

Multi-Lateralisms:
Explaining Variation in Regime Instruments

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Abstract

Different international regimes are built from legal instruments that vary in terms of whether they are multilateral, bilateral or unilateral. We investigate the reasons for such variation. We argue that unilateralism is possible in the presence of positive network externalities as long as traditional externalities are absent. In the presence of traditional externalities, the choice between multilateralism and bilateralism is a function of the trade-off between each instrument's relative flaw—multilateralism is wasteful in incentives whereas bilateralism multiplies transaction costs. We also conjecture that information asymmetry leads countries to prefer multilateralism to bilateralism. We illustrate some of these propositions by looking at four regimes: the gold standard, foreign direct investment, human rights, and climate change.

International regimes are built on instruments that vary in terms of whether they are multilateral, bilateral or unilateral. For example, the current trade regime has a strong multilateral component as its core, centered on the World Trade Organization (WTO); the foreign direct investment (FDI) regime, by contrast, is mostly constituted of bilateral agreements; while the monetary regime rests largely on instruments that are unilateral, such as currency pegging, or even essentially domestic, in the form of central bank independence. Notably, many regimes combine two or more instruments: the nuclear nonproliferation regime combines a multilateral treaty with bilateral policies pursued mostly by the United States.

Moreover, it is important to note that the type of instrument on which a regime rests does not seem to correlate with the strength or depth of the regime—the foreign investment and monetary regimes *prima facie* are no weaker than the trade regime. In other words, multilateralism, defined as the signature of one treaty by a large number of countries, is not merely a more advanced state of regime development than more decentralized alternatives.

From a legal perspective, the question of "lateralism" points to the location of the legal norm that is enforced by national administrations and judiciaries: in a treaty, multilateral or bilateral, or in a domestic statute alone (unilateral). From a bargaining perspective, it points to the negotiating format that presided over the creation of the regime, as captured by the arrangement at the negotiating table. With multilateral agreements, many governments negotiate around a single table; with bilateral agreements, two governments negotiate across a single table; and with unilateral agreements, decisions are made behind a desk in each capital, with no international negotiations at all. States must coordinate on this decision before

they can make substantive rules and institutional design choices.

Why do regimes vary in terms of their lateralism? We investigate the reasons for such variation and argue that the mix of lateralisms in an international regime is a function of several variables: the nature of externalities, transaction costs, and a new concept—the *member surplus*. The member surplus captures the idea that the multilateral strategy can be wasteful in incentives, since incentives are calculated to elicit the participation of the state that is burdened with the highest cost of compliance, thereby creating rents for the other members. The bilateral strategy, in contrast, allows the customization of rights and obligations to each individual member state. But because the bilateral strategy is more wasteful in transaction costs than the multilateral strategy, states face a trade-off.

This allows us to make three claims: (1) While externalities are present in all regimes, positive network externalities can be accommodated through unilateralism; (2) in the presence of traditional externalities, however, multilateralism is most attractive with high transaction costs or a low member surplus, and (3) bilateralism is more likely to obtain when transaction costs are low or the member surplus is high. We develop a formal model to capture the logic behind these institutional outcomes.

The next section situates our topic in the theoretical literature. We then introduce the concept of member surplus, on which our argument rests in part, and present the formal model and a set of predictions that flow from it. In an empirical section, we demonstrate the plausibility of our claims in the context of four prominent regimes: the currency regime, the foreign direct investment regime, the human rights regime, and the climate change regime. A penultimate section offers some

extensions of the model and the concluding section highlights implications for our understanding of international institutions.

1 Lateralisms in the Literature

The paper adopts the standard definition of international regimes, which grounds them in some sense of general obligation related to a particular norm or principle (Krasner 1983, Keohane 1984). Our approach complements work on regimes that views them as created by a hegemonic state (Krasner 1976, Keohane 1984), a small group of great powers (Snidal 1985), the market-oriented Anglo-Saxon subset (Cowhey and Klimenko 2000), or the North at large (Sell 2007). Most regimes, we think, are organized by a small group of founders who try to enlist the cooperation of a larger group of followers or regular members. The founders take the lead on account of their larger resources, greater interest in the regime, or principled concern over the issue.

We also build on Conybeare's (1980) insight that decentralized bargaining offers a viable substitute for multilateral agreements in some situations. We go even further by incorporating the role of unilateral policies as a foundation for a regime, a possibility that is typically overlooked in the literature and even ruled out by definition.

Most treatments of international regimes assume that they rest on multilateral agreements. Those that examine variations tend to look over time and argue that given historical periods can be characterized as more or less multilateral (Ruggie 1992, Finnemore 2003, Yarbrough and Yarbrough 1992). Like Kahler (2004), we take much more seriously the possibility that these outcomes are not mutually exclusive but can coexist at a given point in time and in a given regime.¹

Very few works recognize that multilateral regimes need not rest on international agreements. We draw from existing studies of international standards to explore the role of unilateralism as a foundation for regimes (Abbott and Snidal 2001, Mattli 2003). Addressing international standards. Abbott and Snidal (2001) distinguish between network and traditional externalities, arguing that the former call for private governance or unilateral public solutions while the latter call for international public solutions. Likewise, we argue that positive network externalities are conducive to unilateralism—uncoordinated individual decisions produce collective gains—whereas other types of externalities require bilateralism or multilateralism.

The paper adds to the growing IR literature on institutional design, which explains variation along dimensions such as centralization, hierarchy, legalization, flexibility, and independence (Koremenos, Lipson and Snidal 2001; Lake 1999; Goldstein et al. 2000; Rosendorff 2005). The variation in legal instruments through which states participate in regimes has not received much attention in this literature to date, though Pahre comes close with his discussion of centralized versus decentralized bargaining, as does Milner in her study of bilateral and multilateral aid (Pahre 2001, Milner 2006). Also, some legal scholars view the limited use of bilateralism as a constructive complement to multilateral regimes, as in the case of trade (Hudec 1990, Sykes 1992). The work that most directly addresses our subject is by Rixen and Rohlfig (2005), who argue that bilateral bargaining is good for allocating distributive issues while multilateral bargaining is necessary to reduce transaction costs.

In general, the rational design literature does not appreciate the substantial variation in how regime rules are negotiated and how international law is made. Aside

from being interesting in its own right, the format of negotiations has important effects on institutional outcomes insofar as it shapes some of the variables commonly used to explain design outcomes, such as uncertainty about other actors' preferences and behavior (which is reduced in bilateral settings and irrelevant in unilateral ones), monitoring and enforcement problems (which are most difficult in multilateral settings), and the number of actors involved (Koremenos, Lipson and Snidal 2001). In this respect, variation in lateralisms can be thought of both as an outcome to be explained and as an intervening variable between fundamental political factors—concerning issue characteristics and state interests—and other institutional design outcomes of interest.

2 The Member Surplus

Two of the key concepts that generate our results—externalities and transaction costs—are commonly used in the regime literature and require little introduction. The third concept, member surplus, is new to this literature and in need of a lengthier introduction.

An externality is an effect of a decision by one state on others who did not have a choice and whose interests were not taken into account. We distinguish network externalities from other kinds. With traditional externalities, individual payoffs vary with the activities (investment, pollution, etc.) of other countries. In contrast, with network externalities, individual payoffs vary with the number of users of a product.

All regimes, whether unilateral or else, by definition exhibit positive network externalities, otherwise there would be no need for states to coordinate on a set of norms or principles in the first place. In some cases, the presence of strong positive network externalities is sufficient to induce coordination through a purely

competitive equilibrium, in which each party unilaterally decides whether to join or not to join an already existing standard. This is so because in the presence of positive network externalities, past a threshold point of adoption by a core group of founders, it is in everyone else's interest to coordinate on the same standard.

But not all regimes are unilateral. Positive network externalities do not typically yield unilateralism whenever paired with traditional externalities, be they positive or negative. Traditional externalities lead the competitive equilibrium to generate inefficiencies that can only be corrected through bargaining and agreement on a set of rules consigned in one multilateral and/or multiple bilateral agreements. Whether multilateralism is more efficient than bilateralism, and, in the case where a mix is preferable, how the instruments are distributed among members, depend on the interaction of two variables: transaction costs and the member surplus.

