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Unequal Partners? Networks, Centrality, and Aid to International Education

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Abstract
Following the 2005 Paris Declaration on Aid Effectiveness, international development policy discourses have focused on partnership as an overarching principle. With a focus on participation and non-hierarchical relationships, new partnerships aim to reconstitute the aid relationship in a way that obviates power inequality and hegemony. However, empirical studies of these partnerships are scarce. This paper uses social network analysis to analyse relationships between organisations involved in prominent partnerships for education in international development. Our analysis of an original dataset demonstrates that bilateral donors, civil society organisations and international organisations are most likely to occupy central positions in this network, meaning that they enjoy high levels of connectivity to many organisations. Literature on international networks suggests that these organisations would therefore shape the flow of information and ideas between organisations, influence the distribution of resources among members, and determine normative preferences of the partnerships. In contrast, recipient governments, private businesses and universities occupy peripheral positions. We contextualise these findings with respect to literature on aid in international education and privatisation in the political economy of educational development.

Introduction

The number of organisations participating in international development has proliferated rapidly, expanding from its origins in relations between states and international financial institutions, to an increasing role for civil society organisations (CSOs), private businesses, philanthropies, and academia. This surge in the participation of different types of actors has coincided with a shift in contemporary international development rhetoric. Following the 2005 Paris Declaration on Aid Effectiveness, development policy discourses have centred on partnership as an overarching principle. With a focus on participation and non-hierarchical relationships, new partnerships aim to reconstitute the aid relationship in a way that obviates power inequality and hegemony (Colclough and Webb, 2012; Klees 2010; Varvus and Seghers 2010; Verger et al. 2014). However, the extent to which these discursive and organisational shifts ameliorate longstanding critiques about power inequalities in international development remains an open question.

In this paper, we seek to better understand power relationships between organisations involved in international educational development using social network analysis. Looking at networks of co-membership in seven prominent international education partnerships, we map relations between different types of actors and examine patterns of relationships between them. We examine how power operates by looking at positionality within the network, determining the extent to which centrality and brokerage differ across organisations from the Global South and North.

We begin with a review of contextual literature on the shift to partnership-based organisations in global education and theoretical perspectives on networks in international relations. We then describe our data and methods, focusing on the measurements of centrality and brokerage. Our analysis begins with an overview of the network structure and then presents tests of how centrality and brokerage differ across different types of organisations and between those in the Global North and South. Our analysis of an original dataset demonstrates that bilateral donors, civil society organisations and international organisations are most likely to occupy central positions in this network, meaning that they enjoy high levels of connectivity to many organisations. Literature on international networks suggests that these organisations would therefore shape the flow of information and ideas between organisations, influence the distribution of resources among members, and determine normative preferences of the partnerships. In contrast, recipient governments, private businesses, and universities occupy peripheral positions. We contextualise these findings with respect to literature on aid to international education and privatisation in the political economy of educational development.

The shift to partnership in global development

Recent years have witnessed both a remarkable surge in the number of organisations participating in international development as well as a transformation in the types of actors engaging in the global policy environment. From its advent in the mid-twentieth century, international development assistance was primarily bilateral in nature —high-income donors

loaned or gave aid to a poorer recipient. Alongside bilateral aid, and to a slightly lesser degree, multilateral agencies such as the World Bank pooled donor funds and distributed resources to recipient countries in need of support to an array of sectors (Brown 2012). Although a small number of charities operated throughout the Global South, development was primarily a state-based activity.

However, this model of development was widely criticised as fragmented, uncoordinated, and inefficient. Moreover, there was a growing realization that in an era of globalisation, states were failing to respond to problems with global impacts, in terms of financing, advocacy and policy-design. Finally, and most notably, the aid architecture was widely critiqued for excluding voices from the Global South, where recipients of aid were not sufficiently involved in the development processes that directly impact them (Benzanon and Isenman 2012; Severino and Ray 2010; Stone 2004; 2013). Recognition of these shortcomings ushered in a new era of international development and 'a fundamental reconstitution of the global public domain' (Ruggie 2004, 2).

This new global public domain necessitated new governance and aid arrangements. A series of global agreements, most notably in the 2005 Paris Declaration, set out to formally overhaul the aid agenda to include the need for increased partnership and coordination (OECD, 2005). The past decade has accordingly seen a rise in transnational partnerships—heterogeneous groups of both state and non-state actors—that aim to significantly influence decision-making on international development policy and funding at the global level (Savedoff 2012; Severino and Ray 2010; Stone 2013). These partnerships are envisaged as serving a range of functions, including resource pooling and distribution, coordination of activities, policy design, and advocacy (Backstrand 2008; Benzanon and Isenman 2012; Martens 2007). They are generally characterized by the inclusion of a diversity of actors, representing governments from both the Global North and South, multilateral agencies, private corporations, non-profit foundations, and civil society, enabling a 'space of assembly' where a range of actors can participate in decision-making (Stone 2013).

