

PART I

# **Networks as Structure**

International and  
Domestic Consequences



# Globalization and the Social Power Politics of International Economic Networks

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**D**espite unprecedented economic growth in recent years, economic globalization is causing growing inequalities within and between states (United Nations 2005). This idea is ubiquitous. Politicians everywhere campaign on it; nongovernmental organizations mobilize around it; and academics and intellectuals study it (Mazur 2000). Data corroborate the story. Trade liberalization might improve global economic prosperity, but it is also marginalizing the world's poorest countries, creating a global political economy that destabilizes weak states and spreads inequality among them (Wallerstein 1974; Nemeth and Smith 1985). Trade, from this point of view, is not just about money or goods; it creates power politics, making poor countries worse off, robbing them of the material capabilities necessary to defend their interests in an increasingly integrated world marketplace. A flood of recent protests and scholarship emphasizes that institutions such as the World Trade Organization (WTO) or preferential trade agreements (PTAs) such as the North American Free Trade Agreement (NAFTA) only aggravate the problem (Dowlah 2004). Meanwhile, economists are concerned that PTAs are at odds with the goals of the multilateral trade regime, diverting trade from more efficient to less efficient producers for political reasons and obstructing multilateral negotiations and initiatives (Bhagwati 1993; Schott 2004).

In this chapter we adopt a “network as structure” perspective to consider the rise and evolution of structural power inequalities in the international political economy; in it, we contrast inequalities in social power between states that result from relative possession of social capital due to density of ties through PTAs with inequalities in material power that result from relative possession of resources such as guns and butter. Our argument is a simple one. The globalization debate revolves around the consequences of increased

trade and investment for inequality, both within and between states. That debate has focused mainly on material inequality. Examining the social networks formed by PTAs produces a different view of inequality, one which may redress in part the material effects of economic transactions. Trade is a set of transactions between agents that allocates information and material resources and, in the process, structures states' material roles in the global economy (Snyder and Kick 1979; Smith and White 1992). We argue that the formal organizations that regulate trade (PTAs), like other intergovernmental organizations (IGOs), generate informal social networks through joint membership. These networks give some states more social capital than others, structuring group relations and creating a social dimension of power politics that also shapes inequality (Hafner-Burton 2005; Hafner-Burton and Montgomery 2006).

PTAs are spreading rapidly—hundreds have already been notified to the WTO and more are being created. Are these agreements bad news, not just for global prosperity but also for global political equality? We do not adopt the standard economic refrain that a rise in absolute global economic prosperity offsets the importance of how those gains are distributed (Wolf 2004). Rather, we accept that the world economy is characterized by substantial distributional inequalities between states, generating material power politics and shaping development. But the increasing material gap between the poor and the rich is not the whole story, and international institutions are not uniformly making the problem worse, as some have argued, or better, as others think. Preferential trade arrangements such as NAFTA more and more govern economic exchange, shaping material power relations derived from sums of money or financial transactions—although there is some debate about whether these organizations have an appreciable effect on material wealth and power (Frankel 1998); yet the same PTAs also create and sustain social power politics created by group dynamics. Like other organizations (Ingram, Robinson, and Busch 2005; Hafner-Burton and Montgomery 2006; Dorussen and Ward 2008), these institutions form social network structures, creating ties between states. The distribution of these ties endows certain states with more social capital than others, creating social power relationships that significantly affect international politics, shaping issues like whether states go to war or use economic sanctions (Hafner-Burton and Montgomery 2005, 2008). While states' material power is determined by the relative size of their material capital, social power is determined by the relative social capital created by and accessed through ties with other states in the international system such as ties through mutual membership in PTAs.<sup>1</sup>

1. Our conception of social power is derived from a particular conception of social capital. Bourdieu defines social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (1986, 248); power can be measured by looking at relative amounts of capital. Two schools of thought regarding social capital due to networks have

Unlike inequality in material power (as measured by potential military power or gross domestic product), inequality in at least one form of social power—that endowed to states by virtue of their positions in the international network of PTAs—has been falling dramatically since 1947. Elsewhere, we have examined the effects of this form of social power on outcomes of interest in the international system; in this chapter, we concentrate on comparing how the distribution of one particular aspect of social capital in the international system (centrality in the PTA network) has varied over time relative to traditional conceptions of material power. In doing so, we add nuance to the traditional debates over inequality and globalization; this broader view suggests that the net institutional effects of globalization on inequality may be less severe than traditional measures suggest, although it is middle-ranking countries rather than marginalized states that are closing the gap.

Our approach is different from but compatible with customary understandings of power. Scholarship on political economy has traditionally concerned itself with relative disparities in material power (Hirschman 1945; Gilpin 1987). International relations theory, however, has long recognized that disparities in social power also shape the landscape of politics; the recent rise of constructivism has recovered the insights of the English School, reemphasizing the role that social power plays in international relations (Bull 1977; Hopf 1998; Wendt 1999), while classical realists have long made the case that power arises from nonmaterial resources as well (Morgenthau 1948), and some liberal institutionalists have argued that “soft power” significantly affects international relations (Keohane and Nye 1977).<sup>2</sup> Through social network analysis, we offer a way of conceptualizing and measuring the role of social power relationships in international relations created by the increasing institutionalization of interstate interactions. This method of analysis can help to explain why mutual membership in international organizations in general or preferential trade agreements in particular fails to have a consistent effect on politics, such as militarized disputes or economic sanctions (Russett, Oneal, and Davis 1998; Mansfield and Pevehouse 2000; Hafner-Burton and Montgomery 2008): the socially significant effects of membership can only be measured by aggregating across the effects of all ties rather than by just looking at mutual membership. Social network studies have found that although mutual membership is rarely a significant predictor of behavior, both social power and competition between groups due to membership patterns are strong predictors of belligerent behavior (Hafner-Burton and Montgomery

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since developed (Portes 1998); the idea that structural holes (gaps in networks between important actors) are sources of capital (Burt 1992), and the idea that centrality is a source of capital (Coleman 1990). Following Bourdieu and Coleman, we take the latter definition as our basis for measuring social capital and therefore social power derived from PTA network membership.