Our definition of transaction costs is borrowed from Williamson's (1985) work. Transaction costs are "the costs of negotiating, drafting, and safeguarding an agreement," with safeguarding broadly defined to include whatever it takes to make the agreement enforceable—the setup and running costs of monitoring, dispute settlement, renegotiation in the face of uncertainty, and, in Williamson's terms, "the bonding costs of effecting secure commitments." While some safeguarding costs are only incurred after an agreement is reached, the prospect of facing such problems complicates and prolongs matters during the negotiation phase (Fearon 1998). We especially focus on those transaction costs that have scale economies in the sense that they make the signing of n dyadic treaties costlier than the signing of one treaty with n participants. All the costs so far mentioned meet the scale economy condition.

The multilateral strategy has the advantage of saving on transaction costs, especially when multilateral treaties establish international organizations that facilitate negotiations and offer economies of scale in providing centralized monitoring and dispute settlement. The bilateral strategy, in contrast, multiplies transaction costs, since a new contract has to be negotiated, drafted, and safeguarded for each participant.

However, the multilateral strategy will be expensive for the founder in another sense—this is where the member surplus comes in. Multilateralism typically offers only one deal and this deal is the same for everyone.² As a result, participants are offered an incentive that is calculated to be just enough to elicit the participation of the state that is burdened with the highest cost of compliance. The problem is similar to the one that occurs in competitive markets, where the law of one price for a particular good confers a surplus on all producers who would have been willing to sell for less. This surplus is known in economics as the "producer surplus." In direct analogy, we call it the "member surplus." Unlike the multilateral approach, the bilateral approach is immune to the member surplus because it gives to each state the incentive it needs to participate and no more.

Hence, the member surplus makes multilateralism costlier for the founder than bilateralism, whereas transaction costs make bilateralism costlier than multilateralism. For the purpose of illustration, consider the FDI regime, which we further develop in the empirical section. The regime could be organized in two ways: through either one multilateral agreement or many bilateral treaties. A multilateral agreement has so far been out of negotiators' reach because it would require that capital-rich countries extend to the whole world the demanding conditions advanced

by the governments of Brazil, India, and China—three very attractive markets for foreign investment. Keeping the regime bilateral skirts this difficulty, at the cost, however, of a complex tapestry of bilateral investment agreements (BITs), each with its own legal peculiarities.

Foreshadowing the formal and empirical results, the choice between the two designs, therefore, should depend on the relative importance of each cost. If transaction costs are unusually high, as we argue they are in the human rights regime, multilateralism should be the strategy of choice; if the member surplus is too high, as is the case in the FDI regime, it should be bilateralism; and if the two are cost-comparable, as we suggest is the case in the climate change regime, then we should observe a mix: a multilateral contract targeted to states with lower compliance costs, topped off by bilateral contracts extended to states with higher compliance costs.³

3 A Founder-Member Model of Instrument Choice

Regimes require that states first coordinate on a set of principles and then select a mix of legal instruments. We leave out the first stage (and the positive network externalities, which, as argued earlier, are common to all regimes) to focus instead on instrument selection. To that effect, we posit a simple bargaining structure featuring the founder (or founders) and the rest of the world. In the case of multiple founders, we leave their interaction out of the model; they are assumed to act like a single player by means of an iterated play. We are making this assumption for reasons of tractability and also because we are looking only at global regimes, where there already exists a consensus among a core group of founders.

The members are indexed $i \in [1, N]$ with $N > 1$ a positive integer. Each

member i maximizes her individual utility $u_i(s_i, s_j) = f(s_i, s_j) - cs_i$, with $s_i \geq 0$ a continuous choice variable and c the marginal cost. Function f , which is assumed to be strictly concave, makes each member i 's utility a function of both her choice s_i and the choice of all other agents s_j , with j standing for all agents other than i . For the sake of calculating point predictions, we opt for the following specific functional form $f(s_i, s_j) = a_i\sqrt{s_i} - \rho \sum_{j \neq i} s_j$.⁴ Variable s_i may be thought of as an investment in a polluting technology or any activity producing a traditional externality, for instance fishing in the high seas, setting protective tariffs, or pursuing a security policy with negative consequences for human rights abroad. In each case, an investment s_i generates a negative externality ρs_i inflicted upon every single other member.⁵ Parameter ρ is the traditional externality index; it is greater than or equal to zero, with a value of zero indicating no externalities and a value greater than zero indicating their presence. Variable a_i is member i 's marginal gain, specific to each member.

In the absence of a founder, each member maximizes $u_i(s_i, s_j)$ with respect to her choice variable s_i and such that $s_i, s_j \geq 0$. This version of the game—featuring no founder—yields a competitive equilibrium in which every member produces $s_i^\# = \left(\frac{a_i}{2c}\right)^2$. This quantity is greater than the individual production level that would maximize the social optimum, $\sum_{i=1}^N u_i$, and which is equal to $s_i^\circ = \left(\frac{a_i}{2(c+\rho(N-1))}\right)^2$ (see the appendix for the demonstration of both results). As one would expect, the presence of a negative externality yields a competitive equilibrium that is economically inefficient because agents overinvest in the activity that causes the negative externality.

Enter the founder, intent on designing a regime that would lead a large number

of members to reduce their excessive investment level under the competitive equilibrium. We use the social optimum to operationalize the founder's optimum, yet it is important to note that the model and results can accommodate any notion of optimum as long as it is socially more desirable than the competitive equilibrium.⁶ The founder achieves this result by offering an incentive to each member. For the sake of simplicity, we assume the incentive to be a positive transfer—a payment— $t(s_i)$.⁷ The transfer can be given in several ways: through a multilateral instrument in which each member is treated identically (they are given the same transfer); through a series of bilateral agreements by which the founder is able to customize transfers to each member's need; or through a mix of multilateral and bilateral instruments, where a subset of members is treated identically and another is treated based on individual need.

The multilateral and bilateral approaches to regime building differ in a second respect: the transaction costs for the multilateral approach are lower than for the bilateral approach. We capture this feature formally by assuming that any single deal, bilateral or multilateral, costs constant T to process, with T positive.

A trade-off follows. Although the single multilateral treaty allows the founder to save on transaction costs, it is wasteful in incentives. This is so because the founder is forced to pay the member surplus. No such surplus is paid to agents under a bilateral approach, since each receives just enough compensation to break even. The bilateral approach, however, is wasteful in transaction costs—hence the trade-off.

If the respective costs incurred by each approach are lopsided, the founder will opt for one of these approaches exclusively of the other. If the respective costs

are somewhat balanced, however, the founder will optimize by mixing the two approaches according to the following rule of thumb: (1) offer a multilateral treaty targeting members who are relatively cheap to incentivize, and (2) supplement it with offers of bilateral instruments to the more expensive members, those with higher marginal gains.⁸

As presently formulated, the model should give us a reasonable idea of the relative importance of multilateralism in relation to bilateralism. The model, however, is biased toward bilateralism because it does not take into account a third design possibility that is open to the founder: exclusion. The founder need not provide an incentive to all agents but is entitled to exclude as many as it wants. Exclusion offers the advantage of reducing the founder's cost of building the regime and would typically affect agents with the highest marginal costs of compliance, precisely those that would be candidates for bilateral deals. To avoid overestimating the importance of bilateralism, therefore, it is necessary to model exclusion as an alternative to bilateralism. We add this feature to the model in order to get more accurate predictions on bilateralism, but we do not draw any comparative statics with respect to the exclusion variable per se, for it is not our goal in this paper to propose and illustrate a theory of membership size.⁹

The institutional upshot of this matching is graphed in Figure 1, showing members' marginal gain of investing in the activity that generates the externality on the horizontal axis and the incentive given to each member to deter her from making such an investment on the vertical axis. On the left-hand side of the graph, in the $[a_1, a_x]$ segment, the incentive that has to be given to the member is sufficiently low that it makes sense to seek compliance by offering a single generic contract,