Another key characteristic of partnerships is 'an emphasis on non-hierarchical modes of steering,' where partners are ostensibly considered equal (Risse 2004, 292). At their core is the strengthening and rearrangement of relationships, in particular between actors in the Global North and Global South. The rhetoric surrounding such organisations is dominated by concepts that reflect the positive potential of strong relationships, including 'coordination,' 'collaboration,' and, most notably, 'partnership' (Draxler 2008; Klees 2010). Intertwined with the partnership rhetoric is the discourse of participation, indicating the desire for recipients of aid to more strongly and explicitly engage in the design of the policies that directly impact them. Countries in the Global South are aspirationally envisioned as having equal input into the development process via partnership arrangements (Backstrand 2006; Benzanon and Isenman 2012).

Partnerships are proliferating in many sectors of international aid in what Severino and Ray (2010) describe as 'hypercollective' action. Many of these partnerships have been established within in the past decade and have been designed to tackle significant issues (Backstrand 2006; Bezanon and Isenman 2012; Stone 2013), for example the Global Fund to Fight AIDS, Tuberculosis and Malaria; GAVI: The Vaccine Alliance; and the Global Water Partnership.

The education sector has seen a notable rise in partnerships, where actors and organisations concerned with the provision of quality education worldwide have established partnerships that range in size and purpose. This trend can be traced to the 1990s with the World Congress on Education for All (EFA), one of the early collaborative efforts to support universal access to education. EFA signified a new consensus around global education norms, widely viewed as a new global compact on education (Mundy 2012; Sperling 2008). This compact also underpinned the second Millennium Development Goal towards universal primary education, supported by a range of organisations (Chabbott 2003; Mundy 2012). The combination of a new global educational compact and the belief that partnership is a means to more effective, equitable aid, has led to the establishment of several new collaborative educational organisations. These educational partnerships are interconnected via interlinking co-memberships: many organisations are members of multiple partnerships. These interconnections resulting from co-memberships entail differing levels of connectivity between organisations.

Education scholars have begun to examine the changing nature of global education and the proliferation of actors involved by identifying networks, most notably amongst non-state actors (Ball 2012; Mundy et al 2016; Verger 2012), and within single partnership organisations (Faul 2016). What is less understood is how partnership organisations—networks on their own—form a wider network in global education through co-membership. Moreover, partnership-based organisations are ostensibly presented as non-hierarchical, and therefore reflective of equal partnership (see Global Fund 2011; GPE 2013). Mosse (2006, 1) describes this era in international development, characterized by an emphasis on partnership and Southern participation, as the 'moral resurrection of aid' and underpinned by a re-constitution of power arrangements. However, several scholars have noted that power imbalances do indeed exist within—and may in fact be augmented by—these partnership structures (Backstrand 2006; Faul 2016; Kahler 2009; Mosse 2006; Stone 2004). Through mapping the network formed by cross-organisational membership, we aim to understand its characteristics, and explore how power is constituted.

Networks in international relations

The study of networks in international relations is a relatively recent area of scholarship, and arose in response to perceived shortcomings of traditional analyses of international actors (Finnemore 2014; Hafner-Burton, Khaler, and Montgomery 2009; Moaz 2003; Kahler 2009). Historically, studies into the nature of inter-state relationships assumed particular hierarchies and structures, based mainly on material resources or military clout. A network approach offers an alternative perspective and 'defines structures as emergent properties of persistent patterns of relations among agents that can define, enable, and constrain those agents'

(Hafner-Burton, et al. 2009, 562). The network perspective emphasises the complex connectivity between actors over the intrinsic characteristics of actors themselves; as Goddard (2009, 254) explains: 'for network theorists it is not actors' interests, power, or ideology, but the relations among actors that are causally significant.' Through examining the structure of relationships, network analysis has shown that the structure of international relations can be understood as a complex system in which actors' positions are constructed through relational processes, not solely through individual characteristics (Finnemore 2014; Goddard 2009; Hafner-Burton, et al. 2009; Hughes 2009; Ward 2011).

Key literature using network analysis to study international relations have naturally focused on inter-governmental organisations, such as the United Nations, European Union, or World Bank, as their units of analysis (Beckfield 2008; Hafner-Burton, et al. 2009; Torfason and Ingram 2010). Other studies have looked at the rise of transnational advocacy networks of international non-governmental organisations (Beckfield 2003; Finnemore and Sikkink 1999; Hughes, et al. 2009; Smith and Wiest 2005). A number of thematic areas have been targeted to help understand the structure and hierarchies within such networks, including patterns of conflict and alliances, such as arms trading and nuclear proliferation treaties (Hafner-Burton and Montgomery 2006; Hafner-Burton, et al. 2009; Kahler 2009); policy entrepreneurship within networks (Goddard 2009); the diffusion of democracy (Torfason and Ingram 2010); and changes to international networks over time (Beckfield 2008; 2010; Moaz, et al. 2003). On the more specific topic of global education, scholars have studied tertiary school expansion and international networks of universities (Shields 2013, 2016; Clark 2008).

