, without the same legitimacy, through bilateral activity. The state will need to maintain some control in the institution for this to

occur and will not be willing to tie its hands. Once this power is granted, the state cannot credibly commit not to use it to pursue its own best interest (Stone, 2013), even when confronting public goods. The commitment mechanism is broken for overcoming free-riding, locking in the cycle of under provision that characterizes the non-cooperative outcome. It is important to note that this outcome does not depend on which states have power, but is the result of any states having power that they are unable to commit not to use. A single governing structure cannot be both effective at providing public goods and incentive compatible for navigating situations where high private co-benefits exist.

The theory builds on the work of scholars who have sought to understand the relative roles of bilateral and multilateral initiatives in international development. Girod (2008) as well as Dollar and Levin (2006) argue that multilateral donors are more concerned than bilateral donors with the quality of governance and rule of law in recipient states. Drawing a somewhat different conclusion, Annen and Knack (2015) note the similarity between aid disbursement patterns for many multilateral and bilateral agencies and Schneider and Tobin (2016) find that OECD donors give more resources to international development institutions with which they have high portfolio similarity. Taking a different approach, Findley, Milner and Nielson (2017) report results of a survey experiment in Uganda in which little difference is found in the recipient regarding preferences between multilateral and bilateral aid programs.

The analysis is developed through a formal model and then applied to the examples of the World Bank, Green Climate Fund, and Gavi, the vaccine alliance. The result is both theoretically interesting and timely for development policy. It highlights the need for differentiating across types of potential benefits and the importance of this to institutional design; these are lessons that can be applied beyond the realm of international development, particularly to other areas where bilateral and multilateral strategies serve complementary purposes (Johnson and Urpelainen, 2012; Verdier, 2008).

At a practical level, the analysis has important implications for plans to reform multilateral development institutions. A growing number of experts suggest that the World Bank should be

reformed to have a larger role in providing global public goods. The theory developed here indicates that it is unlikely the Bank is an optimal choice for this role. Providing public goods requires delegation and hand-tying. The World Bank has a hands-on Board of country representatives that cannot commit not to pursue their own self-interest. The result would be underfunding and skewing of finance from the optimal distribution, even if the Board structure is redesigned to enhance the voices of developing states. It is not the identity of the states, but their role in decision making that creates the problem. The Green Climate Fund (GCF) provides a useful example. Recently created and including strong representation from developing countries, it is nevertheless underfunded and decision making is cumbersome. With this recent creation as a guide, it is unlikely that path dependence and lack of developing country power are the only problems the World Bank would need to overcome to be an efficient provider of global public goods.

It is useful to contrast these organizations with Gavi, the vaccine alliance. Gavi is funded by many of the same donors as the World Bank and GCF. It is widely perceived as successful in its mission of increasing vaccine coverage and working toward disease eradication. The theory suggests that this is due to its narrow focus on a public good and its governing structure. Because Gavi focuses on a public good and excludes issues where private co-benefits are high, states are willing to delegate decision-making authority to the institution. As a result, country representatives make up less than half of the board at Gavi and none have permanent representation. This delegation of power acts to reassure donors, both public and private, that contributions will not be unduly skewed by private state interests. This helps overcome free-riding and keep donations flowing.

1 Background and Theory

One possible interpretation of the status quo is that the current distribution of resources across bilateral and multilateral agencies represents a Pareto optimum for donors: there is no way to improve the development situation without making at least some donors worse off. This seems

unlikely. In an important review of recent literature, Gulrajani (2016, p.20) notes that “there is no accepted wisdom on what a sensible allocation across bilateral and multilateral channels should look like or by what criteria this decision should be informed.” Many of the current institutions are large bureaucracies created in a different geopolitical era. Path dependence and institutional inertia can make reform of these organizations difficult, limiting their ability to adapt to address emerging problems (Allison and Zelikow, 1999; Weaver, 2008). This is particularly problematic for donors as their goals regarding development and the use of foreign aid have evolved significantly in the last few decades (Bermeo, 2017, 2018; Clist, 2011; Fleck and Kilby, 2010; Lancaster, 2007; Moss, Roodman and Standley, 2005; Radelet, 2003; Woods, 2005). Donors must also contend with principal-agent problems (Nielson and Tierney, 2003; Hawkins et al., 2006; Milner and Tingley, 2013) and potential insulation of international bureaucrats from donor pressure (Johnson, 2014), further exacerbating attempts at reform. Given these considerations, it seems unlikely that these institutions currently represent an optimum from the donor perspective.

