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Vincy Fon

Francesco Parisi
University of Minnesota Law School, parisi@umn.edu

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The Formation of International Treaties

VINCY FON,¹ FRANCESCO PARISI²

George Washington University; University of Minnesota and University of Bologna

This paper develops a stylized model of international treaty formation and analyzes the different modalities with which states can become part of an international treaty according to the procedures set forth by the Vienna Convention on the Law of Treaties. We consider the rules governing accession to international treaties, distinguishing between three situations: (i) Treaties for which acceptance of a new member requires unanimous approval of the signatory states with an amendment of the original treaty agreement (closed treaties); (ii) Treaties where acceptance of a new member is made possible through approval by a majority of the existing member states (semi-open treaties); and (iii) Treaties where the original member states have agreed to leave the treaty open for accession by other states (open treaties).

International treaties are instruments of international cooperation. While states can pursue some goals in isolation, international cooperation may provide an opportunity to more effectively achieve such goals. States can become part of an international treaty in two ways: (i) being among the original signatory states of a treaty; and (ii) acceding to an existing treaty. Original signatory states often face substantial costs in the process of treaty negotiation and drafting, while the costs of acceding to an existing treaty are generally lower. However, there are benefits in being part of the original group of signatory states, rather than acceding to the treaty at a later stage. For example, the founding states influence the content of the

¹ George Washington University, Department of Economics. E-mail: vfon@gwu.edu. This material is partially based upon work developed while serving at the National Science Foundation.

² University of Minnesota, Law School and University of Bologna, Department of Economics. E-mail: parisi@umn.edu. We thank Dan Milkove for his insightful comments and help. We are grateful to the anonymous referees for their thoughtful comments and to Nuno Garoupa for his encouragement. We also thank Alessandra Arcuri, Emanuela Carbonara, Luigi Franzoni, Felix Reinshagen, Jacob Nussim, and participants in the 2005 European Association of Law and Economics Annual Meeting for valuable comments and suggestions. All remaining errors are ours. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

treaty. In this paper we analyze the process of treaty formation in light of the possibility that non-signatory states may be given an opportunity to join an existing treaty through accession. Under what conditions is it desirable for the original states to leave a treaty open for accession? What are the likely characteristics of these treaties?

This paper provides a model of international treaty formation to analyze the different modalities with which states can become party to an international treaty. We analyze the advantage which original signatory states have over acceding states that justifies undertaking the initial treaty negotiation costs. Section 1 starts by describing the main categories of treaty accession: (i) closed treaties; (ii) semi-open treaties; and (iii) open treaties. Section 2 considers the process of treaty formation under these possibilities. Section 3 discusses some variations of the basic model and draws conclusions.

1. FORMATION AND ACCESSION TO INTERNATIONAL TREATIES

The Vienna Convention on the law of treaties allows the original parties to an international treaty to determine if and how non-signatory states may subsequently join the treaty agreement. Article 15 of the Vienna Convention authorizes a state to consent to be bound to a treaty by accession when:

- a. the treaty provides that such consent may be expressed by that State by means of accession;
- b. it is otherwise established that the negotiating States were agreed that such consent may be expressed by that State by means of accession; or
- c. all the parties have subsequently agreed that such consent may be expressed by that State by means of accession.³

International law thus requires prior or subsequent consent of the signatory states for an applicant state's accession to an existing treaty. When signatory states pre-authorize accession of applicant states at the time of signing the original treaty, the treaty is described as "open" for accession. Conversely, if no such pre-authorization is given in the original treaty, subsequent consent by all signatory states is necessary for an applicant's accession and the treaty is "closed." The intermediate case of "semi-open" treaties leaves admission of a new applicant in the hands of a majority of the signatory states.

³ Vienna Convention on the Laws of Treaties, May 23, 1969, Art. 15, available at: <http://www.un.org/law/ilc/texts/treatfra.htm>.

The default rule dictates that a treaty is closed unless its terms provide for open or semi-open accession (Bishop, 1971:119). In the matter of accepting new members to a treaty, a state must consent to the specific approval of all current member states, or expressly waive such consent by an open (or semi-open) accession clause. This insures that the existing parties approve changes in membership, so their rights and obligations are not disturbed without their consent (Starke, 1989:458-9). The International Law Commission (ILC) has advocated changing the default rule to make all multilateral treaties open for accession unless otherwise stated. A similar change was advocated for plurilateral treaties, when a state invited to participate in negotiations to become a founding state declined to join the treaty at that time. The treaty would be left open for such states that subsequently applied for accession. Signatory states that disapproved of the accession could hold the treaty inoperative between themselves and the acceding state.

The ILC modifications were expressed through draft articles on the laws of treaty that have not been adopted.⁴ The analysis in Section 2 shows that the prevailing default rule favoring closed-form treaties may be justified. States face incentive problems when confronted with treaty participation. Since treaty negotiation is costly, leaving all multilateral treaties open for accession by default could undermine incentives to invest in the initial negotiation and drafting of treaty agreements.

1.1. CLOSED TREATIES

According to Article 15(c), some treaties are closed treaties in which acceptance of a new member requires unanimous approval by the current signatory states. Most bilateral treaties are closed since they concern a relationship between two entities. Although closed treaties do not allow automatic accession, with unanimous consent the existing signatory states can amend the original treaty to allow accession of a non-signatory state. For example, the Association of Southeast Asian Nations Treaty (ASEAN) was amended several times to allow the accession of Brunei Darussalam, Vietnam, Laos, Myanmar, and Cambodia. However, it was not amended to permit the accession of Papua New Guinea (Chinkin, 1993:53).⁵

A closed treaty may serve a function that requires exclusivity. For example, the Treaty on the Non-Proliferation of Nuclear Weapons, signed in 1968, extended special privileges to states that manufactured and detonated nuclear weapons prior

⁴ Int'l L. Comm'n, *Draft Articles on the Law of Treaties*, Arts. 8-9, 1962 Vol II. U.N.Y.B of the Int'l L. Comm'n 167-68, U.N. Doc. A/CN.4/144. For further analysis of the ILC proposal, see Kelsen (1966:479-80).

⁵ See Association of Southeast Asian Nations (ASEAN) website at: <http://www.aseansec.org/64.htm>.

to 1967, designating these as “nuclear weapons states.”⁶ In an effort to limit the number of states that hold special privileges with regard to nuclear weapons, similar privileges were not subsequently extended to other states that manufactured nuclear explosive devices after the effective date of the treaty (Beemelmans, 1997:85).