2. Soft power is defined as a residual category to hard power; by contrast, social capital (and social power) is positively defined.

2005, 2006, 2008; Dorussen and Ward 2008). Consequently, the social network approach to power politics offers both a robust and nuanced perspective on how institutions shape violence and coercion.

In this chapter, we map how the distribution of this type of social power compares with material power over time. Both sources of power, material and social, generate inequality: the distribution of social ties in the international system created by PTA membership advantages some states over others just as the distribution of material capabilities does. Yet while material inequalities between states are high and rising, inequalities in social power derived from PTA membership have been on the decline from the beginning of the contemporary trading system that began after World War II. Standard analysis of the global economy demonstrates that trade is dividing the world into groups of winners and losers, conferring more material resources on some states than others; a social network view of power in the global economy reveals that the apparent losers are not at a complete loss for power. Economically disadvantaged states are making up for relative disparities in material power through rising social power in the network of PTAs, which gives them some new advantages. Although trade is dividing the world into haves and have-nots, PTAs can be a vehicle of social power for states otherwise disenfranchised materially by globalization, although the “middle” states benefit most; while the distribution of social power through PTAs may be more equitable, it is far from a level playing field.

Our three aims are (1) to identify the type of social power created by the network of PTAs and distinguish it from standard concepts of material power in international relations—relative economic clout and military strength; (2) to generate empirical indicators to measure this concept that can be widely applied to the study of political economy; and (3) to trace the evolution of structural inequality in this type of social power between states over time. We first introduce social network analysis as a framework of investigation. We then consider how PTAs create social power discrepancies through networks. Next, we define our network concepts of social power and our indicator of social capital from PTAs (*PTACentDegree*, or *the degree centrality of a state in the PTA network*) as well as material capital (*GDP* and *CINC*, or *Correlates of War Composite Index of National Capability*), using them to create specific measures of state inequality generated by the network of agreements. Finally, we analyze the evolution of structural inequality over time and show that the political economy is actually characterized by two opposing trends: rising material inequality between nations accompanied by a decline in social inequality, both of which influence international relations.

## **Social Network Analysis, International Political Economy, and Intergovernmental Organizations**

This book considers the role of social networks in world politics—social structures made up of actors that are connected through various ties ranging from terrorist and criminal networks to transnational human rights networks. Social network analysis (SNA) is not only a research focus on networks—it is a research methodology distinctive to the social and behavioral sciences that is inherently concerned with such networks. It is possible to study networks without employing SNA, but it is not possible to employ SNA without attention to networks. Like rational choice, it is not a unified set of theories but rather a framework for analysis based on a set of primary assumptions and formal tools that can be applied to an assortment of subjects. At the most abstract level, SNA concerns relationships defined by linkages among units, such as people, institutions, or even states. The underlying difference between SNA and standard ways of analyzing behavioral processes is accordingly the use of concepts and indicators that identify associations among units rather than solely focusing on the attributes of the units (Wasserman and Faust 1994).

SNA concepts and indicators are relational. They describe the connections that associate one actor to another and cannot be reduced to the traits of an agent; relationships are not properties of agents but of systems of agents (Scott 2000). SNA research is thus grounded by three principles: actors and their behaviors are mutually dependent rather than autonomous; relational ties between actors are channels for the diffusion of resources, whether material or nonmaterial; and persistent patterns of associations among units create a social structure within which actions take place that provide occasions for or restrictions on behavior (Wasserman and Faust 1994).

SNA has been only sporadically applied to international relations in general or to intergovernmental economic networks in particular (Hafner-Burton, Kahler, and Montgomery forthcoming). Historically, it has been used to explain global economic stratification (Snyder and Kick 1979; Rossem 1996), transaction flows in the international system (Brams 1969), and international trade (Nemeth and Smith 1985; Smith and White 1992).<sup>3</sup> The latter two used blockmodeling to investigate world systems theory, which claims that states are in more or less fixed structural relationships with each other and can be divided into core, periphery, and semiperiphery. By dividing states into discrete groups based on their relationships with others, both papers found that there was some mobility between groups, and that the number of groups was greater than that predicted by world systems theory. However, much of this literature has been ignored or marginalized.

3. More recently, it has been applied to democratic networks (Maoz 2001) and alliances (Maoz et al. 2005) as well. See Hafner-Burton, Kahler, and Montgomery forthcoming for a review of SNA applications in international relations.

Recently, a few scholars have begun to acknowledge that international organizations (IOs) create social networks among their members and that these networks shape politics in very significant ways that are different from conventional understandings of what IOs do.<sup>4</sup> For example, we (2005, 2006, 2008) use SNA to study the relationship between IOs and conflict. We argue that conflicts between states are shaped not only by material power but also by relative positions of social power created by institutional memberships and characterized by significant disparity. Membership establishes hierarchies of social capital in the international system, making certain policy strategies more practical or rational. Dorussen and Ward (2008) emphasize a different aspect of social network analysis, arguing that networks are conduits for information that affect the propensity of states to engage in conflict, while Kim and Barnett (2007) look at the effects of communication networks on conflict. These perspectives are only just developing and most concern themselves with the effects of organizational networks on various behaviors; we complement and extend these approaches by investigating the distribution of the variables that these studies have identified as empirically significant.

## The Power of Social Networks

Thinking about power in the international political economy as a matter of social networks is not obvious. Markets, after all, involve the exchange of material resources between parties. Political discussions around globalization and inequality concentrate on relative disparities in material attributes of relevant actors, whether states, corporations, or people. It is these material components of power—the size of a national economy or the wealth of a population—that matter most to individual consumers and voters and so garner the most rhetoric and debate. What, then, is “social” or “networked” about the power politics of global inequality?