The potential for development to have properties of a public good has long been recognized (Annen and Knack, 2015; Olson and Zeckhauser, 1966; Steinwand, 2015). Underdevelopment is associated with negative spillovers for other states (Bermeo, 2017, 2018). It can allow early stages of potential disease pandemics to go undetected. Poverty can lead to instability, and lack of institutions can create permissive environments for international crime, such as trafficking in persons or illicit substances. If increased development limits negative spillovers, then any state that had been affected by them will benefit, whether or not it funds the development. For example, if Ebola virus or avian flu fail to spread because of early detection from an improved health system, multiple countries benefit. Additionally, any one state enjoying the benefit of decreased spillovers from increased development does not detract from the ability of others to also benefit from these decreased negative effects. The benefits of development for other states are, to at least some extent, both non-rival and non-excludable.

The ability to provide a public good can be hampered by the desire of states to free-ride off the provision of others, resulting in an inefficiently low level of provision of the good. The

situation can be thought of as a multi-party prisoner's dilemma in which each country has a dominant strategy to defect (free-ride), yet mutual defection is Pareto inferior to mutual cooperation. Moving from the socially inefficient non-cooperative outcome to the efficient cooperative outcome requires a commitment mechanism, whereby states contribute because they are confident others will contribute as well, allowing them to share the burden of provision (Milner and Tingley, 2013). International cooperation in this type of situation is modeled by Stone, Slantchev and London (2008); in their scenario the size of the hegemon influences the breadth and depth of cooperation.

A multilateral institution can be used to overcome market failure (Keohane, 1984), such as providing a coordination mechanism for funding a pure public good that is under provided in a non-cooperative setting. Broad-based development can be thought of as a public good, as can more narrowly defined issue areas such as climate change mitigation or disease eradication - sometimes referred to as development-related public goods. Donors can exhibit heterogeneous preferences for promoting development across countries (Annen and Knack, 2015; Bermeo, 2018), which can increase the bargaining problem for cooperative provision (Krasner, 1991). Both heterogeneous preferences and private co-benefits (addressed below) can mitigate the problems of under provision (Cornes and Sandler, 1994; Olson and Zeckhauser, 1966), as individual donors will have an incentive to provide more even in the absence of an institution.

The creation of an institution to overcome under provision will be incentive-compatible if the increased benefits will exceed the cost of bargaining and maintenance of the institution. This will be a function of the gap between non-cooperative provision and the efficient allocation (which decreases as heterogeneous preferences increase private provision) and the cost of bargaining and maintenance (with bargaining costs expected to be higher with heterogeneous preferences).

For the purpose of this analysis I am adopting a somewhat functional definition of "public good" with regard to development. The category is meant to capture all development-related goods that donors would collectively consider under provided in a non-cooperative setting, i.e. the sum of the marginal benefits to donors exceeds the marginal cost at the non-cooperative outcome.

This includes obvious candidates, like climate change mitigation and disease eradication. It can also include issues like famine relief. Many donor governments might be willing to contribute to famine relief, either from altruistic motivations or due to pressure from domestic interest groups concerned with responding to humanitarian disasters abroad. The interests of individual donor governments might not be large enough for any of them to act as a lead contributor, and giving small amounts might not be useful if others do not follow suit. However, if all donors can coordinate and each give a relatively small amount, they might prefer this to the uncoordinated outcome of continuing famines. For the purposes here, this would qualify as a public good.

It is important to distinguish between the purposes of foreign aid, often labeled “development assistance,” and development. Foreign aid is a policy tool that can be used to achieve multiple donor goals, including but not limited to development. The use of bilateral aid to further the security and economic interests of donor states has long been recognized (Alesina and Dollar, 2000; Bueno de Mesquita and Smith, 2009; Fleck and Kilby, 2010; Maizels and Nissanke, 1984; McKinlay and Little, 1977, 1978; Neumayer, 2003; Schraeder, Hook and Taylor, 1998).

Annen and Knack (2015) and Verdier (2008) explain the complementarity between bilateral and multilateral development channels as driven by a desire to use multilateral channels to increase the provision of public goods while using bilateral channels to pursue areas where heterogeneous preferences and donor interests are important. This ignores the mounting evidence that powerful states pursue their own private interests through their influence at the World Bank, International Monetary Fund and regional development banks (Dreher, Sturm and Vreeland, 2009; Lim and Vreeland, 2013; Stone, 2004, 2008, 2013; Vreeland, 2007). The state-centric power structure and the disproportionate voting share of key members facilitates the pursuit of private benefits, either formally or informally (Stone, 2011, 2013).