Some closed treaties are open or semi-open to specific groups of countries, but closed to the world-at-large. For instance, the General Act of Arbitration of 1928 contained a clause which stated, “[t]he present General Act shall be open to accession by all the Heads of States or other competent authorities of the Members of the League of Nations and the non-Member States to which the Council of the League of Nations has communicated a copy for this purpose.”⁷ This Act was initially open to most non-signatory states, who were members of the original League. However, the treaty became more closed over time as more states came into existence after the treaty was formed. Some interesting questions were raised concerning Pakistan and India, which both gained independence from British India in 1947. Pakistan claimed authority under the treaty in a legal dispute against India before the International Court of Justice in 2000.⁸ India claimed that it was not bound to the treaty because it never specifically provided its consent to be bound and in fact manifested its explicit intent not to be bound in 1974.⁹ Further, India argued that Pakistan could not invoke the treaty because it was not the “continuator of British India” and therefore could not accede to the treaty due to its closed nature.¹⁰ The Court found India’s prior manifestation of not-to-be-bound intent sufficient, and denied application of the General Act.¹¹

1.2. SEMI-OPEN TREATIES

Semi-open treaties are treaties where acceptance of a new member depends on approval by a majority of the existing signatory states. These treaties invite accession, but require a majority of the signatory states to approve specific acts of accession. Although semi-open treaties generally specify the conditions for accession in the terms of the treaty, the need for specification is less critical than

⁶ Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, art. IX(3), 21 U.S.T. 483, 492-93, 729 U.N.T.S. 161, 174.

⁷ General Act of Arbitration for the Pacific Settlement of International Disputes (Geneva, 26 September 1928).

⁸ Case Concerning the Aerial Incident of 10 August 1999 (*Pakistan v. India*), 2000 ICJ 12 (2000).

⁹ *Id.* at 19.

¹⁰ Pakistan argued that the Schedule to Indian Independence transferred unto India and Pakistan all international rights and obligation upon India and Pakistan, excluding those regarding territorial issues and international organizations. *Id.* at 19-20.

¹¹ *Id.* at 25. The Court rejected each of the jurisdictional claims put forth by Pakistan and found that it lacked jurisdiction over the matter.

under the case of open treaties, given that the majority of signatory states must review and accept accession terms.

A traditional example of a semi-open treaty is the 1974 Agreement on an International Energy Program, which promotes the secure acquisition of oil. The treaty sets up a Governing Board which includes representatives of the participating states, but with a balance of power among the original signatories. The accession clause of this agreement states that a country seeking to enter by accession must gain approval of a majority of the Governing Board.¹²

One variant of a semi-open treaty is the 1993 Center for International Forestry Research Treaty, which “established a Center for International Forestry Research (CIFOR) which will be concerned with forestry research that benefits developing countries.”¹³ The treaty was left open for “original” signatories for two years, after which states seeking accession must receive approval from a majority of members of the CIFOR Board of Trustees.

Another variant of the semi-open treaty comes from the Treaty of Rome establishing the European Economic Community (EEC 1951). Although the only formal criterion for membership in the Community was a state’s “European identity,” member states have used various unwritten requirements to weigh the eligibility of new entrants. This leaves great political discretion to current member states on whether to allow accession to new applicants. Although treaty amendments require the consent of every incumbent state, accession negotiations take place between candidate members and the Commission, which is a representative organ deliberating on a majority basis.¹⁴

Although our analysis in Section 2 concentrates on semi-open treaties where accession of new states is contingent on approval by a simple majority of states, some semi-open treaties require more than a simple majority. One such treaty is the General Agreement on Tariffs and Trade: Multilateral Trade Negotiations Final Act Embodying the Results of the Uruguay Round of Trade Negotiations (GATT

¹² Agreement on an International Energy Program, TIAS 8278, 27 U.S.T. 1685; 1974 U.S.T. LEXIS 278 at *45.

¹³ Center for International Forestry Research (CIFOR), TIAS 11960, 1993 U.S.T. LEXIS 16 at *1 (March 5, 1993).

¹⁴ The EEC example is a hybrid case – with some features of a semi-open treaty and other features of a closed treaty. Although the organs of the community approve accession with a majority vote, an intergovernmental conference is necessary (with proper state ratification) in order for a new accession to become effective. At this stage, incumbent member states have the power to impose conditions for accession of new states. These conditions are often imposed with reference to: (a) the modes for extending membership and the composition or representation within EC institutions; and (b) the acceptance of all past regulations and implementation of all past directives within a given period (generally rather long). Some bargaining takes place and modifications are made at this stage.

1994), which established the World Trade Organization (WTO). Its accession clause provides that states seeking accession to the treaty (and membership into the WTO), must gain the approval of two-thirds of the present WTO membership.¹⁵ The clause also states that the Ministerial Conference may negotiate terms of agreement with the state seeking accession, creating an opportunity for negotiation for those states that may initially lack two-thirds support (Karasik, 1997:529).

The majoritarian principle that is at work in the admission of new states highlights the difference between consent to be bound in the formation of a closed treaty and consent in the case of semi-open treaties. Part II, Section I of the Vienna Convention on the Law of Treaties refers to the process by which parties officially manifest their consent to be bound to one another by the specified terms of the treaty. However, as pointed out by Kelsen (1966:480-1), in the case of semi-open accession, an original signatory agrees to be bound to a treaty knowing that treaty participation and content can subsequently be modified by a majority of signatory states. A minority signatory state may later disagree with changes brought about by the accession of a new state, but is nevertheless bound to the treaty as modified by the majority.

1.3. OPEN TREATIES

Open treaties contain clauses under which the original member states grant a right to accede to all states that are willing to agree to the terms of a treaty, though sometimes subjecting the right of accession to some general limitations. Open accession clauses are common in multilateral treaties, particularly those of general concern that promote cooperation and foster dispute resolution between states.¹⁶ For instance, the Vienna Convention on Diplomatic Relations (1961) states in Article 50 that the Convention “shall remain open for accession” to all states, United Nations members, parties to the statute of the International Court of Justice, and other states invited by the UN General Assembly to join the Convention.

Many treaties have no original signatories in the technical sense, but rather require all states who wish to join the treaty do so through accession (Perry et al., 1996:3). The

¹⁵ Besides offering an interesting example of semi-open accession, GATT 1994 demonstrates another interesting aspect to accession rules in general. While accession to a treaty puts the acceding state on equal terms with original members, there is nothing to prevent future amendments from discriminating against such states. According to GATT 1994, only the original members of GATT 1947 became original members of the WTO. All parties that subsequently joined GATT 1947 by accession were now excluded from GATT 1994 and the WTO, pending accession.