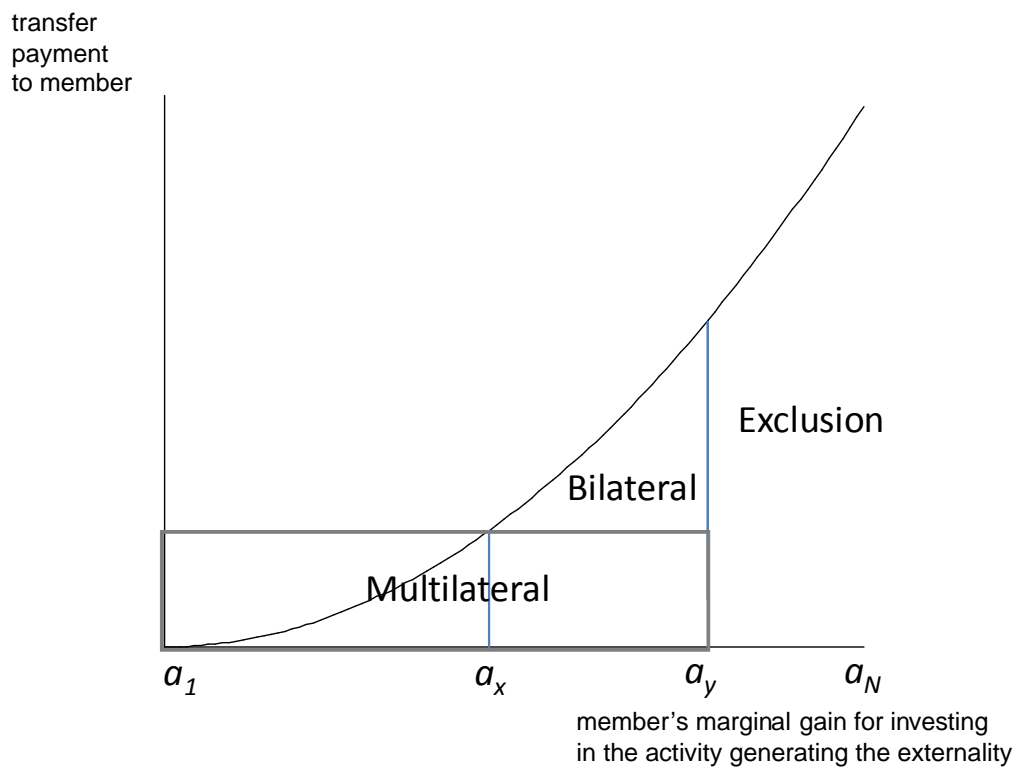


Figure 1: Lateralism as a function of member's marginal gain

minimizing transaction costs, yet providing a surplus to all the agents to the left of a_x . In the middle part of the graph, in the $[a_{x+1}, a_y]$ interval, the incentive is too high in relation to the fixed transaction cost for overlooking the surplus. Rather than offering a more generous multilateral contract, the founder merely supplements the existing multilateral contract with bilateral ones, saving on the member surplus (since the bilateral contracts are customized to each member of the interval) yet wasteful in transaction costs. Finally, on the right-hand side of the graph, in the $[a_{y+1}, a_N]$ interval, the incentive is so high that the founder is better off excluding agents.¹⁰ To put it succinctly, the regime should obey the following generic condition $0 \leq x \leq y \leq N$, with x the member that makes the founder indifferent between offering and not offering bilateral incentives in addition to multilateral incentives, and y the member that makes the founder indifferent between including and excluding that member.

On the founder's side, we assume that the founder values at constant V any member i 's investment that conforms with the founder's notion of what is optimal. The demand curve for compliance that would intersect the supply curve of Figure 1 is a flat line (not drawn), reaching the vertical axis at a value equal to V .¹¹ For the sake of convenience, we also assume that V is sufficiently large for the founder not to run into a budget constraint.

Last, we posit the following functional form for transfers: $t(s_i) = ts_i$, with ts_i the transfer given to member i and t a positive variable standing for the subsidy rate.

The founder moves first, offering a contract to all members simultaneously. Then the members simultaneously decide to reject or accept the offer. No subset of mem-

bers has the capacity to organize a coordinated response to the founder's offer. If a member rejects, there is no contract with that member. If a member accepts, the contract is executed as written; we are not giving the founder the capacity to make the signing of a contract with one (or more) member(s) contingent on the acceptance of all contracts by all other agents. There is no room for shirking once the member has accepted the founder's offer—signing an international instrument makes the commitment credible for both sides. Credibility is the result of a costly signaling game or a reputation game that is not modelled here because it is unnecessarily complex.¹²

A strategy for the founder specifies the (t, x, y) regime she proposes. A strategy for any member i is the mapping $(t, x, y) \rightarrow s_i$, specifying for every combination of institution and subsidy rate an investment level in the activity causing the externality. The solution concept is the subgame perfect Nash equilibrium.

Solving the game involves the founder choosing cutpoints x and y and subsidy rate t that maximize her aggregate utility while simultaneously inducing transfer levels sufficiently high to induce the y agents to invest optimally. This means that each member chooses her investment level s_i so as to maximize her individual utility, which now includes the founder's transfer. Formally, it means for the founder and the agents to simultaneously solve the program

$$P = \left\{ \begin{array}{l} 1. \max_{x,y,t} U_P = xg(x) - T + \sum_{z=x+1}^y (g(z) - T), \\ 2. \text{with } g(i) = \delta V - t(s_i^\# - s_i), \text{ and } \begin{cases} \delta = 1 & \text{if } s_i = s_i^\circ, \\ \delta = 0 & \text{if } s_i \neq s_i^\circ \end{cases}, \\ 3. \max_{s_i} u_i = a_i \sqrt{s_i} - \rho \sum_{j \neq i} s_j - cs_i + t(s_i^\# - s_i), \text{ for all } i, j \in [1, N], \\ 4. \text{with } s_i^\# = \left(\frac{a_i}{2c}\right)^2 \text{ for all } i \in [1, N], \text{ and } s_i^\circ = \left(\frac{a_i}{2(c+\rho(N-1))}\right)^2, \\ \text{subject to:} \\ 5. a_i \sqrt{s_i} - \rho \sum_{j \neq i} s_j - cs_i + t(s_i^\# - s_i) \geq a_i \sqrt{s_i^\#} - \rho \sum_{j \neq i} s_j - cs_i^\#, \\ 6. s_i \geq 0, \text{ for all } i, j \in [1, N], \text{ and} \\ 7. 1 \leq x \leq y \leq N. \end{array} \right.$$

The first clause of the program formalizes the founder's maximization problem, choosing subsidy rate t and cutpoints x and y so as to offer a single multilateral treaty to agents 1 to x , and bilateral contracts to agents $x+1$ to y .¹³ Clause 2 specifies the founder's utility function, earning positive constant V for every member who cuts activity down to the level required to implement the social optimum, at the cost of transfer $t(s_i^\# - s_i)$ given to each member.

Clause 3 features the maximization problem for included member i , who now receives transfer $t(s_i^\# - s_i)$, calculated to give her an incentive to reduce activity below the competitive equilibrium, $s_i^\#$, whose value is reported in clause 4, along with that for the socially optimum value s_i° .

Clause 5 specifies the incentive constraint for each included member, insuring that none of them has an interest in unilaterally deviating from the founder-induced optimum equilibrium. The last two clauses are boundary conditions.

The program is solved in the appendix. The equilibrium value of the subsidy rate, t^* , is equal to $(N - 1)\rho$, which can be interpreted as the externality rate, since each member causes $N - 1$ externalities, each time with marginal impact ρ .

The equilibrium value for x identifies the member on the $[1, N]$ continuum, left of whom the founder prefers multilateralism, right of whom, the bilateral approach. Assuming, in order to be able to make a point prediction, the following functional form for marginal gains, $a_i = ia$, with $i \in [1, N]$ and $a > 0$, we are ready to state the solution.