The benefit of using an institution to pursue private self-interest needs elaboration. It is possible that the institution is simply serving as a substitute for bilateral action. In this sense, it is simply a matter of cost-sharing: powerful actors use their influence at the institution as a way to force others to finance part of the cost of pursuing private benefits. If this is the only (or primary)

benefit, then the institution is not providing any new benefit to the system, it is simply redistributing costs.

This is too simplistic. There are times when the existence of an institution creates a new (possibly public) good - one that did not exist and could not be “purchased” unilaterally. These may include network effects (Lipsy, 2015) or economies of scale that are increasing in the size of membership. For instance, a multilateral response may at times be seen as more legitimate (Lake, 2009) or less political (Girod, 2008; Reinsberg, 2015) than a bilateral program even (or perhaps particularly) when the benefit in question more closely resembles a private good to the donor than the provision of an under-provided public good. Governments that wish to invest in risky areas but are concerned with potential political ramifications if things go poorly will seek cover by channeling assistance through an international body (Guder, 2009). They may seek to assist countries or issue areas that would carry domestic political costs for themselves, and use the international institution to avoid the appearance of direct assistance (Reinsberg, Michaelowa and Eichenauer, 2015). Bilateral donors may also wish to benefit from economies of scale and shared expertise, without handing over decision-making regarding allocation to the institution. In this way they can receive “credit” from the recipient government for their contribution while benefitting from the structure and expertise of the multilateral institution.

When donors pursue private benefits with foreign aid - either bilateral or through multilateral institutions - these benefits can (but need not) co-exist with provision of the public good. Where they do co-exist, the donor’s utility increases from both the additional amount of the public good and from the private benefit. The development regime covers a range of goods, for some heterogeneous preferences or private co-benefits for donors are high, in other cases they are not. Bilateral and multilateral channels for pursuing development can be used to provide a mix of public and private benefits to donor states.

When an institution provides a public good, it can serve as a commitment device. The good could be provided in the non-cooperative setting, but under provision is likely given the incentives to free-ride. An institution could be formed to lock-in cooperation. Heterogeneous preferences

and private co-benefits will increase private provision; when these are high the benefit of coordination is lower and the costs of coordination are higher, decreasing the likelihood that an institution will cover these goods.

When an institution is designed to provide network effects, its value to donors can be higher in the presence of high private co-benefits. For instance, a donor government may have a security interest in providing assistance in a violence-prone area, perhaps hoping to enhance the viability of one side in a conflict by providing development assistance or humanitarian aid. It may also fear domestic political backlash if things go badly. It can turn to the institution to spread the risk and responsibility, potentially deflecting criticism at home in the event of a negative outcome. The value the donor places on this risk sharing will be positively related to the value it places on the private benefit it receives. A similar argument can be made for seeking international legitimacy (e.g. through an IMF program) for an activity that provides a private benefit to a donor state (helping a client state in a time of need). The greater the private benefit, the more value added (to the donor) from the institution.

2 The Model

This study represents an advance over previous models of development as a public good and the provision of foreign aid, which assume homogeneous preferences on the part of donors (Torsvik, 2005) and/or homogeneity of development as a good (Bourguignon and Platteau, 2015). Other studies have focused primarily on bilateral actions, without drawing lessons for the multilateral aspects of development promotion (Steinwand, 2015) or have examined the public good but cannot accommodate private co-benefits (Annen and Knack, 2015). Each of these advances the thinking on development as a public good; it is the task of the current work to draw insights from these while incorporating new elements into the analysis. In particular, two situations are modeled, those approximated by pure public goods and those where private co-benefits are high for donors. Institutions are allowed to either provide coordination for public goods provision or to provide network effect benefits for donor states. Donors must decide the level of bilateral and

multilateral resources to employ. Implications for institutional design are drawn from the model.