¹⁶See Bishop (1971:119) and Kelsen (1966:478-79). Hedlund (1994:295) observes that one feature of a treaty designed to enhance competition in the global airline market would be an open accession clause.

treaty may take effect once a specific number of states ratify it (Starke, 1989:458). Being party to the original group of signatory states only provides the advantage of being able to influence the treaty content. Some treaties remain open for original signatures for a set time period, after which states must enter through accession.

Open treaties do not require affirmative action by the original signatories. They are more rigid in their content formulation, since all conditions for treaty accession must be specified *ex ante*. For example, the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, December 18, 1997, (also known as the OECD Convention), is open to “non-members which become full participants in the OECD Working Group on Bribery in International Business Transactions.”¹⁷ By formulating the conditions and prerequisites for accession, the original signatory states avoid the necessity for a formal renegotiation of the treaty, thus permitting expansion without a simultaneous alteration of treaty content. Although amendments of treaty content are possible through unanimous consent in an open treaty, original states can *de facto* achieve a greater protection of their own interests and the integrity of the treaty, while at the same time securing the freedom of entry that open-accession clauses provide.

2. FORMATION OF INTERNATIONAL TREATIES: AN ECONOMIC ANALYSIS

In deciding treaty participation, rational states compare the net payoff without international cooperation with that obtainable through international cooperation in pursuit of a given goal. We think of the payoff obtainable by states in the absence of international cooperation as the “self-help” payoff. The highest self-help payoff represents the opportunity cost that states face when contemplating participation in an international treaty. States may be more or less equipped to pursue specific goals in the absence of international cooperation, and may derive different net benefits from such pursuits. That is, states face different opportunity costs in treaty participation. The payoff for state i , obtainable without treaty participation, is $V_i^1(s)$ when undertaking an effort level s , where V_i^1 is assumed to be strictly concave. The superscript signifies that the state is not cooperating with other states (only 1 state is involved, the state itself). The maximum payoff obtainable for each state without participating in a treaty is \hat{V}_i^1 , the state’s opportunity cost in treaty participation.

¹⁷ Argentina-Brazil-Bulgaria-Chile-Slovak Republic Organization for Economic Cooperation and Development: Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, December 18, 1997, 37 I.L.M. 1, 6 (1998).

By engaging in international cooperation, states may exceed their opportunity costs. This may be due to economies of scale in the pursuit of the common goal, the presence of gains from trade, or benefits from coordination and network effects. International treaties may serve to secure these benefits. In an N -state treaty, $\pi(s_{NT}, N)$ represents the benefit enjoyed by *each* state participating in the treaty. The benefit from treaty participation π is an increasing function of s_{NT} , the effort level mandated by the treaty (hereinafter referred to as treaty content), and N , the number of participants in the treaty. The treaty variable s has two subscripts: the variable subscript N refers to the number of treaty participants and the fixed T signifies that it is the treaty content.¹⁸ A treaty agreement with no substantive content generates no benefit: $\pi(0, N) = 0$. Similarly, no benefit can be derived from a treaty without other states: $\pi(s_{T}, 1) = 0$. Further, states obtain non-increasing marginal benefits from more substantive treaty content: $\pi_{ss} \leq 0$.

We consider both complementarity and substitution between treaty content and participation. Complementarity may characterize international agreements for adopting new technological standards with network externalities, or situations distinguished by weakest-link problems, such as the fight against terrorism. In these cases, the treaty effort level and the number of participants are complements: $\pi_{SN} > 0$. In other situations such as environmental cleanup or financial contributions to fight hunger in third world countries, one state's increase in effort can make up for another state's reduction. The treaty effort level and the number of participants are then substitutes: $\pi_{SN} < 0$.

The *total* payoff for state i , when participating in an N -state treaty with content s_{NT} , is $V_i^N(s_{NT}) = V_i^1(s_{NT}) + \pi(s_{NT}, N) - c_i$. Here V_i^1 represents the state's *direct* net benefit from undertaking the effort specified by the treaty: if state i undertakes effort level s_{NT} by itself without joining a treaty, then its benefit is $V_i^1(s_{NT})$. Once the state joins the treaty, π is the *additional* benefit from undertaking the effort in the company of other participating states, and c_i represents the costs of negotiating and drafting the treaty, as well as the political cost of joining the treaty. The superscript for V refers to the number of treaty participants, where 1 indicates the payoff without participating in a treaty. A superscript greater than 1 represents the state's total net payoff, including gains from cooperation and negotiation costs. We simplify notation by assuming that the negotiation cost for a

¹⁸ The variable N appears twice in the benefit function, π . It has both a direct effect on the benefit from participating in a treaty (i.e., widespread membership may affect benefits) and an indirect effect through the treaty content (i.e., changes in membership may affect treaty content).

state is constant and independent of the number of states involved in negotiating a treaty. To ease the notational burden further, the negotiation cost is the same whether the state negotiates to form a treaty with other states or requests accession to an existing treaty, although we expect that the former exceeds the latter. It is possible that both the payoff V_i^1 and the benefit from treaty participation π are present discount values of future benefits. The negotiation cost of a treaty is borne only once. Any costs suffered in future periods, for example minor political consequences, can be subsumed as part of the payoff V_i^1 .

2.1. SETTING THE STAGE: INITIAL TREATY FORMATION

States can join an international treaty as original signatory states or by acceding to an existing treaty. Accession to a treaty presupposes the existence of a treaty formed by a group of founding states. To set the stage for analyzing treaty accession, first consider the process of treaty formation by a group of states. Founding states become the incumbent states that control entry of new states applying for accession according to rules set forth in the initial treaty agreement.