Our social network approach to power politics in international relations is similar to traditional theories of power politics in important ways, but also differs on crucial points. First, although many international relations (IR) theories already treat power as a relational attribute, most traditional empirical approaches to studying the concept derive power relationships from the attributes of individual states instead of from ties between states. Second, they unnecessarily favor the material over the social content of state networks, ignoring, for example, information. Third, social power—which we define as power that originates from social capital formed by ties with other states, rather than material capital formed by resource capabilities—is not a simple

4. The number of articles using social network analysis to study international institutions has increased dramatically since 2000 (K. Kim and Barnett 2000; J. Kim and Barnett 2007; Beckfield 2003; Ingram, Robinson, and Busch 2005; Hafner-Burton and Montgomery 2005, 2006, 2008; Dorussen and Ward 2008).



derivative of material power; it operates in tandem with material forces but is not entirely dependent on them. In both cases, capital forms the basis for power; disparities in capital between actors lead one actor to have power over the other. Finally, social power gained through networks relates to all three of the “faces of power” (coercion, agenda setting, and identity/interest alteration).

First, power in international relations is already thought of in relational terms, but usually only references network concepts implicitly. Realists have long understood that power has both material and social dimensions: “Power may comprise anything that establishes and maintains the control of man over man. Thus power covers all social relationships which serve that end, from physical violence to the most subtle psychological ties by which one mind controls another” (Morgenthau 1948, 11). Structural realists argue that the power in the international system depends not on individual states but rather is an emergent property of the distribution of capabilities among all states: “Power is estimated by comparing the capabilities of a number of units” (Waltz 1979, 98). What matters is not how much money or how many guns a state acquires; what matters are the distributions of these resources relative to all other states. Power relationships are not properties of states but of systems of states. Consequently, although our most basic understanding of power is not usually described in SNA terms, it is in every way grounded in the same defining principles of network analysis: that actors and their behaviors are mutually reliant, not independent; that relational ties between actors are conduits for the diffusion of resources, which include but are not limited to material resources; and that lasting patterns of associations among units create a social structure within which actions take place that provide occasions for or restrictions on behavior (Wasserman and Faust 1994). However, social network analysis looks not at the distribution of a unit-level variable (capabilities of individual states), but rather at the distribution of an interaction-level variable (ties between states).

Second, social network analysis includes social as well as material power in its considerations; not just material capabilities and trade flows but social ties between states and the social capital that flows from them are included in network analysis. Although Waltz is implicitly materialist, other realists (such as Morgenthau) are not; social conceptions of power are compatible with traditional realist notions of power, and, increasingly, with some constructivist notions as well (Goddard and Nexon 2005). This is not to suggest that social power matters as much as material power; such a statement would be nothing more than a conjecture, likely to be true in some circumstances but not in others. However, the core of international relations theory acknowledges that social sources of power matter, even if it does not tell us how much or when, while research into the behaviors of agents of all kinds, including animals, children, and firms, show that relative social connectedness is a crucial factor in cooperation and conflict behaviors.

Third, social power is not necessarily determined by material power. All states occupy positions of material and social power in the international system, but positions of material power, which are established by the distribution of wealth, do not determine positions of social power, which are established by the distribution of ties with other states.<sup>5</sup> States with privileged material resources relative to other states do not necessarily acquire advantaged social network relations, much in the same way that not all rich children are popular and all poor children outcasts. The relationship between material and social forms of power is an empirical question, not a theoretical one to be deduced a priori.

Fourth, like material power, social power has several “faces,” giving an agent various capabilities to coerce another agent to do something they would otherwise not do (Dahl 1957), to prevent grievances from being aired through setting or shaping agendas and deciding who sits at the table (Bachrach and Baratz 1975), or to manipulate the desires, interests, and identities of another agent (Lukes 1974). Advantaged social network positions provide a state various capacities to coerce another state to do something they would otherwise not do—the first face of power. In the same way that a materially powerful state can use or threaten military force to intimidate another state into taking certain actions, forcing governments to withdraw from captured territories, a socially powerful state can bully another state through naming and shaming or isolation into doing what they want, signing onto human rights agreements they had no intention of joining or helping to overturn regimes or bring states to the bargaining table. Bad reputations and threats of social isolation or ridicule among a network of states are weapons; they may operate in much the same way as threats of military or economic coercion, imposing costs on target states that would otherwise not be there. The denser a state’s social ties to other states, the more influence and therefore power they have to manipulate reputations and even potentially cut other states’ ties. And in some cases, bad reputations may lead to material coercion as well. In general, however, it is our view that the direct costs imposed by tools associated with social power are apt to be lower than those imposed by most material weapons in the first face of power, but that they can matter in ways that shape politics nonetheless; they may be more “usable” than material weapons as well.

The same logic applies to the second and third faces of power. The ability of a state to shape who gets to speak and who is silenced is affected by a state’s capacity to mobilize support for its positions; a state’s density of ties with other states through social networks assists in this mobilization. A state’s ability to

5. Material power can also result from material ties, that is, from trade relations between states. Yet power relations measured in this way usually end up being reduced to stocks of capital, not flows. If a state has power over another due to their mutual trade, this results from one state having a lower dependence on that trade than the other—in other words, the discrepancy in GDP, not trade, is what gives that state material power.

define interests and identities in the international system (such as the attempts by the United States to define certain states as rogue, outlaw, or evil) is a function of how many other states are listening; the more ties a state has to a broad audience in the international system, the more conduits it has through which such actions can be taken, and the more likely it is that such identity manipulation can take place. We believe that in the second and third faces, social power is likely to be both more “usable” and more effective than material power.

## The Social Network of PTAs

States form social networks through membership in international institutions—in this case, PTAs. Mutual memberships create *ties* between states and, although the strength of these ties increases with additional joint memberships, they do not necessarily create positive or negative bonds between states. These ties define states’ relative positions in social hierarchies in the international political economy. Like the balance of military or market power, these positions are state characteristics that are measured (and have their effects) relative to other states, shaping the conditions under which certain strategies of action become rational. Table 2.1 summarizes our social network concepts and measures as they compare to material concepts and indicators standard in the literature.