2.1 Public Good

Multiple donors must simultaneously choose how much of a public good, D , to provide. The contribution of state i is given by d_i and the sum of the contributions of all other states is denoted D_{-i} . Each state has wealth, w_i , which it can spend on a mixture of a private good, x_i , and contribution to the public good, d_i . State i will choose x_i and d_i to maximize:

$$u_i(x_i, D) = u_i(x_i, d_i + D_{-i}^*) \quad (1)$$

$$\text{s.t. } x_i + d_i = w_i$$

$$\text{s.t. } D \geq D_{-i}^*$$

D_{-i}^* is the sum of the best response provisions of other states to the provision of $d_i \geq 0$ by state i . The first order conditions for an interior solution require that state i allocate resources between x_i and d_i such that

$$\frac{\delta u_i(x_i, D)}{\delta x_i} = \frac{\delta u_i(x_i, D)}{\delta d_i}$$

Since each state benefits from the contribution of other states to D , the change in utility for i when it increases d_i depends on final affect on $D(d_i, D_{-i})$. Let the impact on D_{-i} of a change in d_i be denoted as:²

$$\frac{\Delta D_{-i}}{\Delta d_i} = h_i(D).$$

Then

$$\frac{\delta u_i(x_i, D)}{\delta d_i} = \frac{\delta u_i(x_i, D)}{\delta D} (1 + h_i(D))$$

²Bergstrom, Blume and Varian (1986).

and the first order condition (assuming an interior solution) is given by:

$$\frac{\delta u_i(x_i, D)}{\delta x_i} = \frac{\delta u_i(x_i, D)}{\delta D} (1 + h_i(D))$$

With free-riding, an increase in d_i leads to a decrease in D_{-i} , so that $-1 \leq h_i(D) \leq 0$.

Figure 1 shows the classic case of reaction functions for two countries that both contribute to the good in the non-cooperative outcome.³ Heterogeneity in strength of preference or donor size can lead to increased spending by those whose benefits are higher, which has a positive impact on provision (Olson, 1965; Buchholz and Sandler, 2016). R_i shows the response of country i to changes in d_j and R_j shows the response of country j to changes in d_i . The Nash equilibrium occurs where the reaction functions intersect: at that point each country's decision is a best response to the other country's decision. Along each reaction function, each country decreases its provision as the other country increases its provision. Each country's iso-utility curves are drawn through the equilibrium, with country j oriented toward the x-axis and country i toward the y-axis. The area with the arrows represents points of Pareto improvements. If the countries could commit to **both** contribute more to D , each would be better off. Without commitment, any increase by one will result in a decrease by the other. That this is socially inefficient follows from the fact of non-excludability with positive provision for more than one country: at the marginal (provided) unit for each, it must be the case that marginal private benefit (MPB) equals marginal cost (MC); since both $MPB > 0$, it must be the case that $MPB_i + MPB_j > MC$. The utility of any country i optimizing over x_i, d_i can be written as $u_i(x_{ib}^*, d_{ib}^* + D_{-ib}^*)$ where the subscript b denotes that this is the bilateral (non-cooperative) outcome.

The countries consider forming an institution to lock-in cooperation and reduce free-riding. With cooperation, $0 \leq h_{im}(D) \leq 1$ so that an increase in d_i leads to an increase in D_{-i} ; the subscript m denotes that this is a multilateral (cooperative) outcome. Each country operates at a point where

³See Sandler (2015).

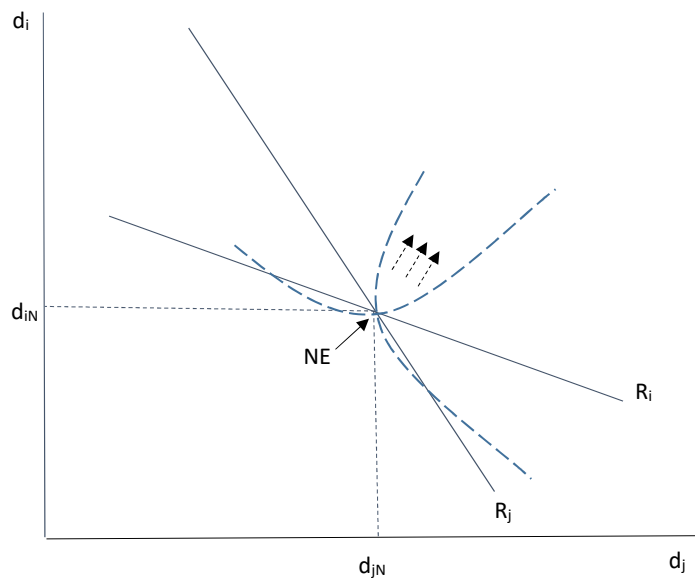


Figure 1: Sub-Optimal Private Provision of a Public Good.

$$\frac{\delta u_i(x_i, D_m)}{\delta x_i} = \frac{\delta u_i(x_i, D_m)}{\delta D_m} (1 + h_{im}(D))$$

This can be modeled as a decrease in the price of D , since each expenditure d_{im} now provides an increase in $D \geq d_{im}$. Figure 2 shows this graphically, with point A representing the non-cooperative optimum choice and point B the cooperative outcome. Clearly the country is better off with cooperation.