Without loss of generality, consider the simplifying case of two states forming a treaty. When two states form a treaty with content s_{2T} , each state's payoff from participating in the treaty becomes $V_i^2(s_{2T}) = V_i^1(s_{2T}) + \pi(s_{2T}, 2) - c_i$. Negotiation of the treaty content s_{2T} by a Nash bargaining game is considered. The bargaining powers for the two risk-neutral states, state 1 and state 2, are θ and $1-\theta$ respectively. Recall that \hat{V}_1^1 and \hat{V}_2^1 are the opportunity costs of treaty participation that each state can obtain through its own effort without participating in a treaty. These are their threat points in the bargaining problem or their best alternatives to a negotiated agreement. The Nash bargaining solution to the 2-state treaty negotiation, s_{2T} , is the solution to the problem:

$$\begin{aligned} \max_s & (V_1^2 - \hat{V}_1^1)^\theta (V_2^2 - \hat{V}_2^1)^{1-\theta} = (V_1^1(s) + \pi(s, 2) - c_1 - \hat{V}_1^1)^\theta (V_2^1(s) + \pi(s, 2) - c_2 - \hat{V}_2^1)^{1-\theta} \\ (1) \quad & s.t. \quad V_1^2 \geq \hat{V}_1^1, \quad V_2^2 \geq \hat{V}_2^1. \end{aligned}$$

This Nash bargaining solution can vary with different scenarios. We highlight the importance of different factors in determining the outcome of the bargaining solution.

(A) We should stress the importance of the magnitudes of the benefit from treaty participation π and the bargaining and negotiating costs c_i . High benefits from international cooperation and low bargaining costs are required before states will

agree to international cooperation. Otherwise, bargaining room for states to achieve acceptable treaty content may be lacking and no treaty will be signed.

As a simple example, consider the payoff $V_i^1(s) = b_i s - a_i s^2$ and the benefit from joining the treaty $\pi = \alpha s$, where the dependence of π on the number of treaty participants is suppressed. Then $b_i/2a_i = \arg \max V_i^1$ and $(b_i + \alpha)/2a_i = \arg \max V_i^2$. The optimal level $b_i/2a_i$ is chosen by state 1 in the absence of a treaty. The level $(b_i + \alpha)/2a_i$ is the desired treaty content for state 1, without considering the other state's constraint or any bargaining issues. The desired treaty content is greater than the optimal effort without joining the treaty, because higher effort leads to higher mutual benefit from treaty participation. Also, the opportunity cost for state 1 with no treaty is $\hat{V}_1^1 = b_i^2/4a_i$. Under a treaty, the best payoff that state 1 can hope for is $\tilde{V}_1^2 = [(b_i + \alpha)^2/4a_i] - c_i$. State 1 will participate in a treaty only if $[(b_i + \alpha)^2/4a_i] - c_i > b_i^2/4a_i$. This means that $\alpha(2b_i + \alpha)/4a_i > c_i$. Thus, the higher the benefit from international cooperation α and/or the lower the cost of negotiation c_i , the more likely the inequality holds. It then becomes more likely that state 1 will participate in a treaty formation. This matches our intuition exactly.

Note that a high potential benefit from cooperation and a low transaction cost to participate in a treaty only provide the backdrop for a state's willingness to join a treaty. Whether a state indeed participates in the formation of a treaty rests on the negotiation process and treaty content. Thus, in the following, we assume that it is beneficial for a state to participate in treaty formation, and turn to the outcome of the Nash bargaining process itself.

(B) Consider the case of *homogeneous* states with identical preferences and costs of negotiation and drafting, and the same gains to cooperation ($V_i^2(s) - \hat{V}_i^1 = V_2^2(s) - \hat{V}_2^1$). The bargaining power of states does not matter here, since their interests coincide exactly. The treaty content, $\arg \max V_i^2(s) - \hat{V}_i^1 = (V_i^1(s) + \pi(s,2) - c_i - \hat{V}_i^1)$, maximizes net payoff for each state, and a treaty is formed.¹⁹ Convergence of the interests of homogenous states leads to the best outcome possible. In general, when states have similar preferences and similar negotiation and drafting costs, there is little disagreement concerning treaty content, and a treaty will thus be formed. This explains why many regional treaties are formed among rather homogeneous states.

(C) Next consider *heterogeneous* states with *diametrically opposite bargaining strengths*. The states' preferences V_i differ and one state, say state 1, has overwhelming bargaining

¹⁹ Using the same payoff and benefit-from-treaty functions as in case (A), the effort level $(b_i + \alpha)/2a_i$ is the treaty content desired by both states.

strength. In the limiting case where state 1 has all of the bargaining power, the bargaining solution must satisfy $\max V_1^2 - \hat{V}_1^1$ s.t. $V_2^2 \geq \hat{V}_2^1$. Thus, due to its superior bargaining power, state 1 realizes most, if not all, the gains from cooperation. The treaty content maximizes state 1's net payoff, while the less persuasive state 2 remains close to its threat point. An extreme example involves a state with little potential gain being strong-armed into signing a treaty.²⁰

(D) Now turn to the case of *heterogeneous* states with different preferences but very *similar bargaining powers*.²¹ Not surprisingly, the tension created by different payoff patterns but equal bargaining power to pull and push the treaty content would be greatest under this circumstance. In particular, when states are even in their bargaining power, at the optimal treaty content, the net payoff from treaty participation for one country is increasing while that of another country is decreasing. This is because the treaty content must satisfy: $(V_1^2(s) - \hat{V}_1^1) \cdot \partial V_2^2 / \partial s + (V_2^2(s) - \hat{V}_2^1) \cdot \partial V_1^2 / \partial s = 0$. Since the coefficients in the equation represent the gains to each state from joining the treaty and are positive, the two partials in the equation must be opposite in sign. That is, when the treaty content is increased, the state with the positive partial will gain while the other state loses. We submit that many treaties signed by "equal-partner" countries, for example, the 1951 treaty establishing the European Coal and Steel Community, the 1956 treaty establishing the European Atomic Energy Community, and the 1957 Treaty of Rome establishing the European Economic Community, fit the description of this case.

The analysis of these different cases clarifies the resulting formation of treaties with different countries. The first important criterion for the formation of an international treaty is a substantial gain in cooperation and reasonable bargaining cost for each participating state. Beyond that, we observe that homogeneous states are most likely to form an international treaty to cooperate. In such cases we surmise that the treaty would likely be open or semi-open. Any state willing to join the open treaty, accepting treaty content as is, would be welcomed by the signatory states. Likewise, acceptance by a majority of signatory states of the accession of a new state to a semi-open treaty means that the interests of all other states with similar preferences are well served.

²⁰ Treaties signed by one country to cede a city or a port to another country may fit this scenario. In the Treaty of Nanking (1842) which ended the first opium war, China opened additional ports of trade, eliminated trade barriers, ceded the offshore island of Hong Kong to Britain, and allowed Britain's drug trade to continue despite the Chinese ban. Signing the treaty helped the Chinese to avoid further war with the British.

²¹ This is the basic Nash bargaining problem that Nash (1950) discussed. In our notation, this is the case when $\theta = 1/2$.