Proposition 1 *There exists a subgame perfect equilibrium in which the founder offers*

(1) *transfer $t^*s_x^\circ$ to agents i indexed 1 to x^* and in which these agents invest social optimum s_i° ;*

(2) *transfer $t^*s_i^\circ$ to agents i indexed $x^* + 1$ to y^* and in which these agents invest social optimum s_i° ;*

(3) *no transfer to agents i indexed $y^* + 1$ to N and in which these agents invest competitive equilibrium $s_i^\#$;*

with $t^* = (N - 1)\rho$,

$$s_i^\circ = \left(\frac{a_i}{2(c+\rho(N-1))} \right)^2,$$

$$s_i^\# = \left(\frac{a_i}{2c} \right)^2,$$

$$x^* = \begin{cases} N & \text{if } \bar{T} < T \leq \hat{T} \\ x \in [\underline{x}, \bar{x}] & \text{if } \underline{T} \leq T \leq \min \{ \hat{T}, \bar{T} \} \\ 1 & \text{if } T < \min \{ \underline{T}, \hat{T} \} \end{cases},$$

$$y^* = \begin{cases} N & \text{if } \bar{\bar{T}} < T \leq \hat{T} \\ y \in [\underline{y}, \bar{y}] & \text{if } \underline{\underline{T}} \leq T \leq \min \{ \hat{T}, \bar{\bar{T}} \} \\ 1 & \text{if } T < \min \{ \underline{\underline{T}}, \hat{T} \} \end{cases},$$

$$\underline{x} = \frac{1}{4} \frac{\sqrt{(a^2\rho^3(N-1)^3 + 32Tc^2(c+\rho(N-1))^2 + 2ca^2\rho^2(N-1)^2)}}{a\rho(N-1)\sqrt{2c+\rho(N-1)}} - \frac{1}{4},$$

$$\bar{x} = \frac{1}{4} \frac{\sqrt{(a^2\rho^3(N-1)^3 + 32Tc^2(c+\rho(N-1))^2 + 2ca^2\rho^2(N-1)^2)}}{a\rho(N-1)\sqrt{2c+\rho(N-1)}} + \frac{3}{4},$$

$$\begin{aligned}
\underline{y} &= 2 \frac{c}{a\rho} \frac{\sqrt{V-\underline{T}}}{\sqrt{2c+\rho(N-1)}} \frac{c+\rho(N-1)}{N-1} - 1, \\
\overline{y} &= 2 \frac{c}{a\rho} \frac{\sqrt{V-\overline{T}}}{\sqrt{2c+\rho(N-1)}} \frac{c+\rho(N-1)}{N-1}, \\
\underline{T} &= \frac{3}{4} a^2 \rho^2 (N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2}, \\
\overline{T} &= \frac{1}{4} a^2 \rho^2 (2N-1)(N-1)^3 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2}, \\
\underline{\underline{T}} &= V - \frac{1}{4} N^2 a^2 \rho^2 (N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2}, \\
\overline{\overline{T}} &= V - a^2 \rho^2 (N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2}, \text{ and} \\
\widehat{T} &= \arg \text{solve } \underline{x} = \underline{y}.
\end{aligned}$$

4 Observable Implications

The model produces four predictions that are relevant to the mix of lateralisms:

(1) In the absence of traditional externalities, the model predicts a regime based on unilateral instruments. If $\rho = 0$, then members invest optimally ($s_i^* = s_i^o$), the equilibrium value of the subsidy rate, t^* , is equal to zero, and institutional variables x^* and y^* are indeterminate. Neither multilateralism nor bilateralism is necessary for optimal investments to be made—the regime rests on the members’ uncoordinated decisions to invest.

In contrast, the social optimum (or any other equilibrium that Pareto-dominates the competitive equilibrium) is not reachable in the presence of traditional externalities without incentives and thus some form of interdependent decision-making. Given traditional externalities, the model allows us to make the following predictions.

(2) Instruments are matched with members’ compliance costs (or their marginal gain in investing in the externality, which is the same): low cost members are offered a multilateral treaty alone; members with intermediate costs are offered both the multilateral treaty and incentives through bilateral agreements; and members with high costs are excluded.

(3) The choice between the multilateral and bilateral frameworks depends on transaction costs. Visual examination of the possible values for x^* and y^* suggests that the scope of the multilateral treaty, x^* , increases with the size of transaction cost, T , whereas the scope for the bilateral treaties, y^* , decreases. If the transaction cost is low, the bilateral approach is dominant (the "Coase Theorem"). Instead, if the transaction cost is high, the multilateral approach is the more effective. For intermediate values of T , the optimal institutional design mixes a multilateral treaty with a series of bilateral agreements.

(4) An increase in the founder's value for one unit of compliance, V , leaves multilateralism unchanged (x^* is not a function of V), yet increases bilateralism (y^* increases with V). The reason is that V does not enter into the determination of the member surplus, but plays an essential role in determining the limit past which the founder no longer finds it valuable to enlarge the regime.

5 Empirical Illustrations

We illustrate the logic of our theoretical argument by focusing on four important cases: (1) a case of unilateralism—the gold standard; (2) a case of bilateralism—the FDI regime; (3) a case of multilateralism—the human rights regime; and (4) a case of mixed multi- and bilateralism—the climate change regime. In addition to offering variation on the dependent variable, the nature of “lateralism,” these cases demonstrate the generalizability of the model by covering a broad range of issues areas. We use the predictions generated by the model and presented in the previous section to guide the empirical discussion, focusing on those observable implications that are most relevant to each case.

5.1 The Gold Standard

The gold standard was a world-wide fixed exchange rate system by which each member sought to maintain price and currency stability. We use the case primarily to illustrate that in the absence of significant perceived traditional externalities, the participants felt little need for any form of interdependent decision-making. The result was a regime based on unilateral policies, an outcome consistent with prediction 1.

In the 19th century monetary regime, it was in every member's interest to maintain price and currency stability. Price stability had no perceived economic or political externalities, since "the workers who suffered most from hard times were ill positioned to make their objections felt" (Eichengreen 1992, chap. 2). Moreover, currency stability offered the additional advantage of lowering the cost of borrowing for governments in capital-scarce countries (Bordo and Rockoff 1996).

Not only was it in everyone's interest to join the gold standard, but joining had no congestion effect. One member's pursuit of currency stability had limited effect on another's equivalent pursuit. Capital-money was not a commodity in limited supply, but created according to the demand for loans. This is not a fact that was specific to the 19th century, but a universal principle of banking: any borrower with an investment project that is deemed profitable by the standards of the time can always find a lender. Surely, the standards vary with the vagaries of the business cycle—loose in times of boom, they become draconian in times of lull—but this is different from saying that there is a constant stock of capital searching for the best opportunities. As a result, joining the regime for a country had no negative impact on others and the competitive equilibrium approximated the social optimum, as it

usually goes with markets. Countries with good risk outlook were able to borrow capital at market price whereas countries that were deemed to be poor risks had to pay a premium.¹⁴

Rather than negative externalities, the gold standard, like all standards, actually was characterized by positive network externalities and a tipping dynamic. Silver and gold functioned as co-standards for several centuries, but the sudden depreciation of silver in the wake of the Nevada strikes and Germany's conversion to gold in 1876 tipped the scales against silver. The rest of Europe "scrambled for gold" while the rest of the world had little choice other than to emulate the core countries, lest they find themselves unable to borrow in the core's financial markets.¹⁵

Therefore, until 1914, the gold standard relied on strict and constraining legal instruments, but these instruments took the form of national statutes and central bank charters—no international agreement of any sort was ever negotiated and signed. Central banks coordinated their interventions and would lend gold to each other in times of crisis with and like private bankers (Eichengreen 1992: 31).

There was one significant exception to this golden picture. Farmers in the United States pressed for a return to the bimetallic standard. At the behest of this country, several international bimetallic conventions were held in the 1870s and 1890s, with the purpose of exploring ways to reintroduce silver as a standard (Kindleberger 1993: 70). J.P. Morgan himself made a trip to London under the McKinley administration to sound the British authorities' opinion on the question. All these efforts came to naught.

The populist support for silver merely anticipated a trend that would come to fruition after World War I. Under the mounting pressure of a newly enfranchised

working class unwilling to lose their jobs to save the national currency, the nature of the game shifted from mere coordination to PD, and remained so throughout the interwar and postwar periods (Eichengreen 1992, Simmons 1994). This is when governments began to grope their way toward the multilateralism that would be eventually enshrined in the Bretton Woods agreement.

5.2 The FDI Regime

Since the 19th century, there has existed an international investment regime consisting of a set of "widely shared standards regarding the proper treatment of foreign capital" (Lipson 1985: 81). Nevertheless, despite efforts by the United States in particular to promote rules on seizure and compensation, there exists no multilateral treaty or customary law on the treatment of foreign direct investment (Guzman 1998; Sornarajah 2004: 167). Instead, over the last fifty years rules governing FDI have rested overwhelmingly on more than 2,600 bilateral investment treaties (BITs). The regime deals with two traditional externalities, investment risk and race-to-the-bottom effects, making a regime based on unilateral instruments unworkable (prediction 1). Moderately low transaction costs and a large member surplus concur to make bilateralism the design of choice (prediction 3). The high value placed on compliance for the founders—the large investor countries—reinforces the tendency toward bilateralism (prediction 4).