Absent from the analysis so far is the cost of an institution. Suppose that country i will incur cost C_{im} if it chooses to join a multilateral institution to provide the public good; these can be thought of as bargaining and maintenance costs for the institution. Costs can also be negative if savings from economies of scale are larger than the costs of the institution. Let $u_i(x_{im}^*, d_{im}^* + D_{-im}^*)$ represent the optimum choice for country i if it joins a multilateral institution. It will choose to join if $u_i(x_{im}^*, d_{im}^* + D_{-im}^*) - C_{im} > u(x_{ib}^*, d_{ib}^* + D_{-ib}^*)$. One possible outcome is shown in Figure 2. The cost of the institution shifts the budget constraint in, and the country operates at point C. It is clear that either lower gains from cooperation or higher costs would result in shifts to the budget constraint that would leave the country worse off under a multilateral solution; in this case it would choose bilateral provision.

If the multilateral institution provides donors with at least enough additional utility to cover the costs of the institution, then they will join. It is important to note that these benefits only accrue if the countries can tie their hands to avoid the non-cooperative outcome. An institutional structure that recreates the non-cooperative power structure within the institution would be unable to do this. It is only through delegation to the institution to allow hand-tying that this can be accomplished. This type of structure serves as an offer for cooperation by states, which could then lock-in cooperation with a simple punishment mechanism, such as tit-for-tat, if a state defects. This is credible since the best response to defection by one party is defection by other parties. In the scenario given, if a country joins the institution it channels all its funding for the

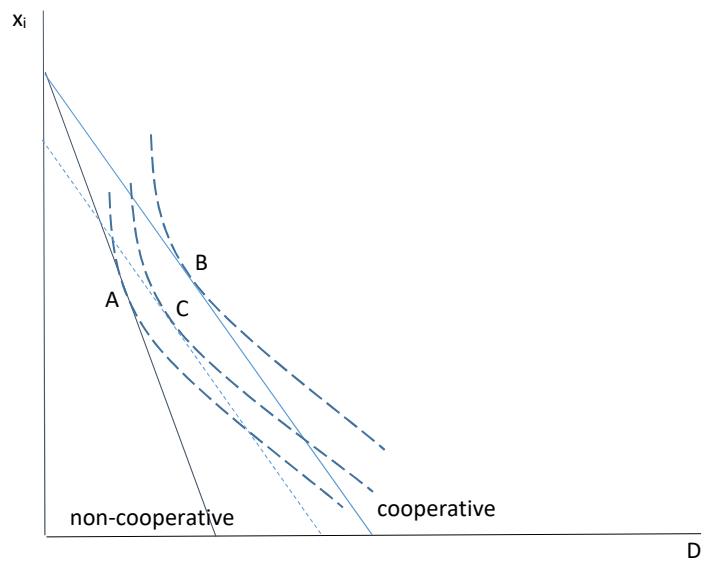


Figure 2: Income constraint and indifference curves for cooperative and non-cooperative outcomes.

public good through the institution, since there is no private benefit that would be gained by working bilaterally. This is relaxed in the next section.

2.2 Private Benefits

In many cases, donor states receive private (co-)benefits when providing development funding. A distinguishing feature of these benefits is that they only accrue to the donor if the recipient knows that the donor has provided the assistance. While the assistance may (or may not) be used to provide the public good of development, the private benefits to an individual donor are attached only to its own contributions. For instance, a state may use foreign aid to influence rotating members on the United Nations Security Council to vote in a way it favors (Dreher, Sturm and Vreeland, 2009, 2015; Kuziemko and Werker, 2006; Vreeland and Dreher, 2014), or to sway important votes in the UN General Assembly (Carter and Stone, 2015). A donor may use foreign aid to “buy” military or other favors from recipients (Bueno de Mesquita and Smith, 2007, 2009). In these cases it is important that the recipient know the identity of the donor, the donor cannot receive this benefit from portions contributed by others, and others cannot free-ride off the contribution of the donor to receive it themselves. It is a private benefit that may be produced in tandem with the public development benefit. While countries have an incentive to free-ride off others for the provision of the public portion of the good, they cannot do so for private benefits.⁴

Unlike the scenario above, it can be utility maximizing to provide a mix of bilateral and multilateral development assistance when private co-benefits are present. These private co-benefits can be realized through either bilateral or multilateral aid. Additionally, the multilateral institution can provide network benefits to members, such as legitimacy, risk-sharing, or economies of scale and scope. A donor’s utility with respect to the private good, x_i and its bilateral (d_{ib}) and multilateral (d_{im}) contributions to the public good, D , is given by:

⁴For more discussion of public goods with private co-benefits, see Andreoni (1990); Buchholz and Sandler (2016); Cornes and Sandler (1994); Pittel and Rubbelke (2008).

$$u_i(x_i, d_{ib}, d_{im}) = v_i(x_i, D) + \alpha_i(f(d_{ib}) + g(d_{im})) + \gamma_i\beta_i n(D_{-im})d_{im} - \gamma_i C_{im}(D_{im}) \quad (2)$$

In Equation 2, $v_i(x_i, D)$ represents the benefit received from the private good x_i and the public good D . The donor may receive a private benefit associated with its contribution to D , which it values at α_i and which can be achieved through either bilateral ($f(d_{ib})$) or multilateral ($g(d_{im})$) provision, with both $f(d_{ib})$ and $g(d_{im})$ exhibiting diminishing returns. In addition, the donor receives a network benefit, $n(D_{-im})$, that it values at β_i , for each unit of d_{im} that it contributes. This benefit is assumed to be increasing in D_{-im} , but with diminishing returns past some point: once many other countries have given a lot of aid, the additional value to existing members of a new member contributing is small. The donor only receives the network benefit if it joins the institution ($\gamma_i = 1$ if the donor joins the institution and zero otherwise). If the government joins, it also pays a cost, $C_{im}(D_{im})$ that is increasing in D_{im} to capture higher bargaining costs when there are more donors and/or each donor has more at stake (economies of scale that might decrease costs can be captured by $n(D_{-im})$).

As in the previous case, let

$$\frac{\Delta D_{-i}}{\Delta d_{ib}} = h_{ib}(D)$$

$$\frac{\Delta D_{-i}}{\Delta d_{im}} = h_{im}(D)$$

Assuming $d_i = d_{ib} + d_{im} > 0$, the donor will allocate across bilateral and multilateral aid so

that, in equilibrium,⁵

$$\frac{\delta v_i}{\delta D}(1 + h_{ib}) + \alpha_i \frac{\delta f}{\delta d_{ib}} = \frac{\delta v_i}{\delta D}(1 + h_{im}) + \alpha_i \frac{\delta g}{\delta d_{im}} + \gamma_i \beta_i \frac{\delta n}{\delta D_{-im}}(h_{im}) - \gamma_i \frac{\delta C_{im}}{\delta d_{im}}(1 + h_{im}) \quad (3)$$

The left-hand side of Equation 3 is the marginal benefit of a unit of d_{ib} while the right-hand side is the marginal benefit of a unit of d_{im} . The optimal allocation between bilateral and multilateral aid channels depends on several variables. Donors will care about free-riding in the provision of D , and will therefore be sensitive to different values of h_{ib} and h_{im} ; a higher value suggests less free-riding or, if positive, more crowding-in of expenditure by others. If bilateral (non-cooperative) provision is more likely to lead to free-riding, then this would favor multilateral allocation. Network benefits would also suggest less free-riding in the multilateral setting: as d_{im} increases this should provide a positive network effect to other donors, increasing the amount they choose to allocate to the institution.

Donors also care about the relative efficiency of bilateral and multilateral aid for producing private benefits. Where $\frac{\delta g}{\delta d_{im}} > \frac{\delta f}{\delta d_{ib}}$, the donor will pursue private benefits through the institution. Finally there are network benefits and costs that only accrue with membership in the institution. Obviously, the higher the network benefits and lower the costs, the more beneficial is the institution for the donor. The network benefits are increasing in institutional size. The larger and more inclusive the institution, the greater the benefits from perceived legitimacy and from risk-sharing or economies of scale.

An important point is that the ability of an institution to provide private benefits to the donor as well as network effects that are unavailable bilaterally allows the institution to be incentive-compatible even without considering free-riding. Diminishing returns allow a mix of bilateral and multilateral aid to be optimal. However, the value of multilateral benefits depends on a donor's ability to sway decision-making in the institution. To receive private benefits through

⁵For simplicity, I assume that country i 's choice of d_{ib} can influence D_{-ib} but not directly influence D_{-im} ; similarly, d_{im} can influence D_{-im} but not directly influence D_{-ib} .

the institution's provision of aid, a donor must have - and must be known to have - the ability to influence institutional spending. When this is true, the donor can use promise of its influence in the institution to extract private benefits from potential aid recipients. The value of network benefits also varies with a donor's power in the institution. The more power a donor has, the easier it is to convince the institution to provide a cover of legitimacy or risk-sharing for projects important to the donor.