In the case of heterogeneous states with an overwhelming bargaining strength for one party, the strong-armed state enjoys most of the benefit of cooperation. The weaker state gains little. We surmise that the treaty would most likely be closed, since the stronger state may refuse to give away any stake resulting from the negotiation advantage that it enjoys. In the more general case, a very strong state may sustain a closed treaty with a few weaker states. For example, the old Soviet Union may have forced other countries to join their version of NATO. On the other hand, if a group of weak states is capable of extracting concessions from a strong state while negotiating a treaty, then the strong state would have preferred to sign many separate treaties with individual weaker states.²²

When states are heterogeneous but have fairly even bargaining powers, in order for a treaty to be formed, the range of effort level with potential gain from cooperation must be large for all participating states. Otherwise, there is insufficient bargaining room for the states to negotiate. If one state desires high treaty content while another wants low content, the resulting treaty content is typically a compromise. With any change in treaty content, stakes change for some parties. Thus, there is little reason for founding states to be amenable to new treaty content. However, if additional treaty membership with no alteration of treaty content creates large additional gains for every state, then an open treaty may be in order. This is especially true if the founding states anticipate a pool of future accession applicants who are amenable to existing treaty terms.

Not only does the expected number of potential entrants matter, but the typology of states expected to request accession may also matter. Founding states may prefer not to accept an accession application from one state while accepting an application from another state. For example, the founding states accept accession applications from states willing to increase the content of the treaty undertaking, but not from others. These factors can also help determine whether the treaty is closed or left open for accession.

Thus far, we have concentrated on treaty formation and on the interests of the founding states. Once the treaty is formed, the interests of a potential newcomer state and interactions between the newcomer and the signatory states become important. In our notation, after a treaty is formed, the payoffs of the two states are denoted \hat{V}_1^2 and \hat{V}_2^2 . With this as a starting point, we now turn to the accession process.

²² See the related issues on Bilateral Investment Treaties discussed in Section 3.

2.2. TREATY ACCESSION

Once a treaty is formed, non-signatory states may wish to join the treaty. The accession process through which other states may join an existing treaty is generally set out in the original treaty agreement. The three accession types are discussed separately.

2.2.1. “Closed” Treaties: Unanimous Consent

Suppose a new state applies to join an existing treaty where expansion of the treaty requires unanimous consent of the signatory states and an amendment to the treaty. Consider the region where increased treaty participation generates increasing benefits for all states ($\pi_N > 0$). In the limiting case where the new state has preferences identical to those of the incumbent signatory states, incumbents welcome accession, as more states joining the treaty increases the benefit from treaty participation without modifying treaty content. The more problematic case emerges when a third state desiring different treaty content applies to join the treaty.

In a closed treaty where unanimous agreement of the incumbent states is required, either state would veto the proposed entry if expansion necessitates a treaty amendment that lowers its payoff compared to the original treaty agreement. Thus, incumbent states approach an application for new entry by first calculating whether an additional participant in the treaty is beneficial, assuming that the entrant accepts the treaty content (possibly amended from the previous content) proposed by them:

$$(2) \quad \max_s (V_1^3 - \hat{V}_1^2)^\theta (V_2^3 - \hat{V}_2^2)^{1-\theta} \quad s.t. \quad V_1^3 \geq \hat{V}_1^2, \quad V_2^3 \geq \hat{V}_2^2.$$

Setting aside the interest of the newcomer, state 3, for the moment, this treaty amendment problem is similar to the bargaining problem that states 1 and 2 faced when negotiating the original treaty agreement. One difference is that the opportunity costs faced by the original signatory states have changed since they joined the original treaty. When considering the application for entry by a third state, the incumbent states look at the higher payoffs generated by the original treaty (\hat{V}_1^2 and \hat{V}_2^2) as their opportunity costs, rather than the lower optimal self-help payoffs (\hat{V}_1^1 and \hat{V}_2^1). While admitting a third state creates additional value-enhancing opportunities for both states, new negotiations may entail new costs similar to those at the formation stage of the original treaty. If treaty expansion offers no Pareto superior treaty content for the incumbent states, then the current treaty arrangement is preferable and entry by the third state is denied.

On the other hand, high increases in benefits from more states participating in the treaty and low renegotiation costs could produce a range of Pareto superior treaty arrangements involving admission of the third state. Let s'_{3T} be a solution to the Nash bargaining problem (2) in the enlarged treaty environment. More treaty participants increases the net payoff from joining the treaty and the range of agreeable treaty obligations widens for an individual incumbent state. Figure 1 illustrates this for state 1. The existing treaty content between states 1 and 2 is given by s_{2T} , making \hat{V}_1^2 state 1's payoff derived from the original 2-state treaty. With a third state joining the treaty, the general net payoff function for state 1 shifts up from V_1^2 to V_1^3 .²³ The range of treaty content that makes state 1 at least as well off as in the original treaty spans s_{3T}^L to s_{3T}^U . Any proposed treaty amendment that lies in this region would be agreeable to the incumbent signatory state. The solution to the incumbents' bargaining problem generates the *proposed* treaty terms for the third state applying for admission.

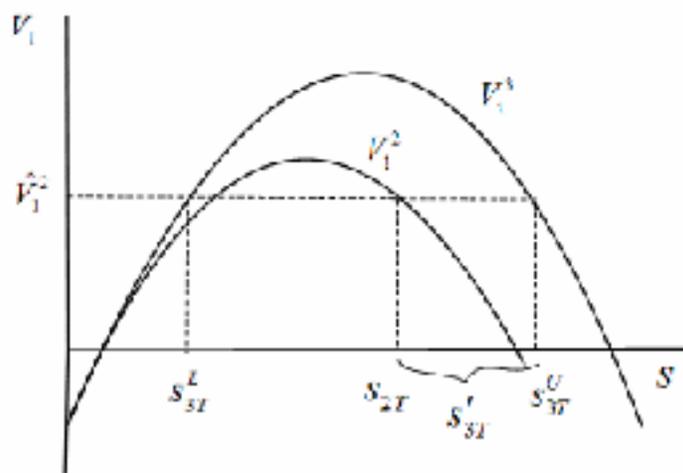


Figure 1. *Agreeable Treaty Content for Incumbent Signatory State*

²³ Figure 1 makes an implicit assumption that the cost of negotiation for an additional entrant equals the original negotiation cost to create the treaty. If the negotiation cost for the incumbent state is lower in the case of accession by a third state than in the case of forming the treaty, for example, then the vertical intercept of V_1^3 should be higher than the vertical intercept of V_1^2 .