The fundamental cooperation problem underlying BITs involves the time-inconsistent preferences of governments hosting investment. Once the investment is made, the government is tempted to employ a variety of policy tools—from higher taxes, to new performance requirements, to outright expropriation—in order to siphon off benefits from the investment. This creates a credibility problem for governments hoping

to attract foreign firms and a situation in which both sides are better off with a commitment device (Stasavage 2002). Another source of policy externalities is competition among host governments, which can produce race-to-the-bottom efforts to attract FDI (Elkins, Guzman and Simmons 2006). Unilateral policies by host governments are not very helpful in this context because both problems—commitment and competition—entail non-network externalities and involve an incentive to defect (prediction 1).

A multilateral instrument to deal with FDI is potentially attractive insofar as it would set uniform rules and thereby dampen race-to-the-bottom effects.¹⁶ However, in practice a viable multilateral instrument would have to be too watered down—in an effort to include hosts with the highest compliance costs—to be comprehensively effective and would thus be inefficient in incentives (prediction 2). The WTO's agreement on Trade-Related Investment Measures (TRIMs) illustrates precisely this point; it addresses only a narrow range of FDI issues and "imposes only rudimentary disciplines on the regulation of foreign investment" (Neumayer and Spess 2005: 1571).

The alternative is bilateral treaties that can be both deeper and more customized, and therefore less wasteful in terms of the member surplus. BIT participants vary considerably in terms of their political systems, the ideological orientation of their governments, the political influence of labor and other special interest groups, and their level of economic development. Accordingly, BIT provisions are tailored to the political and economic needs of signatories (in particular, of the developing country "members") in terms of what is counted as an "investment," the standards of treatment and protection that are applied, and the precision and options for

dispute settlement (UNCTAD 2007).

The main potential drawback of bilateralism is the high negotiation, safeguarding, and renegotiation costs involved by the signing and monitoring of thousands of treaties. These costs, however, have so far been relatively low. Monitoring and enforcement costs are typically low when it comes to agreements involving FDI. In almost all cases, violations of the agreement are noticed almost immediately by the affected firm, which by definition has a presence on the ground in the host country. This supplies a built-in “fire alarm” system of inexpensive monitoring (McCubbins and Schwartz 1984). This can be contrasted with trade, for example, where a wide range of opaque, non-tariff barriers can violate an agreement or otherwise impair the benefits expected to flow from it. Negotiation and renegotiation costs have also been contained because BITs are similar in terms of their basic components and are seldom negotiated from the ground up. The United States, Canada, the European Union and other investor countries offer a "model" structure that forms the basis of their respective BITs. The UN Conference on Trade and Development (UNCTAD) also promotes a standard BIT that is widely used. This uniformity minimizes the transaction costs of negotiating agreements with other countries and reduces the governance costs of managing the treaty over time by making implementation and interpretation more straightforward (UNCTAD 1998: 24). Of course, standardization also reduces room available for customization and may pave the way in the long run for a shift to the negotiation of a multilateral instrument.

Prediction 4 fits the FDI case well: as the value of secure investments increases for the founders, so does the number of bilateral agreements. The globalization of production has profoundly implicated firms based in the large senders of FDI. From

only \$700 billion in 1980, the world's stock of FDI now stands at \$10 trillion, and more than 60,000 multinational corporations are active in the global economy today. To promote these interests, the founders have sought to include more and more members in the regime through bilateral efforts. By the mid-1990s, 162 countries had concluded BITs and today the number stands at 176. Only a handful of countries, mostly least-developed and politically unstable, are not participating in the regime.

6 The Human Rights Regime

Human right policies generate externalities of a traditional type, rendering unilateralism unworkable as the basis for a regime (prediction 1). The international human rights regime is underpinned by an array of multilateral legal agreements and institutions, an approach that reduces the transaction costs of bargaining and of safeguarding agreements in ways that cannot be achieved through bilateral instruments (prediction 3). Moreover, participants in the regime face compliance costs that are almost uniformly low, making bilateral side-payments unnecessary as a way of calibrating incentives (prediction 2). The relatively low value placed by the founders on compliance further reduces the incentive for them to offer bilateral inducements to bring the most reluctant states on board (prediction 4).

The horrors of World War II served as a catalyst for the emergence of a coherent international human rights regime, centered on the norm that individual human beings should be protected regardless of their nationality or location (Morsink 1999). The founders of the regime were the western democracies, who have sought to expand membership in the face of some resistance from nonwestern countries, especially in Asia and the Islamic world (Ignatieff 2001). The regime is governed by a broad and growing set of multilateral instruments. In addition to the UN Char-

ter, which calls for “universal respect for, and observance of, human rights,” the three core agreements are the Universal Declaration of Human Rights (1948), the International Covenant on Civil and Political Rights (1966), and the International Covenant on Economic, Social and Cultural Rights (1966). These are complemented by more specific treaties on genocide (1948), racial discrimination (1973), discrimination against women (1979), torture (1984), rights of the child (1989), rights of migrant workers (1990), and rights of persons with disabilities (2006). These treaties enjoy widespread participation.¹⁷

Human rights policies do entail a network externality insofar as governments hoping to demonstrate respect for rights have an incentive to adopt the most widely agreed-upon standards. However, there are substantial cross-border effects—traditional externalities—created by human rights policies that make a unilateral regime insufficient. First, moral concerns arise over events in other countries that threaten individual well-being—what Donnelly refers to as a sense of “moral interdependence” across states (Donnelly 1986: 617). Second, there are practical externalities. States with humanitarian problems and oppressed minorities are more conflict-prone, less appealing as partners in trade and investment, and more likely to generate refugee flows (Goldsmith and Posner 2005: 110). The presence of these traditional externalities helps explain why international cooperation is needed and why unilateral policies alone are not sufficient (following the logic of prediction 1).

This does not explain why the regime has evolved primarily on the basis of *multilateral* legal instruments. Following prediction 3, we expect bilateralism to prevail when there are no significant transaction cost savings to be gained through multilateralism. This is not the case: The multilateralization of human rights has

helped to reduce both the bargaining costs and the safeguarding costs entailed in the regime.

Because they involve "taboo trade-offs" and depend on their normative weight to matter, human rights rules do not lend themselves to side-payments and compromises.¹⁸ These factors make a multilateral approach to bargaining more appealing, and accordingly the UN has offered a natural forum for the efficient negotiation of many human rights agreements. The General Assembly was used as a venue for the final negotiations of the Universal Declaration, facilitating speedy agreement across most of the international community. The UN's Human Rights Commission has been used to generate draft texts for many human rights treaties, originally with the administrative support of various secretariat officials, who have proven crucial in reconciling diverse views on human rights and producing draft texts that serve as focal points for intergovernmental negotiations. The costs of forging a wide network of bilateral agreements would have been considerably higher and likely impossible.

Transaction costs also arise from the difficulty of monitoring and enforcing human rights law in a purely bilateral context. First, it is difficult for individual governments to monitor the wide range of human rights rules, especially since the relevant behavior is usually occurring at the domestic level in other states. Second, even when governments have evidence of violations, this information may not be viewed as impartial and credible by other governments. Third, it is difficult for individual governments to punish rights violators through the normal bilateral channels of tit-for-tat retaliation. While in some issue-areas a government can respond in kind to noncompliance—for example, by suspending concessions in the trade or expelling diplomats—there are no direct reciprocal benefits to be withdrawn in human

rights (Hathaway 2007: 589). And a pro-human rights government cannot credibly threaten to mistreat its own population in response to the actions of another government.

The primary mechanisms for promoting compliance in human rights are reputation concerns and shaming, both of which are more effective in multilateral contexts (Guzman 2008: 64; Johnston 2001). Accordingly, the various human rights treaties establish an array of institutions—UN bodies, as well as independent committees and commissions—that provide centralized monitoring and reporting. Their findings, though not binding, do have legal and normative significance that “puts pressure on states” (Buergenthal 2006: 791). The Security Council has also adopted the role of enforcing international human rights law, increasingly authorizing responses to some of the most egregious violations (Le Mon and Taylor 2004). Since none of this would be possible with a series of bilateral treaties, safeguarding the human rights regime requires a multilateral approach.