A state’s structural position relative to other states in the system places external constraints and pressures on it, while a state’s power enables it to take action. Both concepts have long been staples of international relations theory; both structural realism (Waltz 1979) and world systems theory (Wallerstein 1974) argue that state action is constrained by outside influences due to a state’s material position in the international system and enabled by a state’s material capital—measured by the monadic measures *GDP* or *CINC*. For realism, a state’s position is determined by the distribution of material capital

**Table 2.1.** Concepts and indicators

Concept	Level	Material measures	Social measures (PTA network)
Capital	Monad	GDP, CINC	PTACentDegree
Power	Dyad	$GDP_i/GDP_j$ or $GDP_i-GDP_j$ $CINC_i/CINC_j$ or $CINC_i-CINC_j$	$PTACentDegree_i/PTACentDegree_j$ or $PTACentDegree_i-PTACentDegree_j$
Structural Similarity	Monad	Great Power Status	PTA Group Membership
Inequality	System	$GDP\ Inequality = StDev(GDP)/Avg(GDP)$ $CINC\ Inequality = StDev(CINC)/Avg(CINC)$	$PTACentDegree\ Inequality = StDev(PTACentDegree)/Avg(PTACentDegree)$

relative to other all states. Inequality in the overall distribution can be measured by any standard inequality measure; we use the standard deviation of a measure divided by its average to produce the system-level measures *GDP Inequality* or *CINC Inequality*. Certain systemic configurations and balances of power are more or less likely to lead to conflict than others. For example, a system configuration with only two great powers is thought to be more stable than one with three or more great powers; when the balance of power between two states is roughly equal (that is, both have about the same material capital), conflict is more likely between them, although it is most likely when one power is slightly ahead (Mearsheimer 2001). By contrast, world systems theory argues that a state's position in the system (core, semiperiphery, or periphery) depends on ties—in particular, economic flows and military treaties among all of the states in the system. These ties flow among states in the core, between states in the periphery and the core, but not among states in the periphery (Snyder and Kick 1979; Rossem 1996; Borgatti and Everett 1999).

SNA derives states' social positions and power from the ties between nodes in a network. However, instead of using material ties, as does world systems theory, social network analysis uses social ties. We focus here on social ties between states that are created by common PTA membership.<sup>6</sup> Although many social network studies of international organizations only determine whether or not a tie exists between two nodes, information on the strength of a tie can be used to perform a more in-depth analysis of the structure of a network. In the specific case of the social network formed by PTA membership, the number of shared memberships measures the strength of a tie between two states. A state's social capital is an attribute that a state possesses by virtue of its direct relational ties with other states (although this can be weighted by the social capital of the other states)—a concept we measure with the monadic *PTACentDegree*; the more countries a state is connected to and the more strongly a state is tied to those others, the more social capital a state possesses. This measure has been found to significantly affect conflict propensity among states; for example, an increase from the mean to the maximum increases the likelihood that a state will initiate economic sanctions by a factor of ten (Hafner-Burton and Montgomery 2008), an effect as substantively significant as democracy; differences in the same measure also increases the likelihood of militarized disputes (MIDs) (Hafner-Burton and Montgomery 2005).

As with material capabilities, in order to measure the inequality of the distribution of social capital, we use the standard deviation of a measure divided by its average to produce the systemic measure *PTACentDegree Inequality*. Finally, states with more social capital relative to others can exert more social power, which can be measured by the difference or ratio between two states'

6. Where the focus of the debate is on economics-related inequality, PTA-generated ties are most appropriate (Hafner-Burton and Montgomery 2008); elsewhere, we and others have used IGO-generated ties. For a discussion of the problems associated with using noninstitutionalized ties, see Hafner-Burton and Montgomery (2006, 8).

social capital. The distribution of social ties in the international system, like the distribution of material capabilities, is uneven; some states have very strong ties to many other states, while others have weaker ties to only a few. The distribution of ties determines states' structural positions relative to each other in the international political economy; states with similar patterns of ties are placed into structurally similar positions—a concept we measure as *PTA Group Membership*. As with realism, the number of states in a given social group can significantly affect their conflict propensity; for instance, a greater number of states in a social group empirically correlates with belligerent behavior (Hafner-Burton and Montgomery 2006, 2008); in particular, moving from the mean number of states to the maximum increases the propensity of a state to initiate sanctions by a factor of 2.5.

Our variables, *PTA Group Membership* and *PTACentDegree*, are derived from the strength of ties between states, which we measure as the number of PTAs that two states have in common.<sup>7</sup> We start by deriving a general measure of mutual membership in PTAs. We incorporate all trade institutions in the sample, excluding PTAs composed of other PTAs such as that between the European Union and Gulf Cooperation Council, but do include nonreciprocal arrangements such as the Cotonou arrangement and the numerous EU arrangements with individual states outside of the EU.<sup>8</sup> We treat all memberships as symmetrical and equal since co-membership in any of these institutions is a mutual affiliation that not only reflects social ties between states but also causes and reinforces such ties.