Although a there is some literature on the networks that are represented within single partnerships (i.e. Faul 2016), no known studies have examined the interconnections between actors working in education through the analysis of the network arising from cross-membership to several partnership-based organisations. Few studies have attempted to capture the interconnectedness of the diverse array actors that are now populating the development landscape, including country governments, multilateral agencies, civil society, religious organisations, private foundations, private corporations, think tanks, and so forth.

Our study looks at the rise of partnership-based organisations as a means to critically analyse the shift towards 'partnership' in international aid to education. It maps 'hypercollectivity' in a single issue area and examines how power is distributed among different types of actors within this network. The network perspective is particularly useful in this investigation for two key reasons. First, given the vast proliferation of actors involved in the international development arena and the growth in partnerships, a network approach can give a deep description to help track and expose both complexity and size (Hafner-Burton, et al. 2009). A network analysis can help in illuminating the characteristics and scope of the international network of actors involved in educational development.

Second, network analysts in international relations claim that only through a deeper examination of relationships between actors participating as members can we understand if these partnerships reflect the equality that they propose to enable (Hafner-Burton and Montgomery 2006; Hafner-Burton, et al. 2009). As Finnemore argues, network analysis is

important because 'the participatory nature of partnerships has often been criticized as more symbolic than substantive and, as with many governing efforts, outcomes have been mixed' (Finnemore 2014, 223). Although scholars have provided analyses based on counts of membership in organisations, some have argued that without addressing relationships via a network approach, 'the extent of inequality… may be understated' (Beckfield 2008, 423). Not only is knowing the number of connections between actors important, but also significant is understanding the structure that ties them to each other, which may expose power imbalances (Beckfield 2008).

Conceptualizing power in international networks

The study of international relations and development has conceptualized power in a variety of ways, focusing not only on the traditional notions of asymmetries between states in military strength or resources, but also on the influence of information, ideas, or 'soft' power, such as culture and religion (Finnemore and Sikkink 1999; Keohane 2006; Nye 2004). Referencing the current era of global governance, characterized by partnership and coordination, Finnemore argues that it is not solely actors, but relationships that ought to be our units of analysis in the study of power in international development (Finnemore 2014, 223). Barnett and Duvall's 'taxonomy of power' framework delineates the different forms of power that are observable in international relations, focusing on types of interactions between actors (2005). Many scholars who study power in the international system draw from Foucault, who argues: 'What characterizes the power we are analysing is that it brings into play relations between individuals (or between groups). For let us not deceive ourselves; if we speak of the structures or the mechanisms of power, it is only insofar as we suppose that certain persons exercise power over others. The term "power" designates relationships between partners' (Foucault 1982, 786).

Such conceptions of power, all attuned to the significance of relationships and the nature of connections between actors, are complemented by network analysis. A network approach can bring to light power hierarchies in a variety of ways. Power is dependent not only on an actor's characteristics, but its location within the network structure. As Hughes and colleagues explain: 'Network analysis reveals how power is a function of the cohesiveness of groups within a given network' and 'structures opportunity and exchange within networks' (Hughes, et al. 2009, 1717). For instance, an actor that has a high degree centrality measure, meaning many strong links to other organisations, is likely to be relatively powerful because it can benefit from increased access to resources from other actors (Hafner-Burton et al. 2009; Beckfield 2008). Discussing an actor as a 'node' within the network, Hafner-Burton et al (2009, 570) note how centrality can moreover 'shape the flow of information among nodes and alter common understandings of relative capabilities, common interests, or norms' (Hafner-Burton et al. 2009, 570).

Power can also be illuminated through a network analysis by identifying 'network brokers' who act as political entrepreneurs in having exclusive ties to different types of actors that would otherwise not be connected. In acting as their sole link, the broker holds power through its 'betweenness' and ability to control flows of information and resources. Actors

that are marginal within the network are therefore dependent on these brokers (Hafner-Burton, et al. 2009; Goddard 2009).

Even those within a network that might on surface appear to lack influence because of low degree centrality, may in fact have power due to their 'exit option' where some actors have an ability to easily leave the network. Those nodes which may seem peripheral to the network have the power to 'de-link' where 'strategic efforts within the network to exploit bargaining power may result in threats of exit by those who are its targets' (Hafner-Burton, et al. 2009, 571). Those marginal nodes that are not dependent on others in the network, which perhaps have ample resources, or can benefit equally from engaging in options outside the network, therefore wield the power to exit. Understanding the characteristics of such nodes and their history of relationships within and outside of the network helps to identify them as peripheral, yet powerful.