Treaty amendments made in contemplation of membership expansion may increase or reduce substantive treaty obligations. Whether the existing states propose a treaty amendment s'_{3T} containing higher or lower treaty obligations than the original treaty content, s_{2T} , depends on whether the number of treaty participants and the treaty content are complements or substitutes. In general, setting aside any bargaining problems and constraints imposed by other states wishing to join a treaty, consider the first-best payoff maximization problem for an existing state in an N -state treaty: say $\max_s V_1^N$ for state 1. The first-best treaty content desired by the state, s_T^* , must meet the condition that net marginal payoff is zero. Simple comparative static results show that $ds_T^*/dN > 0$ if the treaty content and the number of treaty participants are complements, and $ds_T^*/dN < 0$ if they are substitutes.²⁴ If treaty content and the number of treaty participants are complements, an increase in the number of states joining the treaty raises the marginal impact of efforts on payoff. Individual states would prefer a higher treaty obligation (more effort level) when more states join the treaty. Thus, when treaty content and the number of treaty participants are complements, treaty content proposed by the incumbents falls in the region identified by a brace in Figure 1. (The opposite would hold for substitutes.)

Assume complements so that each participating state is willing to undertake higher treaty obligations when more states join the treaty. When confronted with the prospect of treaty expansion brought about by a third state's application for entry, both states wish to raise the level of treaty obligation and to amend the treaty to allow for admission. In this case, the bargaining outcome between the incumbent states must end with a proposal for amendment that contains higher treaty obligations than the original treaty. In our notation, the proposed treaty content s'_{3T} is greater than the existing treaty content s_{2T} for the two incumbent states. (Opposite results obtain in the case where treaty participation and treaty content are substitutes.)

When the treaty amendment s'_{3T} is proposed, state 3 needs to verify whether the obligations imposed by the proposed treaty amendment provide an opportunity to improve upon its status quo payoff. For a third party state without alternative treaty opportunities, the status quo payoff coincides with the opportunity cost

²⁴ From the first order condition, $ds_T^*/dN = -\pi_{SN}/(\partial^2 V_1^1/\partial s_T^2 + \pi_{SS})$. Since $\partial^2 V_1^1/\partial s_T^2 < 0$ and $\pi_{SS} \leq 0$, $ds_T^*/dN > 0$ when $\pi_{SN} > 0$ (the case of complements) and $ds_T^*/dN < 0$ when $\pi_{SN} < 0$ (the case of substitutes).

obtainable in the absence of treaty participation. State 3 must consider whether $V_3^3(s'_{3T}) \geq \hat{V}_3^1$. If so, state 3 joins the original signatory states, and the original treaty content is amended to $s_{3T} = s'_{3T}$. On the other hand, if $V_3^3(s'_{3T}) < \hat{V}_3^1$, the proposed treaty amendment generates a payoff for state 3 lower than its opportunity cost, and state 3 is not willing to join the treaty under those terms. In this case, state 3 may have the opportunity to make a counter-offer to the incumbent states, proposing different terms for the amended treaty.

Recall that the proposed treaty amendment, s'_{3T} , was the solution to the bargaining problem between the incumbent states. However, in addition to the specific proposed treaty content s'_{3T} , the possibility of entry by state 3 generates a range of Pareto superior alternatives for states 1 and 2. Thus the lack of acceptance of the proposed treaty content s'_{3T} by state 3 may still leave a range of potentially acceptable alternative terms for the two incumbent states. That is, counter-offer by state 3 may not be in vain. Figure 2 focuses on the choice of the newcomer state. It illustrates cases in which the third party state finds the initially proposed terms s'_{3T} unacceptable and makes a counter-offer, with a request for concessions from the incumbent states. The third-party state's rejection of the initial proposal is inevitable when the payoff under the proposed terms $V_3^3(s'_{3T})$ is less than its opportunity cost \hat{V}_3^1 . In turn the incumbent states need to entertain and evaluate the counter-offer.

Subcase A. Third State Applies for Entry Requesting Minor Concession

In Figure 2, the graph on the left illustrates the case where the third state applies for entry asking for a minor concession. The incumbent states' proposed treaty terms, s'_{3T} , call for an increase over obligations undertaken in the original treaty, s_{2T} . This proposed amendment is unacceptable to state 3, since it would generate lower payoffs for this state than those obtainable without treaty participation. To generate a positive return from joining the treaty, state 3 should propose an alternative treaty content less than s'_{3T} . In fact, any treaty content less than s'_{3T} and greater than s_{2T} benefits the acceding state as well as all incumbent states. We use s'_{3T} as the proxy for this mutually beneficial treaty modification, and abstract from further bargaining problems between acceding and incumbent states. The counter-offer s'_{3T} provides treaty obligations above those of the original treaty,

s_{2T} , but lower than those of the initial proposed amendment. Since states 1 and 2 prefer a higher level of treaty content given more participants, they find this minor request for concession acceptable and allow entry by state 3. In this case, a 3-state treaty is formed with treaty obligations set at $s_{3T} = s'_{3T}$.

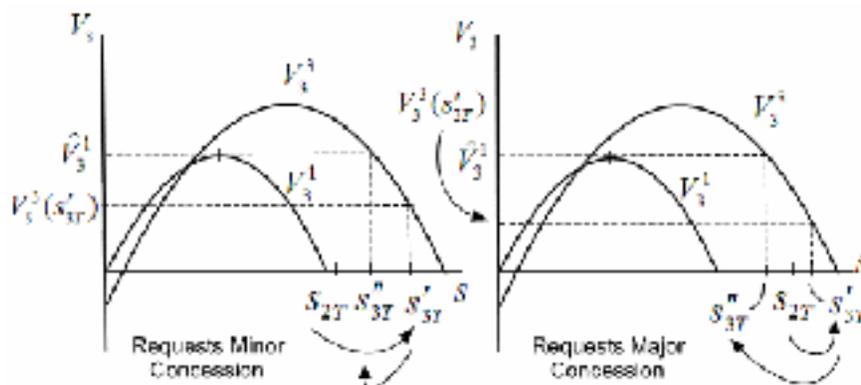


Figure 2. Third-Party State Requests Concessions at Time of Accession

Subcase B. Third State Applies for Entry Requesting Major Concession

The graph on the right panel of Figure 2 illustrates the situation when a more substantial concession is requested by the third-state applicant. The initial treaty amendment s'_{3T} proposed by the incumbent states again imposes higher obligations than those in the original treaty (s_{2T}). This proposed amendment is unacceptable to state 3. In order to make it worth its while to participate in the treaty, state 3 makes a counter-offer proposing lower treaty obligations s'_{3T} . This not only constitutes a departure from the proposed treaty amendment, s'_{3T} , it also lowers the treaty obligation below the original treaty value s_{2T} . This counter-offer by state 3 represents a major concession request from the incumbent states, since they prefer raising treaty content in concert with an expansion of membership.