For an institution that provides private benefits and network effects, a powerful donor has an incentive to retain power for itself in the decision-making structure. This is the opposite of the incentives donors have when free-riding is the first concern: in those cases donors want to give up power and tie their hands to incentivize others to contribute. If power is granted to states, they cannot commit not to use it. Re-establishing the non-cooperative power structure within an institution may work well for incentivizing powerful states to join institutions that provide private goods and network effects, but will result in inefficient provision of public goods. This would also be true if power were allocated in some other fashion, such as between a mix of donor and recipient states. It is the presence of power in the hands of states, rather than delegated to the institution, that creates a credibility problem for the institution in providing public goods.

3 Application: A Tale of Three Institutions

This section will briefly examine the World Bank, Green Climate Fund, and Gavi, the vaccine alliance to demonstrate the applicability of the theory. The World Bank is a long-established institution that provides funding in numerous issue areas and has a state-centric governing structure that favors donor countries. The Green Climate Fund is a relatively new institution that focuses on a global public good (climate mitigation) as well as climate adaptation, which has strong private benefits for states. It has a state-centric power structure, with equal representation on the Board from donor and recipient states. Gavi focuses narrowly on vaccine provision and disease eradication, which can be considered global public goods and its governing structure is not state-centric.

The World Bank was created in the 1940s and currently has 189 country members. All voting power is held by states and distributed across them in a manner roughly proportional to the shares of Bank capital stock held by each country. The United States has the largest vote share (16.25%) followed by Japan (7.01%), while other states wield much smaller voting shares, such as El Salvador, Eritrea, Grenada, Lao PDR, and Swaziland (each with 0.05% or less of vote shares). Not surprisingly given its structure, Annen and Knack (2015) find that the IDA branch of the World Bank had one of the highest levels of overlap with bilateral donor aid. Dreher, Sturm and Vreeland (2009) argue that geopolitics play a role in securing Bank loans for countries holding rotating membership on the UN Security Council. Favoritism for important clients has also been well-documented in the Bank's sister institution, the IMF (Dreher, Sturm and Vreeland, 2015; Stone, 2004, 2008, 2011; Vreeland, 2007). The World Bank also provides many development-related benefits to recipient and donor countries. In addition to providing finance for important development projects, one of its primary purposes is providing technical assistance to states. It is also well positioned to use its expertise and risk-sharing capabilities to operate in fragile states, and to foster coordination and harness economies of scale across donors.

To say that the World Bank is heavily influenced by states is not to argue that it is not focused on development. Donor states often have a strong interest in development promotion and that will be reflected in their views at the Bank. The argument here is that the strong influence of states makes it difficult for the Bank to provide a commitment mechanism that requires states to forego using their power to advance their own agendas at the Bank (including development agendas), so they are not as suited for providing global public goods. The Bank is well situated to provide network benefits, such as legitimacy and risk-sharing. It is also probably the best vehicle for improving donor coordination and removing administrative burdens on donors and recipients that are associated with multiple, and overlapping, aid agendas. In this role donors could maintain their identity as aid donors (and receive private benefits associated with this), but coordinate with the World Bank to increase efficiency. This happens partially through the growth of donor trust funds administered through the Bank, but as many of these funds are single-donor earmarks they

do not serve a coordination function (Reinsberg, Michaelowa and Eichenauer, 2015; Reinsberg, Michaelowa and Knack, 2017). With its global focus, the Bank would be a natural leader in this regard. This suggests that the structure of the World Bank is naturally suited to providing network benefits and economies of scale, and less to providing global public goods.

The Green Climate Fund (GCF) was established in 2010 to focus on climate change mitigation and adaptation. Its Board consists of twenty-four country representatives, with equal representation from developed and developing countries. It's ability to mobilize resources has been limited: of the \$100 billion per year originally promised by developed countries to tackle climate change, less than \$10 billion total has been raised since 2014. The approval process for projects is slow and cumbersome. GCF decision-making has been criticized for lack of transparency,⁶ and for favoring implementing agencies with ties to Board member countries.⁷ The problems experienced by the GCF are consistent with the theory outlined above for two reasons. First, the state-centric nature of the Board creates incentives for Board members to skew outcomes in favor of their own country interests. Second, the combination of adaptation and mitigation in a single entity may create efficiency problems. Mitigation of climate change is the quintessential public good: reduction of green house gases anywhere has equal value for combatting climate change and these benefits are both non-rival and non-excludable. An organization without strong state ties is needed to fund projects that will be most efficient for climate change mitigation without being skewed by state interests. This might also increase confidence in the system enough to encourage private finance to flow into the organization. Adaptation to climate change is much less of a public good: the main benefits accrue to the country receiving the assistance; to the extent that this prevents negative spillovers then there is a public good component as well,

⁶<http://www.germanclimatefinance.de/2017/03/31/green-climate-fund-gcf-much-progress-many-open-questions-remain-2017/>.