Several scholars have pointed to the benefit of a network approach to contrast some existing assumptions about partnership arrangements as equalizing (Beckfield 2008; Faul 2016; Hughes, et al. 2009). In fact, network analysis can expose how networks may augment power differentials: 'network power may also be self-reinforcing and ultimately deepen other inequalities in the international system' (Hafner-Burton, et al. 2009, 574). In educational aid, the key power imbalance has historically been between the Global North and South, where the recipients of aid have been subjugated to the conditions of their Northern funders. Early critiques of international development theorized this power relationship as one of material dependency, in which power asymmetries were rooted in historical capital accumulation in the North and its ability to command low-cost labour in the South (Presbich 1950; Singer 1950; Wallerstein 1974). The advent of post-structuralist critiques (Said 1978) developed this account to include the discursive power of Northern countries in setting the epistemic norms and premises on which the development relationship was founded (Escobar 1994; Ferguson 1990). While differing in their conceptualisation of power, these perspectives expect persistent power imbalances between the North and South that are concealed under ideological guise of apolitical or consensual relationships (Ferguson 1990). These expectations translate well to a network perspective, which envisages 'the global network as stratified, built on an existing foundation of inequality in the distribution of power and influence' (Hughes 2009, 1712). The study of centrality of actors corresponds well to the 'core' and 'periphery' categories established in dependency and world-systems analysis (Clark 2008), as well as the ability to establish norms and control information as a form of discursive power.

Synopsis of the literature

Our review of the literature identifies a shift towards partnership as an organising principle in international development. In the education sector, the growth of partnerships holds the potential to substantially alter the types of actors participating in policy and funding decisions. One key area for investigation is therefore to map and explore the range of actors engaged in partnerships in international development education. In this respect, we seek to identify the types of actors, their proportional representation in the network, and their

geographic distribution.

Literature on international networks demonstrates how networks embed relationships of power, arguing that greater network centrality leads to greater power in terms of access to resources and normative preferences. Additionally, critical studies of international development have longstanding and well-developed accounts of power inequalities in international aid relationships. Thus, a second key question is the extent to which the networks emerging from these partnerships reproduce or transform relationships of power in international development. Here, we look to see whether the network structure is more consistent with what one would expect in non-hierarchical decision making, or conversely whether the relationships would seem to preclude or hinder consensual decisions by inequalities in power and influence.

We investigate these questions using social network analysis and an original dataset of memberships in partnerships for international development education.

Methods and data

Our primary data consist of accessible organisational membership lists in seven partnership-based organisations. We selected these organisations because of their prominence in the field of educational development and included those that describe their structure as a partnership; include state and non-state representation and/or Northern and Southern participation; target education as a global issue impacting cross-border populations; and have the mandate to improve educational access and/or quality in the Global South. The partnerships, however, target a range of foci, including advocacy, financing, policy-design, knowledge-sharing, and/or program-development:

- The Global Campaign for Education (GCE) with 107 members: The GCE is an advocacy organisation and is the largest consortium of civil society organizations globally, representing individual CSOs and regional civil society coalitions from the Global North and South (GCE 2017).

- The Interagency Network for Education in Emergencies (INEE) with 62 members: The INEE is a network of partner organizations from the state and non-state sector and across the Global North and South, and acts as a convening organization on the issue of education in emergencies. It operates in the areas of advocacy, knowledge mobilization, community building, and resource development (INEE 2017).

- The United Nations Girls Education Initiative (UNGEI) with 24 members: UNGEI is a multi-stakeholder partnership that joins state and non-state members from the Global North and South in order to advocate for equity within and improvement of education for girls (UNGEI 2017).

- The Global Partnership for Education (GPE) with 92 members: As the largest multi-stakeholder partnership on education and a core funder of education

globally, members of GPE represent governments, the private sector, civil society, and multilaterals from the Global North and South (GPE 2017).

- The United Nations Global Education First Initiative (GEFI) with 38 members: GEFI is a partnership initiated by the UN General Secretary that has organizational membership from the state and non-state sectors working as a forum for policy development, advocacy and outreach on educational access, quality, and global citizenship (GEFI 2017).

- The Global Business Coalition for Education (GBC) with 33 members: The GBC is a consortium of members from the business community in the Global North and South. The partnership connects companies, fosters collaboration, communicates business initiatives on global education, and funds research (GBC 2017)

- The International Working Group on Education (IWGE) with 8 members: IWGE is a partnership of foundations with educational mandates and aid agencies, housed within UNESCO's International Institute for Educational Planning, working in the area of information exchange and publishing on topics such as aid coordination and education policy implementation (IWGE 2017).