For the *PTA Group Membership* variable, we start by calculating a measure of distance (a measure of dissimilarity) by taking the sum of the differences between two states' memberships with every other state. Note that these states do not have to belong to the same PTAs as long as they share the same number of memberships with other states; for example, if two states belong to two different bilateral PTAs with the United States and no other PTAs, the distance between them would be zero. We then use the distance measure to divide the international system into structurally equivalent clusters (a group of states a short distance from each other and a larger distance from other states). Hierarchical clustering starts with each actor in a separate group and then increases the distance level using the clustering criteria until the desired number of clusters or the desired level is reached. We use average-link clustering because it produces more homogeneous and stable clusters than other methods.<sup>9</sup> Here we set the number of clusters to be proportional to the num-

7. All social network attributes were calculated using the SNA package in R (Butts 2007; R Development Core Team 2007).

8. We exclude the General Agreement on Tariffs and Trade/World Trade Organization.

9. See Wasserman and Faust (1994, 381) on different clustering criteria. For example, single-link clustering puts together the two clusters with the smallest minimum pairwise distance, and tends to create more heterogeneous, less stable clusters. Complete-link clustering, by contrast, merges two clusters with the smallest maximum pairwise distance in each step. Average-link clustering strikes a balance between the two.

ber of states in the system in order to be consistent with previous work that tests the hypothesis that states that inhabit larger clusters are more prone to conflict.<sup>10</sup>

An actor with high social capital, in social network terms, can be either the recipient of many strong ties or a recipient that has exclusive ties to certain actors; an actor with more social capital than another can exert more social power. The appropriate measure to use depends on whether higher social capital comes from being linked to actors with a great deal of social capital any actors, or actors without their own social capital. For example, bargaining leverage may be increased if actors have connections to otherwise weakly connected actors,<sup>11</sup> while being connected to strongly connected actors may increase the resources a state can draw on, as is the case for many former European colonies. As a default assumption, we treat all actors as equal, since it is unclear whether being connected to strong or weak actors would be more likely to affect conflict (or, for that matter, what weight should be put on the centrality of an actor). The formal measure for the sum of all incoming ties in social network analysis is called *Degree Centrality*.<sup>12</sup> We then define PTA-CentDegree to be the sum of a state's ties to all ( $n$ ) other actors in the system through PTAs.

To measure inequality all of our measures across time we tested two different metrics, Gini and coefficient of variation (Firebaugh 1999). The coefficient of variation is simply the standard deviation of a measure divided by the mean. These two measures of inequality are generally highly correlated to our social network measure; for PTA-CentDegree, the correlation is 0.92. Due to the high correlation between our two metrics, we only plot the coefficient of variation. In our analysis section below, we examine the distribution of PTA-CentDegree and the amount of social mobility across the groups in the international system over time.

## Evolution of the Network

We use these SNA tools to trace the historical evolution of social power generated by the network of PTAs over time. Our objective is to refocus analytical attention away from the standard worldview that regards states as independent users of PTAs toward a worldview that understands states as embedded in an interconnected set of organizational associations that structures world

10. Another method of measuring the fragmentation in the international system, network polarization, has been proposed by Zeev Maoz. This method, complementary to our measures, requires ties to be dichotomized, and offers a systemwide measure of polarization based on the overlap between cliques of states (2006).

11. See Bonacich (1987) for a generalization of centrality measures and conditions under which ties to weakly connected actors may be a source of centrality.

12. See Wasserman and Faust (1994, chapter 5) on centrality.

politics by endowing members with PTA social capital (PTACentDegree) and placing them in different PTA groups in the international system (PTA Group Membership). As we will illustrate, this analytical shift has implications for the ways in which we understand the structure of the international political economy, as well as its effects on states' behaviors.

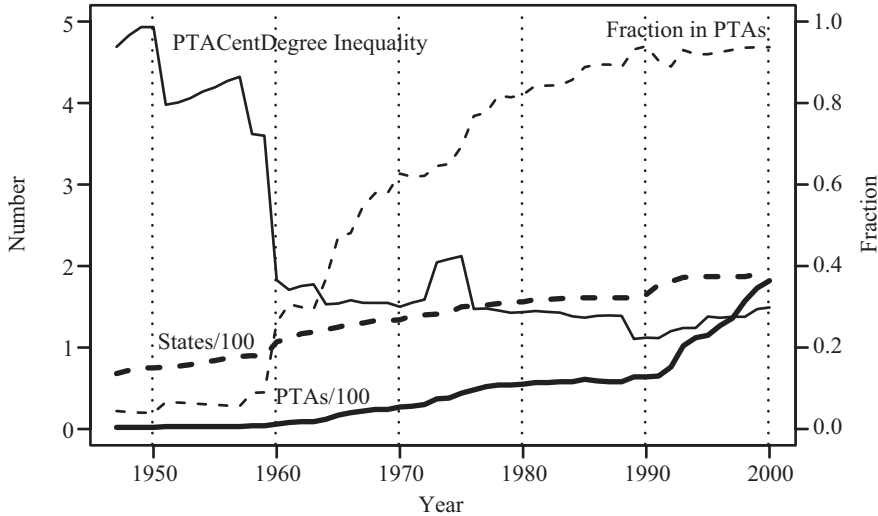
We focus our attention on the postwar period, 1950–2000, as the vast majority of PTAs were created during this time. We begin by mapping inequality at the global level and then turn our attention to the experience of a dozen politically prominent states.

### PTACentDegree Inequality from 1950 to 2000

Global levels of inequality in PTA social capital have declined over time (see figure 2.1). Since social power is simply relative social capital, a decrease in inequality of social capital also represents a decrease in inequality of social power from PTAs. The figure illustrates four continuous trends. First, the number of states in the international system has increased dramatically during the latter half of the twentieth century; dozens of new states have come into existence, as old empires fell and colonization waned.<sup>13</sup> Second, the number of PTAs has grown exponentially since the end of World War II as nation-states have proliferated and postcolonial relationships have evolved through market ties. The international system at the end of World War II was sparsely populated by trade institutions; fifty years later, the number of PTAs has radically outpaced the growth of states and the world economy is characterized by dense networks of organizations.

Third, while states and PTAs have proliferated, the inequality in the distribution of social capital as measured through PTACentDegree (plotted against the right-hand axis) has declined over time. As more and more states belong to more and more PTAs, their associations are distributed increasingly evenly over the long term, although inequality in institutional ties has been on the rise since the 1990s, reflecting similar trends in IGOs and international non-governmental organizations (INGOs) (Beckfield 2003). The temporary increase in the 1970s is due to a number of agreements created in that period between individual countries and the European Community (EC), which rapidly increased the centrality of EU states. Note that many former colonies are represented in these agreements, suggesting that former empires are shaping the distribution of social power through PTAs (and not necessarily in a way that benefits the most marginalized). The general trend, though, suggests that a growing number of states are gaining social capital, measured by PTACentDegree, in the international network of PTAs; most belong to multiple agreements and most share ties with many other states. It also suggests

13. We measure the number of states in the international system in accordance with the Correlates of War Project (2005).



**Figure 2.1.** Population of PTAs and states (divided by 100), PTACentDegree inequality (left axis); fraction of states in PTAs (right axis), 1947–2000

that world trends of social power have been bumpy, as the pattern of decline is nonmonotonic.