⁷<http://www.germanclimatefinance.de/2015/07/27/wrong-signal-deutsche-bank-first-private-partner-green-climate-fund-gcf/>.

although donors will have heterogeneous preferences regarding location of spending (Bermeo, 2018). We would expect states to be much more strategic with adaptation, given its high private benefits, than with mitigation. Combining them in a single institution is not an optimal strategy.

The difficulties faced by the GCF provide a cautionary tale for reform at the World Bank. There is sometimes a feeling that “if only” the World Bank could be created from scratch, without the path dependence of its history or bloated bureaucratic structure, it would be better suited to tasks such as the provision of global public goods. Calls for reform suggest greater participation from developing countries in decision-making. There are strong reasons to support this, but not because it will solve the problem of making the World Bank a better channel for providing global public goods. As long as the Board is state-centric, it will not matter that developing countries play a larger role: states will be unable to tie their hands and the institution will be inefficient at providing global public goods.

These state-centric institutions can be contrasted to Gavi, the vaccine alliance. Gavi was created in 2000 by a combination of intergovernmental, state, and private actors. Johnson (2014) argues that institutions created with input from non-state actors are generally more insulated from state control. The Gavi Board reflects this. It consists of 27 voting members, only 10 of which are states, and no states have permanent representation. State donors to Gavi include many of the same donors found in the World Bank and GCF, with the United Kingdom by far the largest. Annen and Knack (2015) find that Gavi is less aligned than the World Bank with the spending priorities of bilateral donors. Unlike the state-centric institutions, Gavi receives private sector support, with 17 percent of its funding coming from the Bill and Melinda Gates Foundation (McArthur and Rasmussen, 2017), which also holds a position on the Board.

The World Bank describes Gavi as having “a single purpose mandate, to increase access to immunizations in poor countries.”⁸ This focus on a narrowly defined public good decreased the likelihood that states would demand institutional control. The resulting relative independence of the Board served as a commitment device to attract both public and private funding, since funders

⁸<https://ieg.worldbankgroup.org/evaluations/gavi>.

are less worried that states will coopt the mission of Gavi for their own purposes. Since its creation Gavi has been generally seen as successful, receiving high ratings from outside evaluations. Its website claims that it has supported the immunization of 580 million children and averted more than 8 million deaths.⁹ The theory suggests that the structure of Gavi, combined with its narrow focus on a public good, have contributed to its success.

4 Implications for Development Regime Structure

The analysis has important implications for thinking about reform of the international development regime. The optimal outcome for donors will have a combination of bilateral development assistance and complementary multilateralism. Multilateral institutions will be used to provide benefits not available or under provided through bilateral activity. These include the provision of global public goods and of network effects, but not in the same institution. Different institutional design structures are needed to make these institutions both effective and incentive compatible for donors.

The structure of the World Bank suggests it is best suited for providing network benefits, coordination, and economies of scale. These can all be pursued under the state-centric governing structure. This structure is much less suited for providing global public goods, as states cannot commit not to divert resources for their own preferred use. This is also true for regional development banks.

Global public goods may best be provided through a set of international institutions, each with a relatively narrow focus and a governing structure with significant authority delegated away from states. This structure reassures contributors, both public and private, that funds will be used for their state purpose. The narrow focus of the institutions means that states are more likely to agree to delegate authority. These relatively independent structures could also be attractive to sources of private finance, such as foundations and companies seeking to project an image of corporate social responsibility by providing global public goods. Institutional structures should

⁹<http://www.gavi.org/results/measuring/2011-2015-indicators/>.

account for the growing role of private finance and seek to capitalize on this source of contributions.

A reassessment of the international development landscape requires careful attention to which tasks are best performed by bilateral donors and which are most efficiently pursued through institutions. The analysis here suggests that multilateral tasks should be divided across institutions, with some taking the lead in providing network benefits and others focusing on global public goods. The structures of the institutions will vary based on the category of goods provided, but they will each provide important complementarities that are not available through bilateral activity alone.

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