The membership of these partnership-based organisations comprises 293 organisations, with each organisation holding membership in between one and five partnerships. We classified the member organisations into seven different categories:

- *Civil Society or Non-Governmental Organisations* (140 organisations) are directly involved in programme implementation in international development education, for example the Norwegian Refugee Council and Oxfam International. This category also includes advocacy campaigns and networks. Because this group is so large, we distinguish between those in Northern (83 organisations) and Southern (57 organisations) countries, using the classification described below.

- *Bilateral International Development Donors* (24 organisations) for example the United States Agency for International Development (USAID) and the United Kingdom's Department for International Development (DFID)

- *International Organisations* (14 total) are organisations whose members are nation-states (Beckfield 2010), for example the United Nations Children's Fund (UNICEF) and the World Bank. The category includes multilateral development donors (e.g. UNDP and the European Commission)

- *Recipient National Governments* (60 total), for example the governments of Tanzania, Bangladesh and Bolivia.

- *Private Foundations* (7 total) includes any development donor that is not a national government but that has a primary purpose of funding other organisations, for example the Aga Khan Foundation and Open Society Foundation

- *Private sector businesses* (34 total), for example Accenture, Cisco and Chevron.

- *Universities and Research Institutes* (14 total) for example the University of Sussex and the Brookings Institution. The focus of these organisations is research rather than programme implementation.

For each organisation, we identified the location of its headquarters and matched this location with the four World Bank income classifications (i.e. low, lower-middle, upper-middle, and high). On this basis, we are able to identify the possibilities for South-South and North-South relationships advocated by the Paris Declaration on Aid Effectiveness (2005, 18). Based on this classification, we designated actors as either 'Northern' (i.e. from a high or upper-middle income country) or 'Southern' (i.e. from a lower or lower-middle income country) with the understanding that these terms delineate broad socio-economic categories that encapsulate a great deal of diversity and variation. We explore the geospatial distribution of the 'Northern' and 'Southern' organisations using the Google Geocoding Application Programming Interface (API), which translates the text describing the location of the headquarters (for example, 'Geneva, Switzerland') to a geospatial coordinate (i.e. a latitude/longitude coordinate).

From the lists of memberships, we created an affiliation network (Borgatti and Halgin 2011)—a network in which the strength of a tie between two organisations is the number of common memberships they hold in the seven partnership-based organisations. Thus, if two organisations are both members in two common partnerships, the strength of the tie between them would be two. Similarly, if two organisations do not share membership in any partnership-based organisation, they are not connected to one another in the network. This approach to transforming common memberships into a social network is well-documented (Wasserman and Faust 1994; Borgatti and Halgin 2011), and affiliation networks have been studied in numerous contexts, including co-membership in corporate boards (Domhoff 1967), co-membership in international organisations (Beckfield 2010), and co-authorship of scientific articles (Newman 2004).

The maximum theoretical strength of a tie between two organisations in the network is seven, which would be the case if two organisations were members of all seven partnerships. However, this did not occur the dataset, and would be problematic as it would represent a saturation of tie strength. Instead, most ties are either zero or one: 29,495 (69.8%) ties are absent (zero), meaning the organisations hold no common memberships in partnership-based organisations. In contrast, 12,646 (29.7%) ties are based on one co-membership, but only 282 (0.66%) are ties are based on two or more common memberships. Therefore, for the purposes of analysis below, we use a binary version of the network, in which organisations are connected if they have at least one membership in common. Organisations without at least one common membership are not connected. This approach under-represents the strength of ties that are based on multiple co-memberships, but it allows the application of social network analysis methods developed for networks with binary ties (Borgatti and Halgin 2011).

We analyse this network with methods for social network analysis (Wasserman and Faust 1994), specifically focusing on measures of centrality and brokerage. Centrality refers to 'actors that are extensively involved in relationships with other actors' (Wasserman and Faust 1994, 173). While intuitively simple, formally defining and operationalizing centrality is challenging, and several measures of centrality are have been defined in social network analysis (Freeman 1978; Newman 2010). Our analysis uses two commonly employed measures of centrality: degree and eigenvector centrality. Degree centrality is simply a count of the ties to each actor in the network. In contrast, eigenvector centrality is premised on the idea that 'not all connections are of equal value' (Burris 2004, 251); therefore, an actor's centrality is based upon not only the number of connections, but also weighted by the connected actors' own centrality (Shields, 2016). In other words, a tie is worth more if it is from a highly connected actor. Finally, brokerage is defined as the extent to which an actor mediates connections between actors of two other types (Gould and Fernandez 1989). For example, if a bilateral donor were not directly connected to a CSO, but both were connected to a recipient government, that government would broker the connectivity between the donor and the CSO.