While the logic of transaction costs helps explain why the regime is primarily multilateral, there is still the possibility that multilateral instruments would be complemented by bilateral ones, resulting in a “mixed” regime. Our theoretical argument, captured in prediction 2, is that bilateral instruments are most appealing when compliance costs vary significantly across states, such that founders prefer to customize additional incentives to bring reluctant states on board while minimizing the member surplus. In the human rights case, this is largely unnecessary because compliance costs are low for almost all states. Most treaties are shallow, requiring little change in status quo behavior. The Universal Declaration reflected an “agreement across cultures” that papered over a “lack of consensus on foundations”

to maintain sovereignty prerogatives (Glendon 1998: 1156, Lauren 2003: 154-60). Since, as Donnelly (1986) notes, growth in the rights regime was relatively easy precisely because states have been unwilling to increase the depth of their commitments.

Empirical evidence on state behavior bears out the argument that human rights law imposes low compliance costs across the board. Overall, human rights treaties have a very limited impact on state behavior (Neumayer 2005; Hathaway 2002). This is especially true for democracies, which tend to respect human rights anyway. However, the costs of joining a human rights treaty are so low that repressive and nondemocratic governments are just as likely to join as those which protect human rights (Hathaway 2007; Vreeland 2008; Hafner-Burton and Tsutsui 2007). Consistent with prediction 2, this uniformly low compliance costs help explain why bilateral instruments have been largely unnecessary as a complement to multilateralism.

Finally, regime founders place a relatively low value on compliance (the V term in our model) and are simply not willing to offer costly incentives to expand participation. Following the logic of prediction 4, the low priority granted to human rights makes bilateral instruments less appealing for the founders.

7 The Climate Change Regime

The global climate regime deals with an obvious externality, atmospheric pollution. Because of the public-good nature of the climate, there are clear incentives to free ride that make unilateral policies unrealistic and international agreements necessary (prediction 1). The regime relies on a combination of multilateral incentives destined for countries with lower compliance costs and a series of bilateral incentives reserved for countries with higher compliance costs. We use the case primarily to

illustrate that a mixed outcome is one logical and interesting possibility resulting from prediction 2.

The climate regime is centered on some basic norms: the protection of common heritage, the prevention of transboundary harm, concern for inter-generational equity, and an acceptance that all states should make an effort to reduce greenhouse gas emissions. From the beginning, the Europeans have assumed a leadership role in establishing international treaties and calling for the deepest cuts in greenhouse gas emissions (Gupta and Grubb 2000; Yamin and Depledge 2004: 42-4). They are thus the primary founders of the regime and have endeavored to bring other members on board, including more reluctant industrialized countries and developing countries.

An interesting feature of the climate regime is its mixture of multilateral and bilateral mechanisms. The most important multilateral components are the two core treaties, the 1992 Framework Convention on Climate Change (FCCC) and the 1997 Kyoto Protocol, and the institutions established by these treaties to manage the regime. All states must submit national reports to the FCCC Secretariat on their efforts to reduce and track emissions. Industrialized countries are further monitored by "expert review teams," coordinated by the Secretariat, and a Compliance Committee, which can investigate and identify violations. Incentives to comply include public reporting of noncompliance, a penalty of additional emissions reduction requirements, and suspension from use of the emissions trading mechanism. The climate regime also provides a forum for regular negotiations by the entire membership, the Conference of the Parties, and by various subsidiary bodies that handle more technical issues. Given the incentives to cheat and the difficulty of monitoring activities around the world, these are valuable transaction cost-reducing functions

performed by these multilateral institutions, consistent with prediction 3.

The main drawback of the multilateral approach is that the costs of reducing emissions are highly variable, making it difficult to attract participation from those who place a high value on emitting greenhouse gases. Consistent with prediction 2, this was done largely through the use of bilateral mechanisms.

Developing countries offer the most obvious example in this regard. They were reluctant from the start to join the regime, fearing that efforts to tackle climate change would compromise their main priorities of poverty reduction and economic growth (Bodansky 2007; Najam, Huq and Sokona 2003). To attract their participation, the pro-climate industrialized countries have used two bilateral mechanisms. First, they have used foreign aid as a way to transfer resources to the developing world for purposes of mitigating and adapting to climate change. The European Union funds nearly 200 climate change-related projects in the developing world. The U.K. has specific bilateral initiatives with China, India and Brazil that involve scientific collaboration and projects to expand renewable energy use, and has provided the government of Bangladesh with aid for disaster management (European Commission 2006; DEFRA 2006).

Second, the Kyoto Protocol's Clean Development Mechanism (CDM) allows industrialized countries to reach agreements to invest in emissions reducing projects in the developing world. Developing countries benefit from the transfer of capital and technology under CDM, which in effect pays them to address global warming (Victor 2007). Since it became operational in 2006, more than 1600 projects have been initiated. They require a negotiated agreement between an investor (and its government) and the host country on the nature and financing of the project and

on the dispensation of emissions credits that result. As an example, the Japanese government has arranged with the Vietnamese government to authorize a Japanese oil company to recover fugitive emissions from oil wells that would otherwise be burned off.¹⁹

These bilateral enticements have made participation by developing countries much more attractive—the FCCC and Kyoto have been ratified by 192 and 184 countries, respectively—and allow the regime’s founders to more efficiently match incentives with compliance costs than would be possible with bilateralism alone. However, it should be noted that the usefulness of CDM has been threatened by high transaction costs because the agreements are often complex and because measuring emissions reductions is so complicated. Our prediction 3 implies that the long-term viability of CDM will depend crucially on keeping these transaction costs low, especially given the number of projects.

8 Extensions and Conjectures

We now discuss two potential limitations and extensions of the present theory: information asymmetry and the possibility of customized multilateral regimes.

Asymmetric Information The model assumes complete information. What if, instead, the founder were ignorant of each member’s compliance cost and dependent on their own declarations? We argue that in such conditions it is in the interest of each member to claim a cost greater than his actual one and thereby extract a higher payment. Asymmetric information disqualifies bilateralism in favor of multilateralism.

To see this, imagine that the founder has a good sense of the overall distribution

of marginal gains, a_i . We further assume that the founder does not know where member i is located on that distribution, with i being any member. Hence, even if the founder has a good sense of the nature and scope of instruments she should use to build the regime, she does not know which instrument to offer to which member. A rational strategy for any member under such circumstances is to claim to be the high marginal gain type a_y , with y being the presumed highest-marginal-gain member to be included in the regime. As a result, all agents with an actual marginal gain located on and to the left of cutpoint y would claim to be at that very cutpoint.

The founder's best response to such misrepresentation is to give up on bilateralism and offer a multilateral deal calculated to include the member with marginal gain a_y (looking at Figure 1, a_x shifts toward, and becomes, a_y). In response to such an offer, all agents with marginal gains inferior or equal to a_y accept the regime and all those with marginal gains above that threshold stay out. The multilateral instrument is optimal here because it functions like a partial information revelation mechanism. It leads each member to truthfully sort themselves out into a camp of members and a camp of nonmembers. The revelation is partial, however, because nothing is revealed on how agents are distributed within each camp. But note that such information is unnecessary in the context of the multilateral instrument, which treats everyone the same way and thus can be successfully used in the absence of any information on members' individual characteristics.

The situation is very different for bilateral instruments. Individualized information is needed in order to tailor the bilateral incentive to each member's type. In the case where all agents claim to be the a_y type, the bilateral strategy is suboptimal: it does not enable the founder to save on the member surplus, since all agents are given

the transfer that corresponds to the a_y claim, thus multiplying transaction costs for no offsetting benefits. Bilateralism fails in the presence of asymmetric information.

Note that along with multilateralism comes exclusion. In order to reduce the member surplus generated by the multilateral contract, the founder must exclude more agents (reduce the value of y to some value below what would have been its complete-information equivalent, though still above what x would have been) than she would have under complete information. Combining these various points together, we offer the following conjecture:

Conjecture 1 *Asymmetric information makes multilateralism more appropriate than bilateralism and increases exclusion.*

An illustration is the practice known as "nuclear blackmail" (Gilinsky 1997). North Korea and Iran have been suspected of investing in nuclear weapons programs in order to raise their price of compliance with the nonproliferation regime. The possibility of blackmail, which can neither be proven or disproven, makes it difficult for the West to strike a deal with nuclear aspirants. More generally, asymmetric information leads agents to engage in behavior that undermines the bilateral instrument.