Whether the original signatory states are willing to make this larger concession depends on the circumstances of the case. In the relevant range where expansion of membership brings large positive benefits, admitting state 3 brings potential benefits that may lead incumbent states to compromise on the treaty terms. That is, although the incumbent states prefer to increase treaty obligations as

membership increases, they are willing to compromise treaty content to promote membership expansion as long as the payoffs from the treaty enlargement are greater than the payoffs from the original treaty. That is, concessions are made by the incumbents if $V_1^3(s_{3T}'') \geq \hat{V}_1^2$ and $V_2^3(s_{3T}'') \geq \hat{V}_2^2$. When these conditions hold, the original treaty is amended and the states form a 3-state treaty with treaty obligations set at $s_{3T} = s_{3T}'$.

On the other hand, if $V_1^3(s_{3T}'') < \hat{V}_1^2$ or $V_2^3(s_{3T}'') < \hat{V}_2^2$, then state 1, state 2, or both object to the proposed treaty amendment s_{3T}' . No treaty content is agreeable to the incumbent states and the newcomer state. In this case, the application of the third state for entry is rejected and no treaty expansion takes place.

Given multiple incumbents in an N -state treaty, similar considerations drive the process of treaty amendment in contemplation of entry of a new party state. Two additional observations should be made at this point. First, a state may apply for membership to a treaty even though the applicant state is unwilling to accept the current treaty content. This may be so because the third-party state knows that incumbent states would benefit from membership expansion, and that its application for accession opens the opportunity for renegotiating the existing treaty terms. Even in a closed-treaty regime where any state may veto entry of a new state, the net benefits of treaty expansion may be high enough to induce each incumbent state to compromise its own position in order to promote entry of the third state.

Second, when multiple states are interested in applying for admission, the positions of third-party states may be strengthened if they apply as a block, rather than sequentially. Notwithstanding the increase in bargaining power of the new block, the gain in payoffs may make a difference. Major concessions may be unacceptable to one or more incumbent states if proposed by a single applicant. When multiple third-party states apply for admission as a block, the greater magnitude of the benefit from large-scale expansion may justify a larger concession on treaty content. This may explain the stylized fact that treaty expansions for EU membership include several new states at each time of enlargement.

2.2.2. "Semi-Open" Treaties: Consent by Median-Voter State

For semi-open treaties, entry of a new member state requires approval by a majority of the existing signatory states. It is assumed that the process of treaty expansion is carried out through majority vote. Thus, an application of the Median Voter theorem makes the impact on the welfare of the median voter state, state

m , the focus of attention in our analysis (Downs, 1957; Black, 1958).²⁵ Given that the content of the treaty obligation is the critical variable, the median voter state has median preferences with respect to the treaty content, s . In an application for entry by a newcomer state, the median state decides whether the application is accepted, leading to an expansion of the treaty from N to $N + 1$ participants. In reaching this decision, the median state confronts the following problem:

$$\max_s V_m^{N+1}(s) = V_m^1(s) + \pi(s, N + 1) - c_m \quad s.t. \quad V_m^{N+1} \geq \hat{V}_m^N.$$

Similar to the previous case of a closed treaty, we assume that negotiations on treaty content take place when states apply for accession and incumbent states have discretion whether to grant admission. Incumbent states may use this opportunity to modify the level of treaty obligations specified in the treaty and newcomer states may ask for concessions. Assume that $s'_{(N+1)T}$ is the proposed treaty content offered to the newcomer, state $N + 1$. State $N + 1$ compares the payoff under the prospective treaty arrangement to the payoff obtainable without joining the treaty. If the treaty payoff is higher than its opportunity cost, state $N + 1$ accedes. A treaty with $N + 1$ states is formed with $s_{(N+1)T} = s'_{(N+1)T}$ as the treaty content.

On the other hand, if the proposed treaty terms are unacceptable to state $N + 1$ it may request concessions. The outcome of the deliberations concerning the proposed accession would reflect the preferences of the median state m , according to the Median Voter theorem. If the concessions requested by the acceding state $N + 1$ are acceptable to state m , the application for entry is approved and an enlarged treaty with $N + 1$ states is formed. Otherwise, no expansion of the existing treaty occurs.

2.2.3. "Open" Treaties: Take It or Leave It

Treaties with open accession provide an open invitation (at times, subject to limitations) to non-signatory states to join the original treaty signed by the founding states. There is no need for negotiations between incumbent and newcomer states at the time of accession. Although open accession clauses are more common in

²⁵The assumptions of the Median Voter theorem include single-picked preferences and non-alienation. In this context, single-picked preferences with respect to s imply that states prefer treaty obligations closer to their ideal first-best point than treaty obligations that are further away. Non-Alienation implies that all states have an interest in participating in the deliberation through voting and that even states holding extreme preferences will not withdraw from the collective deliberation or be alienated from the decision process.

multilateral treaties promoting international cooperation between states, we examine the simple case of two founding states. There are two aspects to the problem. First, the founding states start negotiating to see if both states benefit from forming a treaty, assuming that the treaty will not be open. Let the proposed closed treaty content be the bargaining solution to (1), leading to payoffs \hat{V}_1^2 and \hat{V}_2^2 for the two states. Next, if the founding states expect future applications for accession to the treaty, they are confronted with another bargaining problem. They may adjust the treaty content, leaving the treaty open to reflect their expectations for enlargement and easing the cost of future negotiation. Let's say that N^E is the expected number of states that will apply for accession. The founding states will bargain to reach a level of treaty obligation that maximizes their expected gains under the enlarged treaty. In particular, the bargaining problem with an open treaty becomes:

$$(3) \quad \max_s (V_1^{N^E} - \hat{V}_1^2)^\theta (V_2^{N^E} - \hat{V}_2^2)^{1-\theta} \quad s.t. \quad V_1^{N^E} \geq \hat{V}_1^2, \quad V_2^{N^E} \geq \hat{V}_2^2$$

Note that the incumbent states' default position in this second Nash bargaining problem is given by the best payoff under the alternative 2-state closed treaty. Only when the prospect for treaty enlargement increases both incumbents' expected payoffs do the founding states leave the treaty open for accession while setting treaty content in expectation of such enlargement. If no treaty content satisfies (3), then the incumbent states do not support treaty expansion and consequently settle for a closed treaty structure. This may happen in situations where the states perceive that a bilateral or plurilateral treaty creates an advantage for the member states, and that such an advantage will vanish if the treaty is expanded through accession of third states.