We analyse the centrality and brokerage of organisations in the network as an outcome of the type of organisation and its national income, specifically testing the proposition that centrality and brokerage differ between Northern (i.e. higher GDP) and Southern (i.e. lower GDP) countries, when controlling for the type of organisation. We do so using linear regression models (Sheather 2009) in which the dependent variables are the actors' degree centrality, eigenvector centrality, and brokerage.[1]

Analysis

We begin our analysis with a description of the network structure, after which we present three statistical models of centrality and brokerage in the partnership networks. We then conclude with exemplar cases that demonstrate the patterns established in the statistical models.

The network structure

The educational partnership network includes a range of organisational types that span the state and non-state sectors. Traditionally prominent aid actors, namely state-based funders and recipients, are represented in the network with 24 bilateral donor agencies, 14 multilateral organisations, and 60 recipient governments. The network membership, however, signifies the growth of non-state actors participating in the global education policy landscape, with numerous civil society organisations—140, the most of any organisational type in the network—as well as 34 private businesses and seven private foundations. Fourteen universities and research institutes are also included in the network. Purely based on numerical counts, the network shows an expansion of representation beyond the traditional aid structure, with strong participation from the non-state sector.

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[1] All data and files used in the analysis are available under an open source license at: https://osf.io/z3n49/

[Figure 1 - Valued Sociogram]

FIGURE 1: A sociogram of network actors. Actor positions are determined using the Fruchtermann-Reingold algorithm (1991), which positions connected actors close together to minimize crossing lines. The plot demonstrates large clusters of actors that are members of one partnership only. These clusters are connected by a smaller subset of mediators, many of which are NGOs.

The network sociogram (Figure 1) represents organisations as points in a two-dimensional space, with groups of interconnected organisations plotted closely together. The plot indicates there are several groups of interconnected actors, but also shows that most clusters are heterogeneous (i.e. composed of different types of actors). The clustering also indicates that many actors share a common level of centrality; those that are clustered are not highly central. Many are members of one network only and most have intermediate levels of centrality. A smaller group of actors visibly mediates connections between these clusters, visualized as not only central in the network, but also acting as brokers to entities which would not otherwise be connected to one another.

[Figure 2A & B - WORLD MAPS]

FIGURE 2: Geographic distribution of network actors plotted using the Google Geocoding API. The plot of locations (top) shows that actors are distributed over most regions of the world. However, the plot of network ties (bottom) shows that connections are unevenly distributed with many ties to Europe and North America with relatively few ties between the Southern countries.

The geographic plot of organisation locations (Figure 2) shows that they represent a large geographic distribution. While there are concentrations of points (e.g. in Western Europe and the Northeastern United States), there are few populated areas that are completely unrepresented, and there is consistent representation throughout the Global South (e.g. Sub-Saharan Africa). Thus, there is an even distribution of members in the partnerships across the North and South, and if the network structure is egalitarian, one would what expect to also see an even distribution of ties.

However, when connections are shown between the points (bottom plot) there is a much higher density of connections in the Global North than elsewhere. Numerous connections are visible between Western Europe and North America, where most international organizations and Northern bilateral agencies have their headquarters. There is little evidence of South-South connectivity, as there are few connections neither across Sub-Saharan Africa nor between Sub-Saharan Africa and the rest of the world. Most connections go North-South or North-North, and few lines cross over the Southern hemisphere.

Centrality and brokerage

We computed centrality and brokerage values for all organisations in the network (Butts 2014). Mean centrality and brokerage values for each category of organisation and for each income classification are shown in Table 1. Results show that both bilateral donors and

Southern CSOs have high levels of both degree and eigenvector centrality, although Northern CSOs have higher levels of brokerage. Recipient governments, international organisations, and Northern civil society organisations have intermediate levels of centrality, with some variation between degree and eigenvector centrality, while universities and research institutes, private businesses and private foundations have the lowest levels of centrality.

Table 1 also shows a common trend in network positionality across income classifications: values of degree centrality consistently decrease for higher income classifications. Eigenvector centrality and brokerage are more varied, although high-income countries have the lowest mean values for all measures.

[TABLE 1]

> Table 1: Number of organisations, network centrality and brokerage by organisation type and national income classification. Values displayed are the mean standardized value (i.e. the z-value) across the entire organisation type or income grouping; thus for degree centrality, eigenvector centrality, and brokerage the mean value is zero.

While results suggest clear differences in network positionality according to organisation type and national income, further analysis is needed because these two factors are interrelated. For example, bilateral donors are found mainly in upper-mid and high income countries, while Southern and Northern CSOs (by definition) are confined to low and high income classifications. Disaggregating the combined effects of organisation type and income is accomplished through linear regression models.