Customized Multilateralism We have assumed so far that multilateral instruments treat all members the same, and such is generally the case with non-nuclear-weapon members of the NPT, signatories to human right conventions, the laws of war and diplomatic immunity, and so forth. There are a few exceptions, however. IMF loans have conditions that reflect the particular situation and bargaining leverage of the country in need of financial assistance; the World Bank and other multilateral aid agencies customize their aid to recipients; and the WTO extends "special and

differential treatment" to developing countries. In fact, the climate regime, which we have described as mixing multilateralism and bilateralism, also has elements of customized multilateralism among industrialized countries, which have different emissions reductions targets and different allowances for counting carbon "sinks" toward these targets. This customization has helped bring reluctant countries like Russia, Japan, Canada and Australia on board.

One might conjecture that customized multilateralism is made possible if the transfer is divisible, as with different levels of aid or tariff concessions. In contrast, if the transfer is "lumpy," everyone receives the same incentive–security guarantees in the nuclear proliferation regime or international recognition in the human rights regime. When incentives are divisible and thus apparently easy to customize, there should be no need for separate bilateral instruments and their attendant transaction costs.

Conjecture 2 *Divisible goods can be handled through customized multilateralism.*

The empirical relevance of this conjecture, however, might be limited by the fact that most divisible goods take a monetary form, which donor governments usually prefer to dole out with strings attached. Consider the case of international aid for development. Although divisible, only about a third of developmental aid is distributed through multilateral institutions—the bulk is given bilaterally. One reason is that donors are more willing to contribute aid as part of a quid pro quo than as a pure public good (Rodrik 1996; Milner 2006). Multilateral aid does not allow for strings of that sort, for reasons that are moral and political. As a result, bilateral aid is oversupplied, multilateral aid undersupplied. This is an important caveat to the otherwise simple idea that divisibility of incentives leads to multilateralism.

9 Conclusion

In this paper we shed light on a variation in the design of international regimes that has not received proper attention in the literature. Regimes vary widely with respect to whether the legal instruments that support them are unilateral, bilateral, multilateral, or a combination thereof. Multilateral agreements are not the only way to design regimes; domestic regulation, as in the case of the gold standard, and dyadic agreements, as in the case of the FDI regime, are viable alternatives. The different instruments are not incompatible, as is too often believed, but complementary, as the climate regime illustrates. States must resolve these fundamental questions before they can negotiate other aspects of the regime.

We offer an explanation for the variation in lateralisms that builds on three propositions: traditional externalities rule out unilateralism, transaction costs favor multilateralism, and the member surplus favors bilateralism. We also conjecture that the introduction of information asymmetry works against bilateralism and that divisible incentives may work in favor of multilateralism.

We do not claim to have provided an exhaustive treatment of the question of lateralisms and acknowledge that there are other rationales. For example, in her study of the intellectual property rights regime, Sell (2007) argues that bilateralism is no complement to the existing TRIPs regime but a divide-and-conquer bargaining strategy in the service of a stronger protection regime that most developing countries are loath to accept.²⁰ The present model also sidesteps the question of the depth of cooperation. A subset of members to a regime may opt to pursue deeper cooperation among themselves. A good illustration is the trade regime, with its patchwork of bilateral and regional free trade agreements (NAFTA, EU, and so on) superimposed

on a common WTO framework in the background. Last, although we note that multilateral bargains are morally and politically constrained in ways that bilateral bargains are not, we do not address the question of which approach is more legitimate in a given context.

Despite its limitations, this study has substantive consequences for how we conceptualize international regimes. The commonality of norms is more important to the existence of a regime than the laterality of the instruments that implement them. The two dimensions should be kept separate analytically. Moreover, the degree of institutionalization of an issue, usually defined by how much of it falls under the supervision of a multilateral instrument or organization, is by itself no indication of the strength of that regime.

Appendix: Proofs

10 Competitive equilibrium

Each member $i \in [1, N]$ chooses her level of $s_i \geq 0$ to maximize her utility $u_i = a_i\sqrt{s_i} - \rho \sum_{j \neq i} s_j - cs_i$, a function that is twice-differentiable and concave. Assuming $\lambda_i \geq 0$ to be the Lagrangian parameters, the optimal level of s_i , $s_i^\#$, satisfies the necessary and sufficient first-order conditions $a_i \frac{1}{2} s_i^{-\frac{1}{2}} - c + \lambda_i = 0$ and the Kuhn-Tucker conditions $s_i \lambda_i = 0$ for any $i \in [1, N]$, thus forming a system of $2N$ equations and $2N$ variables (s_i and λ_i). There is no solution possible in which, for any member $i \in [1, N]$, $\lambda_i > 0$, because it would imply $s_i^\# = 0$, making the corresponding first-order condition indeterminate. Therefore, the only possible determinate solution has $\lambda_i = 0$ and $s_i^\# = \left(\frac{a_i}{2c}\right)^2$ for all $i \in [1, N]$.

11 Social optimum

In any Pareto optimal allocation, the optimal level of s_i , s_i° , must maximize the joint surplus of the N agents and so must solve $\max_{s_i \geq 0, i \in [1, N]} \sum_{i=1}^N (a_i\sqrt{s_i} - cs_i) - \sum_{i=1}^N \rho \sum_{j \neq i} s_j$. This problem gives the necessary and sufficient first-order conditions $a_i \frac{1}{2} s_i^{-\frac{1}{2}} - c - (N-1)\rho + \gamma_i = 0$, with $\gamma_i \geq 0$ the Lagrangian parameters, and the Kuhn-Tucker conditions $s_i \gamma_i = 0$ for all $i \in [1, N]$. The problem is solved like the precedent, yielding interior solution $s_i^\circ = \left(\frac{a_i}{2(c+\rho(N-1))}\right)^2$ for all $i \in [1, N]$.

12 Solving program P

12.1 The subsidy rate

We start by determining the optimal subsidy rate, t^* . The rate must satisfy two conditions: first, it must be large enough to entice each member to abandon the competitive equilibrium for the social optimum; second, it must be high enough

to deter any member from defecting to the competitive equilibrium while holding constant the optimal activity of other agents. To meet the first condition, t must make the equilibrium activity under the socially optimal equilibrium at least equal to the equilibrium activity under the competitive equilibrium. Comparing the first-order conditions for each equilibrium (see above), it is straightforward to see that the condition for the optimal equilibrium is the same as that for the competitive equilibrium minus expression $(N - 1)\rho$. Therefore, $t^* \geq (N - 1)\rho$.

To meet the second condition, the incentive constraint in program P must be met for $s_i^* = s_i^\circ$. This means that $a_i\sqrt{s_i^\circ} - \rho \sum_{j \neq i} s_j^\circ - cs_i^\circ + t \left(s_i^\# - s_i^\circ \right) \geq a_i\sqrt{s_i^\#} - \rho \sum_{j \neq i} s_j^\# - cs_i^\#$. Substituting the values of $s_i^\#$ and s_i° into the constraint yields $t^* \geq \frac{c(N-1)\rho}{2c+(N-1)\rho}$. Since the right hand side term is smaller than $(N - 1)\rho$, it follows that this second constraint is not binding, only the first is, and thus $t^* = (N - 1)\rho$.

12.2 Convexity

To show that program P is convex with respect to x and thus has a fixed-point solution, one needs to show that the founder's utility function, in which we have substituted the values for $s_i^\#$, s_i° , and t^* , is concave with respect to variables x and y . Concavity requires that for any pair of distinct points (x_1, y_1) and (x_2, y_2) in the domain of U_P , and for $0 < \theta < 1$, the following weak inequality holds: $\theta U_P(x_1, y_1) + (1 - \theta)U_P(x_2, y_2) \leq U_P(\theta(x_1, y_1) + (1 - \theta)(x_2, y_2))$. Developing U_P and rearranging yields $U_P = Ax^3 + Bx^2 + Cx + Dy^3 + Ey^2 + Fy + G$ with $A = -\frac{1}{6}R$, $B = \frac{1}{8}R$, $C = T + \frac{1}{24}R$, $D = -\frac{1}{12}R$, $E = -B$, $F = V - C$, $G = -T$, and $R = \rho^2 (N - 1)^2 a^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2}$.

This and all subsequent calculations use the functional form for an member's marginal gain $a_i = ai$.