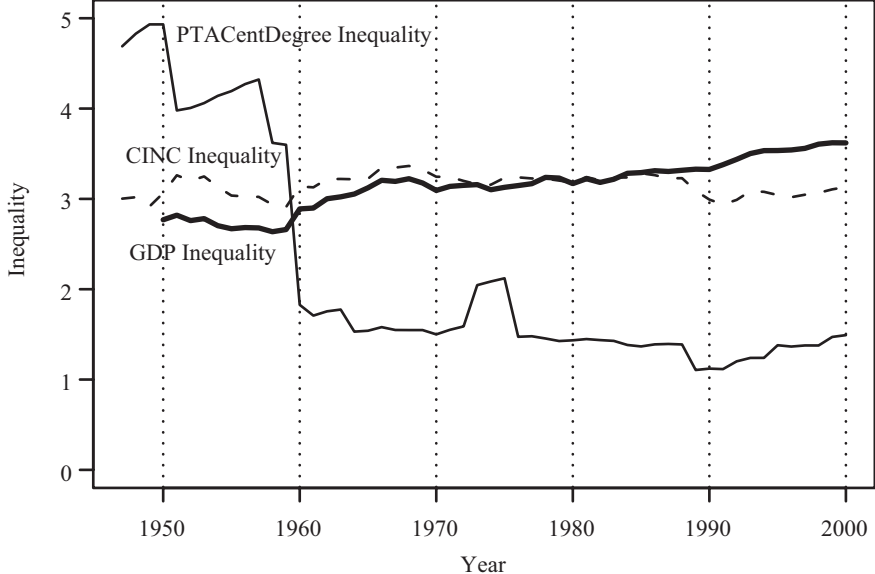
Finally, the fraction of states participating in at least one preferential trade agreement has rapidly increased over time; since the mid- to late 1980s the fraction of states participating in preferential trade agreements has consistently exceeded 90 percent. Even if PTA social capital is somewhat unevenly distributed, most states have been able to enter into at least one agreement.

These trends tell us something very different than standard perspectives about globalization and inequality. Although in individual cases states that have a great deal of social capital from PTAs also possess high levels of material capital, our measure of social capital is not at all correlated with traditional material measures of capital. For economic power, we use GDP. For military power, we use the standard Correlates of War (COW) measure of a state’s combined index of national capabilities, or CINC.<sup>14</sup> Using all observations in the dataset from 1950 to 2000, PTACentDegree is correlated 0.13 with GDP and 0.04 with CINC.<sup>15</sup> Not only is our main measure of social capital from PTAs unrelated to material capabilities, but the distribution of this social capital and therefore this kind of social power is also very different from the distribution of material power.

14. We use version 3.02 of the National Material Capabilities dataset (Singer, Bremer, and Stuckey 1972).

15. Correlation with the total amount of trade of a country is higher, but still not very significant (especially considering an expected connection between trade institutions and trade), at 0.37.

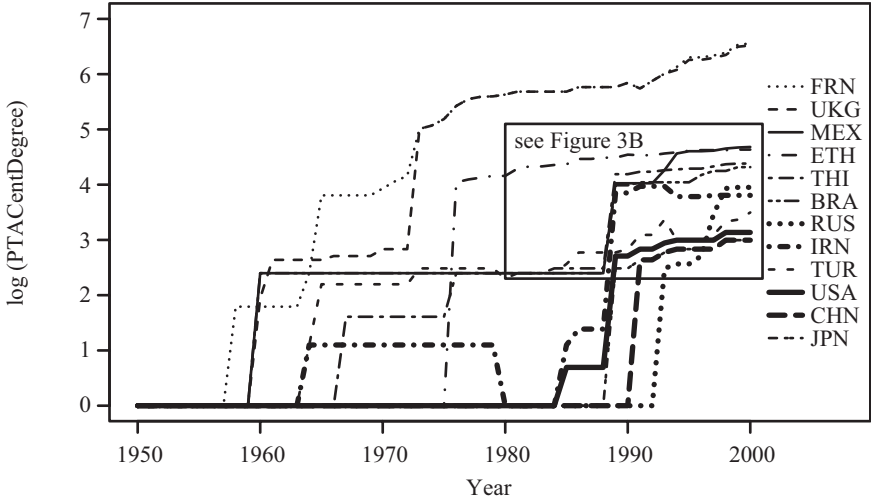




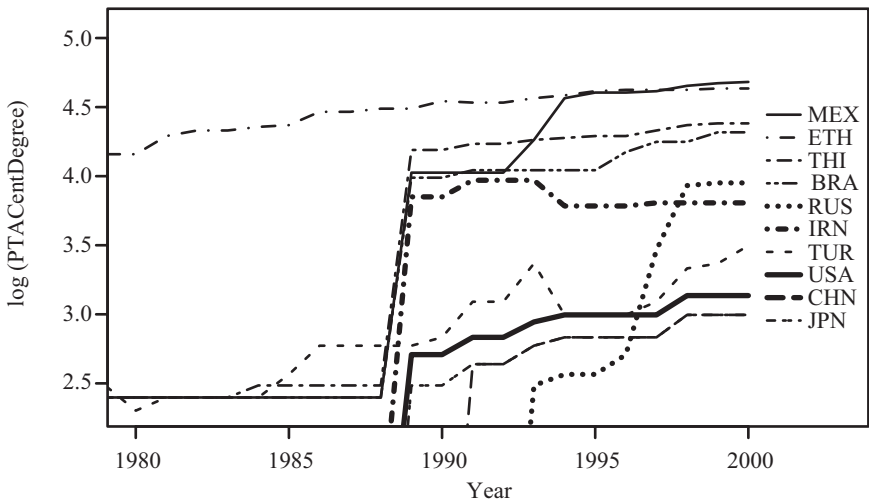
**Figure 2.2.** Comparison of material (GDP, CINC) and social (PTACentDegree) inequality, 1947–2000