Regression models

We further tested the relationship between organisation type, national income, and network positionality (i.e. centrality and brokerage) using a linear regression model. In our model, the measures of centrality/brokerage are the dependent variable, while the national income and organisational classification are independent variables. The main advantage of the linear model is that it independently tests the relationship of income and organisational classification. This independence is important because organisational classifications are not evenly distributed across national incomes. Rather, certain types of organisation are more commonly associated with high- and low-income contexts, making it difficult to identify the effects of organisation type and income from the mean values in Table 1.

The linear model disaggregates the influence of organisational type and national income in order to better understand how each one relates to the network positionality independently. A second function of the linear model is to test the statistical significance of the independent variables. While this test relates to the generalisability of a sample to the population, it also relates to the overall levels of confidence in the validity of findings, treating the observed population as a sample from a 'superpopulation' of conceivable alternatives (Goldstein 2015).

To provide a better test of the relationship between national income and network positionality, we replace the World Bank income classifications used in Table 1 with the

GDP per capita for each country, taken as an average of the years 2010-2015. By replacing categories with a continuous variable, we are able to represent the full spectrum of national income in our model. Because the distribution of GDP is highly skewed, we use a logarithmic transformation in our model. To represent the differences between organisations we use dummy-coding, treating the organisations that were least central in Table 1 (i.e. 'private business') as a reference category with an implicit value of zero. The reported effects of other categories are then relative to the reference.

[TABLE 2]

TABLE 2: Regression analysis of centrality and brokerage as an outcome of organisation type and national GDP. Private business is a reference category (i.e. an implicit value of zero), relative to which all other organisations are compared.

Overall, results (Table 2) show significant relationships between different organisation types and network positionality. The strongest and most consistent finding across all three measures is that bilateral donors occupy central positions in the network: they are connected to more actors (degree centrality), their connections are more central themselves (eigenvector centrality) and they mediate connections between different types of organisation (brokerage). The regression analysis also shows that controlling for income (GDP), Northern and Southern CSOs are quite similar in their network positionality. They are both well-connected (high centrality), but do not broker ties between diverse groups of actors. International organisations are also moderately central and have significantly higher levels of brokerage than any type of organisation except bilateral donors. As with the results in Table 1, universities, private foundations, and private businesses are far more peripheral in the network structure than other actors.

The association between GDP and network positionality is not consistent, there is a significant association with eigenvector centrality but no clear theoretical explanation for this specific difference. Rather demonstrating a significant difference in network positionality for organisations in North and South, the most important function of GDP in the model is to control for differences in income that are implicit in the organisation type. Thus, by disaggregating GDP from the type of organisation, international organisations (mostly with headquarters in high-income countries) are more central, whereas the difference between Northern and Southern CSOs diminishes when income is taken into account. Thus, the GDP term in the model makes it possible to assess the differences across organisations with income essentially treated as constant.

Results also show that the model explains a high proportion of the variance in degree and eigenvector centrality (with adjusted r^2 of 0.28 and 0.50, respectively). However, the variance explained by brokerage is relatively low (adjusted $r^2 = 0.13$), meaning that the tendency of organisations to connect organisations of other types (who are otherwise unconnected) is not very well-explained by our models. Two explanations for these findings are possible. The first is that brokerage is explained by variables other than those considered in our analysis, for example the organisation's size or age. Alternatively, the findings could indicate that

brokerage is randomly distributed among actors in the network, meaning that the brokering connections between different types of organisations is not particularly important in partnerships. To the extent that brokerage is explained, bilateral donors and international organisations are identified as the most likely organisations to bridge different types of actors.

Exemplar cases

The analysis identifies two key patterns in partnership networks. First, the structure of the network is closely related to resource flows in aid relationships, specifically the connections between donors and recipients. Second, the non-state sector's role is notable, but the nature of participation differs for CSOs and private actors. Here, we provide illustrative examples in order to contextualise these results.

Bilateral donors

Many of the most central organisations are bilateral aid donors. For example, the UK's Department for International Development (DfID), Norway's NORAD, and the United States Agency for International Development (USAID) all have high values (ranked 2nd, 3rd and 4th) in their eigenvector centrality. These agencies are members of five different partnerships, which connect them to a large number of other organisations. Australia's AUSAID, Denmark's DANIDA, Germany's GIZ, and Sweden's SIDA, all bilateral donors, are also among the ten most central actors. The least central bilateral donors are China and Croatia, which are jointly ranked 245th (equally) in eigenvector centrality, and members of only one partnership. These cases suggest that donors with higher centrality measures, in particular agencies in the top ten for centrality measures, are greater providers of international aid, committing larger budgets to overseas development assistance than those with lower values (OECD 2016).