Concavity thus requires $\theta (Ax_1^3 + Bx_1^2 + Cx_1 + Dy_1^3 + Ey_1^2 + Fy_1 + G) + (1 - \theta) (Ax_2^3 + Bx_2^2 + Cx_2 + Dy_2^3 + Ey_2^2 + Fy_2 + G) \leq A(\theta x_1 + (1 - \theta)x_2)^3 + B(\theta x_1 + (1 - \theta)x_2)^2 + C(\theta x_1 + (1 - \theta)x_2) + D(\theta y_1 + (1 - \theta)y_2)^3 + E(\theta y_1 + (1 - \theta)y_2)^2 + F(\theta y_1 + (1 - \theta)y_2) + G$. Rearranging and simplifying, one obtains $(x_1 - x_2)^2 ((x_1(1 + \theta) + x_2(2 - \theta))A + B) + (y_1 - y_2)^2 ((y_1(1 + \theta) + y_2(2 - \theta))D - B) \leq 0$, which is true since both components of the addition are negative. The first term is negative because $A + B < 0$ and A 's coefficient is greater than one, while the second term is negative because $D < 0$, and both D 's coefficient and B are positive. It follows that U_P is concave with respect to x and y and that there exists a unique internal maximum (x^*, y^*) .

12.3 Lower and Upper Bounds of x^*

Since x^* is the unique maximum over the relevant domain, it yields a utility to the founder that is greater than the utility yielded either by $x^* - 1$ or by $x^* + 1$. Formally, we have $U_P(x) \geq U_P(x + 1)$ and $U_P(x) \geq U_P(x - 1)$. After developing and rearranging terms in each inequality, we obtain a lower and an upper bound for x^* of the form $\underline{x} \leq x \leq \bar{x}$, with $\underline{x} = \frac{1}{4} \frac{\sqrt{(a^2 \rho^3 (N-1)^3 + 32Tc^2(c + \rho(N-1))^2 + 2ca^2 \rho^2 (N-1)^2)}}{a\rho(N-1)\sqrt{2c + \rho(N-1)}} - \frac{1}{4}$, $\bar{x} = \frac{1}{4} \frac{\sqrt{(a^2 \rho^3 (N-1)^3 + 32Tc^2(c + \rho(N-1))^2 + 2ca^2 \rho^2 (N-1)^2)}}{a\rho(N-1)\sqrt{2c + \rho(N-1)}} + \frac{3}{4}$. Given that $\underline{x} + 1 = \bar{x}$ and that x^* is an integer, the value of x^* may fall anywhere in the closed interval $[\underline{x}, \bar{x}]$.

12.4 Lower and Upper Bounds of y^*

The equilibrium value is what makes the founder indifferent between extending the offer to y^{th} member and earning $V - t^* (s_y^\# - s_y^\circ) - T$ and not extending the offer and earning 0. Equating the two outcomes and substituting the corresponding values for transfer and investment into the equation yields the upper bound value $\bar{y} = 2 \frac{c}{a\rho} \frac{\sqrt{V-T}}{\sqrt{2c + \rho(N-1)}} \frac{c + \rho(N-1)}{N-1}$, and thus the lower bound value

$\underline{y} = 2 \frac{c}{a\rho} \frac{\sqrt{V-T}}{\sqrt{2c+\rho(N-1)}} \frac{c+\rho(N-1)}{N-1} - 1$. The value of y^* may fall anywhere in the closed interval $[\underline{y}, \bar{y}]$.

12.5 Domain

Since x^* must fall in interval $[1, N]$, we infer the domain of the function for which

this result is verified. $\underline{x} \geq 1$ yields condition $T \geq \frac{3}{4}a^2\rho^2(N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2} \equiv$

\underline{T} , while $\bar{x} \leq N$ yields condition $T \leq \frac{1}{4}a^2\rho^2(2N-1)(N-1)^3 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2} \equiv \bar{T}$.

$\underline{y} \geq 1$ yields $T \geq V - \frac{1}{4}N^2a^2\rho^2(N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2} \equiv \underline{\underline{T}}$, while $\bar{y} \leq N$ yields

$T \leq V - a^2\rho^2(N-1)^2 \frac{2c+\rho(N-1)}{c^2(c+\rho(N-1))^2} \equiv \bar{\bar{T}}$. Also, $x^* = \begin{cases} N & \text{if } T > \bar{T} \\ 1 & \text{if } T < \underline{T} \end{cases}$ while

$y^* = \begin{cases} N & \text{if } T > \bar{\bar{T}} \\ 1 & \text{if } T < \underline{\underline{T}} \end{cases}$. One last condition must be met: $T = \arg \text{solve } \underline{x} \leq \underline{y} \equiv \hat{T}$.

Too long to be reported here, this condition is available from the authors.

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Notes

¹Kahler (2004) points to institutional variation in today's global governance, ranging from "multilateralism," "reliance on national capabilities" (our notion of unilateralism), bilateralism, and networks. Likewise, students of international standards stress the mix of governance structures (see Genschel 1997).

²There are exceptions to the rule that multilateralism cannot accommodate customization. We discuss them in the penultimate section.

³The trade-off we point to is similar to the trade-off identified by students of federalism between scale economies in public good provision and the costs of "one size fits all" solutions resulting from centralized provision (Oates 1972; Alesina and Spolaore 1997).

⁴This functional form is appropriate for cases in which the externality is responsible for a sub-optimal outcome of the PD type, with all participants overproducing the negative externality. On cases in which the externality is of the public good type, with all but one actor taking a free ride, see Mas-Colell, Whinston, and Green 1995: 362.

⁵The sign of the externality has no bearing on the substantive results.

⁶The principal's optimum cannot be less desirable than the competitive equilibrium lest it alienate some countries and lose its normative content.

⁷The model and the empirical illustrations refer to regimes that rely on positive incentives. If, instead of offering a reward, the founder merely threatened to sanction nonparticipation, the model would still work provided that one thinks of sanctions as negative prices. For instance, Santa Lucia, a country better known for its beaches than its desire to pursue nuclear weapons, would comply with the proliferation ban even if it were given negative price $-t$ or, to put it more intuitively, even if she were asked to pay t in addition to complying. The fact that she is not asked anything besides compliance means that she saves t . Generally speaking, positive incentives set the member's reservation value to zero, whereas negative incentives set the reservation value below zero. Except for this, the two forms of incentive are interchangeable (author).

⁸For a formal demonstration, see author.

⁹On regime membership, see Downs, Rocke and Barsboom (1998), Koremenos, Lipson, and Snidal (2001), and author.

¹⁰Note that exclusion from the regime does not necessarily involve exclusion from consuming the good in the case of a public good.

¹¹Alternatively, one might have assumed a positively-sloped curve on the grounds that an additional unit of compliance is valued more because it is from a member who would have produced a larger externality. Our specification is arguably most appropriate when founders value country compliance per se, as they do with human rights issues, while the sloped demand curve is more appropriate when they value reducing the overall size of the externality. In any case, the shape of

the demand curve does not affect the comparative statics presented in the next section.

¹²There are sound theoretical and empirical reasons to believe that legalized international commitments are credible. See Simmons 2000 and Abbott and Snidal 2000.

¹³To build the summation term, we took advantage of the mathematical identity between offering each of the $y - x - 1$ members (1) a multilateral treaty and a supplementary bilateral treaty or (2) a bilateral treaty with incentives that subsume those of the multilateral treaty.

¹⁴This is a premise of the "Good Housekeeping Seal of Approval" approach to the gold standard advanced by Bordo and Rockoff 1996.

¹⁵See Gallarotti (1995: 49), who writes that "the scramble for gold showed that monetary hegemony and broad multilateral cooperation are not necessary conditions for the creation of international regimes."

¹⁶While race-to-the-bottom competition still occurs among host states, capital-rich countries in European and North America, under pressure from environment and labor groups, have increasingly included safeguards against this in their BITs. The U.S. Model BIT, for instance, contains provisions that prevent the host government from relaxing environmental and labor regulations to attract FDI, and Canada's standard BIT similarly disallows the weakening of health, safety and environmental measures. See, for example, Article 11 of the recently concluded Canada-Peru Foreign Investment Protection Agreement. Available at <http://www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/peru-perou/report-rapport.aspx?lang=en>.

¹⁷Except for the two newest treaties, on migrant workers and persons with disabilities, all have been ratified by more than 100 countries.

¹⁸On the notion of taboo trade-off, see Fiske and Tetlock 1997.

¹⁹For more on this project, see <http://cdm.unfccc.int/Projects/DB/DNV-CUK1133472308.56/view>.

²⁰Sell 2007. For a similar analysis of the international telecommunications regime, see Krasner 1991; for the international aviation regime, see Nayar 1995; and for the foreign direct investment regime, see Guzman 1998.