We compare social inequality from PTAs with material inequality derived from GDP and CINC in figure 2.2. As can be seen, while inequality in the distribution of PTACentDegree has more or less steadily decreased over time, GDP and CINC inequality have grown even while material inequality in energy and capabilities has mostly held steady. Moreover, since 1960 the general level of inequality of material power has been much greater; for both measures, the standard deviation is always multiple times the mean for these quantities. This is not to say that PTA social capital is equitably distributed, that large differences do not exist, or that these differences do not have significant implications for world politics; but rather that social and material capital and therefore power do not correlate well with each other and are very differently distributed.

World-level indicators can be misleading because they smooth out the important relative variations that determine dyadic power relationships and shape international relations. Figures 2.3A and 2.3B add caution to optimism. Here, we plot the logarithm of PTACentDegree of a dozen politically prominent states in six panel years: 1950, 1960, 1970, 1980, 1990, and 2000. For these figures, we have chosen a sample of states that have been in existence since before 1910 (and existed at the beginning of every one of our years), that contains the great powers, and has at least one representative from every major region: Brazil (BRA), China (CHN), Ethiopia (ETH), France (FRN), Iran (IRN), Japan (JPN), Mexico (MEX), Russia (RUS), Thailand (THI),



**Figure 2.3a.** Logged PTACentDegree for twelve prominent states, 1950–2000



**Figure 2.3b.** Logged PTACentDegree for ten prominent states (excluding Britain and France), 1980–2000

Turkey (TUR), the United Kingdom (UKG), and the United States (USA). Figure 2.3B illustrates a small subsection of the same plot in order to better illustrate recent trends.

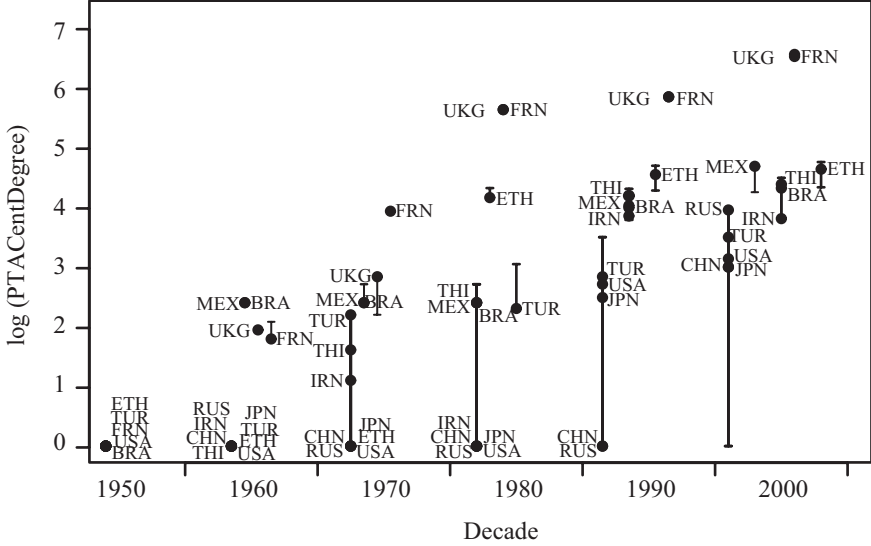
Figure 2.3 illustrates four historical trends. First, PTACentDegree rankings in the PTA network exhibit hierarchy. Differences in relative PTACentDegree between the top few rich core states (such as France or the United Kingdom)

and poorer developing states (such as Mexico or Turkey) and impoverished underdeveloped states (such as Ethiopia) have remained steadily high over time. Differences in *PTACentDegree* among the rest of the world have waxed and waned. Yet the inequality in *PTACentDegree* created by the PTA network looks very different from inequality created by relative disparities in military power or markets: the United States has ended up near the bottom of the distribution in 2000, while Ethiopia, Mexico, Thailand, and Brazil have settled into a grouping above many developed countries, with the latter three demonstrating a radical increase in PTA network centrality since the end of the cold war. This suggests that PTAs organize the international political economy in ways that are not only derivative of material power.

Yet historical ties have had an enormous influence on PTA network formation—in particular, the legacy of empire has had dramatic effects on these networks. Ethiopia's dramatic increase in centrality in the mid-1970s is due to a single agreement: joining the Lomé agreement in 1976, which connected it with a large number of other former European colonies as well as the states of the EU itself. Ethiopia's relatively high centrality today is not exclusively due to Lomé and its successors; it has subsequently signed a number of other PTA agreements as well. However, the weight of this agreement has significantly affected the distribution of PTA network centrality; it took until the late 1990s for Mexico to overtake Ethiopia.

Second, this process of convergence has not been uniform over the course of history. States' evolution of relative *PTACentDegree* derived from the PTA network has increased in fits and starts (with the exception of France). Moreover, *PTACentDegree* is clearly not proportional to military or economic attributes. Third, certain groups of states trend together over time. For example, France and the United Kingdom enjoy the highest relative *PTACentDegree* available to any state in the international system, a degree of political influence that is not derived from their market or military capabilities alone. Since the 1980s, both states have held high relative *PTACentDegree* in the network of PTAs. Although the United Kingdom initially had a great deal of PTA social capital due to its separate agreements in the 1960s, the rising social capital associated with EC membership due to an increase in agreements with the Community as a whole in the mid-1960s led to a temporary decline relative to the value of France's *PTACentDegree* in 1970. Once the United Kingdom joined the EC, its *PTACentDegree* increased again accordingly.