On the other hand, if $s_{N^E T}$ is the solution to (3), then an open treaty is formed with treaty content specified as $s_{N^E T}$. The founding states' decision to leave the treaty open for accession allows newcomer states to join the treaty as originally specified without the need to negotiate entry or to obtain approval from incumbent states. Entry is granted when the acceding state agrees to be bound by the original treaty. If the terms are not acceptable, the newcomer state can still apply for entry, requesting that the terms of the treaty be modified. But such modification should be carried out through treaty amendment, as if the treaty were a closed treaty.²⁶

²⁶ Treaties left open for accession usually limit admissibility of reservations at the time of accession. This pre-commitment strategy limits strategic behavior and hold-up problems by third

3. CONCLUSION

In this paper we develop a stylized model of treaty formation and accession. We distinguish between three modalities with which states can become party to an international treaty according to the procedures set forth by the Vienna Convention on the Law of Treaties: (i) Closed treaties for which treaty membership expansion requires the unanimous approval of the existing signatory states; (ii) Semi-open treaties where treaty expansion can be approved by a majority of signatory states; and (iii) Open treaties that offer third states the option to accede by expressing their intent to be bound to the existing treaty terms.

Our analysis can easily be extended to include variations such as having the most-favored nation clause incorporated into the original treaty, under which both signatories agree that if state 2 makes another relevant treaty with a third state, the terms of the second treaty apply to state 1 as well. If similar treaty content for the second treaty would also increase its payoff, state 1 would like to be guaranteed the same extra benefit created by the new alliance between states 2 and 3. The most-favored nation clause can also reduce the temptation to state 2, making it more difficult for state 3 to seduce state 2 to create a new treaty that bypasses the prior agreement made in the original treaty between states 1 and 2. These pressures make it advantageous for the original signatory states to insist on a closed treaty that includes a most-favored nation clause. A more stringent form of closed treaty helps a state protect itself against future unpleasant surprises and increases its bargaining power when a third nation attempts to steer away the cooperation effort from one of the signatories.

Bilateral Investment Treaties (BITs) have become an important instrument to attract foreign investment by many emerging economies. Often, investors in a (home) country are not confident about the investment environment of a potential host country. A potential host country believes that it would benefit from signing a treaty, conceding to favorable investment conditions that set a stable and advantageous framework for foreign direct investment deals in the host country. In BITs, the signatories agree to a set of rules governing investments made by home country investors in the jurisdiction of the host country. Our analysis can help explain why there are a growing number of BITs, but few multilateral investment treaties. Consistent with the predictions of our model, BITs are typically not open to accession by other states, as they are often concluded among relatively heterogeneous states (an advanced economy and a less-developed country). Since the more developed nation has dominant trading and negotiating power, treaty content favors the dominant nation. Dominant states tend to duplicate the terms

states at the time of accession. States wishing to accede to an existing open treaty have little opportunity to renegotiate treaty terms or to request unilateral exemptions or concessions.

of BITs, using the same treaty content with different partners in different bilateral treaties. The advantage of using multiple BITs over a single multilateral treaty is that the dominant state thus avoids being out-voted by the less developed countries. Instead, it does not have to make concessions, and can maintain its dominant power and dictate the terms of each BIT.

In practice, when states face the prospect of a multilateral international agreement, two interrelated choices need to be made. First, states must decide whether to be among the promoters of the international treaty, engaging in the negotiations for its drafting and signature. Second, signatory states have to decide whether to leave the treaty open for accession by other states and, if so, under what conditions. This paper reveals the effect of the choice of treaty form on the evolution of treaty content given the different expansion mechanisms set forth by these regimes. In turn, these findings help predict when states may join the original founding states and when they instead would prefer to wait and accede to the treaty at a later time.

This paper further unveils an important interrelationship between the chosen form of treaty and its substantive content. When a treaty is left open and the accession of other states is expected, treaty content is set optimally on the basis of incumbent states' expectation of treaty enlargement. This may alter treaty content from that which would be chosen either under other treaty forms or if no expansion was expected. Open treaties simplify the expansion process, but impose uncertainty costs on incumbent states. Founding states calibrate treaty content on the basis of their expectation of enlargement, but such expectations may not be fulfilled, or may be fulfilled with delay. In this context, time preference may become a relevant factor in determining the timing of treaty participation for given states.

Another interesting insight is the paradoxical result that closed treaties may at times be conducive to greater expansion than open treaties. While expanding a closed treaty through treaty amendment imposes greater transaction costs, it allows tailored negotiations that may render the treaty acceptable to a newcomer state that might not have been acceptable under the original terms, even if the treaty had been left open for accession.

Further work should be carried out to collect data and test our results beyond the anecdotal evidence offered in this paper. In order to carry out such empirical testing in the context of multilateral treaties it would be useful to focus on specific types of treaties where the international obligations created by the treaty are limited to one narrow and well-defined sphere of activity (e.g., extradition, mutual recognition of medical degrees, mutual access to territorial waters, freedom of movement for unskilled workers). A quantitative analysis in the context of broader treaties such as the WTO, the Treaty of Rome and subsequent European treaties,

might be less illuminating, inasmuch as the multiple dimensions of cooperation are confounded, making it difficult to ascertain the degree of “homogeneity” or “heterogeneity” of the participating states. The empirical analysis of specific areas of international law would allow the use of data to support or refute the predictions of our model.

Subsequent work should also consider the dynamics of endogenous treaty participation. There is an unavoidable tradeoff between treaty content and participation. With heterogeneous states, an increase in the number of states increases network and coordination benefits for all participating states, but exacerbates diversity, making it harder to select treaty content that reflects each state’s ideal. The results of this paper may provide a basis for understanding when to expect universal multilateral treaties and when to expect formation of multiple treaties among homogeneous states with more limited participation. Adjustments to treaty content and participation may lead to a gradual clustering of states, with the formation of many different treaties that optimally balance the benefits of expansion with the costs brought about by increased heterogeneity in participation.

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