Finally, and perhaps most surprisingly, the non-European great powers have consistently failed to connect to large numbers of states through PTA networks. The United States, Japan, and China have been at the bottom of the list, and Russia has only recently surpassed Turkey and Iran in centrality. Although the networks of these powers, like many others, showed a dramatic increase at the end of the cold war, they still are relatively isolated. This may be best explained by realist theories; many great powers prefer economic autarky in order to preserve their security.



**Figure 2.4.** PTACentDegree of PTA groups in the international system for each decade, 1950–2000

### PTA Group Membership in the Late Twentieth Century

Although PTACentDegree inequality is generally on the decline, the groupings of countries due to PTA ties in the international system is relatively stable, as can be seen in figure 2.4, which looks at snapshots of group membership at the beginning of each decade since 1960. Vertical lines connect states in the same group and indicate the maximum and minimum centrality of each group; groups are dispersed evenly around the beginning of each decade so the groups can be visually differentiated. In 1960, the United Kingdom's separate agreements with its former colonies pulled it into a different group than France and its agreements, while the Latin American Free Trade Association grouped together Mexico and Brazil. By 1970, Turkey, Thailand and Iran had signed a few small agreements, while the benefits of EC membership are apparent with the French group (really, the EC states) far ahead. By 1980, the United Kingdom and France had nearly identical agreements with other countries, while Ethiopia formed another group all related by Lomé. Turkey's agreements were with sufficiently different partners by this time for it to break away from the bottom group of states, while Mexico, Brazil, and Thailand's agreements were similar enough (and small enough) to be classified with the rest of the laggards. The latter three, along with Iran, increased their ties to similar countries and pulled away from the bottom group by 1990; the remainder of the countries in the sample finally began signing a significant number of agreements by 2000.

The membership of the groups indicates a significant amount of hierarchy and splintering in the international system of PTAs; the EC has clearly formed

a group apart since the 1970s that has been continually increasing in centrality in the PTA network, while boosting the centrality of groups of states that sign agreements with it such as Ethiopia and other former colonies. Smaller groups of advanced developing countries have followed, forming their own internal networks with each other. The largest and most diverse group still includes the laggard countries (including several great powers) that have yet to sign any agreements at all; it is no surprise, therefore, that studies find a relationship between group size and conflict.

### Social Network Effects

PTAs, like international institutions of all kinds, do more than reduce transaction costs and lengthen the shadow of future cooperation; they also form social network structures, creating various distributions of ties between states that endow some with more social capital than others, creating social power relationships that are not derivative of material capital. They also partition states into potentially diverse (and quite large) groups of hierarchically organized states. This exercise is more than conceptual; states' social network positions significantly affect politics, shaping, for instance, conflict and aggression between states by making certain policy strategies more practical or rational than others.

For example, a recent study shows that PTAs, by themselves, have no influence on whether members choose to sanction one another; the social network positions they create, however, do shape sanctions behavior, significantly increasing the likelihood of sanctions among members. The more social capital from PTAs a potential initiator has, the more likely it is that sanctions will occur. The influence of *PTACentDegree* on sanctions onset is sizeable. When the initiating state is extremely central, the probability that sanctions will take place is ten times greater than under average conditions (Hafner-Burton and Montgomery 2008). Similarly, large differences in PTA degree centrality also have been shown to increase the likelihood of militarized disputes (Hafner-Burton and Montgomery 2005). By contrast, dyads that share a greater number of total IGO memberships are somewhat more likely to engage in militarized disputes, but large differences in IGO degree centrality (i.e., when large discrepancies in social capital due to IGO membership exist, creating an asymmetry of social power) created by the broader network of international organizations lead to less frequent MIDs. Dyads where two states have radically different IGO degree centrality values (called *Prestige* in that study) are four times less likely to engage in dispute behavior than dyads in which both states have similar values of IGO degree centrality, which is quite a substantial influence when compared to the effect of such state attributes as democracy and dependency (Hafner-Burton and Montgomery 2006).

This book seeks to introduce two approaches to network analysis as they apply to international politics and to use those approaches to reexamine major

debates about the relationship between structure and agency, power and emerging forms of governance. Our chapter contributes to these goals (1) by identifying how the social network of PTAs structures the international political economy, emphasizing the types of social power created and distinguishing them from concepts of material power; (2) generating empirical indicators to measure these concepts in methodical ways that could be useful for studies of international institutions and political economy more broadly; and (3) mapping this structure globally as it has evolved over time.

Our social network approach is not intrinsically realist, liberal, or constructivist in orientation. Rather, it provides systematic empirical tools useful for analyzing all kinds of structural conjectures that take group aspects of international relations—informational and psychological—seriously, including insights from all three traditions. Nor does our approach argue against standard ways of thinking about international institutions, which focus on the individual attributes an institution has to offer—such as dispute resolution mechanisms or voting procedures—and how those attributes affect politics. We simply aim to demonstrate that international institutions also create social networks that place states in various structural positions of power, and that these positions, like dispute resolution mechanisms, can and do shape politics, sometimes in meaningful ways.

The insights to be gained from this kind of approach to studying politics are many. We have added some nuance to the debate about whether trade liberalization is creating more inequality. In response to the critics of globalization, many economists argue that liberalization may be creating inequalities but that the gains in overall global welfare outweigh concerns about distribution because even the poor are, or will be, better off. Our argument suggests, rather, that poor states may also be making up for relative disparities in markets through rising social power in the network of PTAs, and that trade agreements can sometimes be a vehicle of power for states otherwise disenfranchised materially by globalization. The implication of this argument more broadly is that power relations in the political economy are more than a matter of markets; they also emerge from social networks created by the institutions that govern them. Scholars need to engage with this aspect of politics because research is beginning to show these networks matter for political outcomes, just as the size and strength of material resources do. More generally, however, the social network approach taken here offers tools to grapple with many aspects of international relations broadly, providing methods to study complex interactions that give rise to power differences.