Aid recipients

Although low and lower-middle income countries are strongly represented in the network (second only to CSOs in number), the analysis shows that recipient governments are less likely to hold central positions in partnership networks. The four most central recipients (Bangladesh, Ethiopia, Guyana, and Mozambique) are all members of the same two partnerships (GPE and UNGEFI), and are therefore jointly ranked as 115th in centrality. Southern countries are not strongly connected to one another, as their connections primarily go South-to-North (see Figure 2B). Combined with the very high centrality measures of donors, these results indicate that aid recipients hold peripheral positions. As shown in Figure 2B's visualization of global connections, countries in the Global South—the location of aid recipients—are predominantly connected to the network via the North-Eastern United States and Western Europe, where most bilateral donors have their headquarters. Based on literature on international networks, these findings suggest that aid recipients are less likely to influence resource flows or shape the information flows and normative preferences of the partnerships.

Civil society organisations

Our analysis shows that civil society organisations are the most widely represented organisational type in the network, accounting for 140 of the 293 total entities. The high centrality of both Northern and Southern CSOs illustrates the changing nature of the education aid environment, which historically included primarily governments and multilaterals. Many of the most central organisations are CSOs in high-income countries, such as Plan International (the most central organisation in the analysis), Oxfam and Save the Children (jointly 5th). However, many CSOs in Southern countries are also very central, such as the Africa Network Campaign for Education for All (ANCEFA), and Forum for African Women Educationalists (FAWE), both of which are among the 20 most central organisations.

Non-central organisations: Private actors and research institutes

The models also identify types of organisations than tend to have low integration into the partnership network. Private businesses are notably non-central; among the least central organisations (tied 245th) are Chevron, Exxon, Credit Suisse McKinsey and PricewaterhouseCoopers, all of which are only members of the business-oriented GBC. The latter two results are somewhat surprising, given the increasing role of private sector consultancies in implementing key international development programmes (e.g. Barber 2013; DFID 2012; DFID 2016).

Universities and research institutes are also peripheral, with none above 190th in centrality. All 14 universities and research institutes are located in high-income countries. Of all Universities, only one (University of Toronto - the most central University) is a member of more than one partnership. A common theme in most non-central organisations is that aid flows are relatively unimportant to their key concerns and core activities. In other words, these organisations are neither aid resource-dependent nor significant providers of international finance, and they therefore have little incentive to actively pursue integration into partnership networks.

Exceptions and outliers

Results also show that the groups presented above can conceal important individual actors that differ from the overall trend. For example, Intel Corporation, LEGO Education, Microsoft and Pearson are all private companies with high centrality values relative to other businesses. As members of both GPE and GBC they are jointly ranked 121st, each with distinctive and different motivations and histories that could explain why its engagement is greater than other companies. The Open Society Foundation (ranked 113th) is much more engaged in the network than other private foundations, for example Aga Khan Foundation (195th), Comic Relief (196th), and the Qatar Foundation (245th). In other cases, outliers are less central in the network than one might expect. For example, UNDP—a major multilateral agency—is a member of only one partnership (GEFI), and has a correspondingly low centrality value (245th).

Discussion

Our study offers two primary contributions to the literature. First, we map the emerging constellations of actors engaged in global partnerships for educational development. Our mapping supports the claim that international development is in a phase of 'hypercollectivity' characterized by a diverse group of organisations that engage with one another through a complex pattern of relationships. Most of these heterogeneous partnerships demonstrate a shift away from state-based organisations (i.e. government donors, recipients, and international organisations). For example, civil society organisations in both the North and South are particularly numerous, indicative of their expanding participation in global education policy-making (Menashy 2016; Mundy and Murphy 2001; Mundy 2012). Though less numerous, private companies, private foundations, and universities all demonstrate the noteworthy and growing involvement of non-state organisations in international development.

Second, we analyse how actors' connections to one another represent power within the network of partnerships for international development education. Our analysis shows that the structure of the network reproduces power relationships that predate the discursive shift to partnership. Specifically, bilateral donors are the most central organisations in the partnership network, while recipient countries are relatively peripheral. International organisations— including multilateral organisations—have high centrality and are more likely to broker connections between different types of actors than other organisations. In conjunction with the literature on international networks (Hafner-Burton, et al. 2009), these findings suggest that donors and international organisations are likely to shape the flows of information, ideas, and normative preferences of these partnerships. Despite the emergence of hypercollectivity with a rhetorical emphasis on 'non-hierarchical modes of steering' (Risse 2004, 292), the structure of the partnership network tends to reflect the established relationships and roles of international aid.

Evidence on the power of non-state actors in the network shows heterogeneity and segmentation. On the one hand, civil society organisations in both the North and South are very numerous and highly central, their network positionality enables advocacy and influence that simultaneously and ambiguously combine the neo-liberal preference for non-state actors in development with grassroots activism and democratic participation (Kamat 2004). On the other hand, the involvement of the private sector and universities seems relatively superficial and is likely to carry little influence. In terms of businesses and foundations, their marginal status in the network may be indicative of a wider lack of financial support from the private sector (van Fleet 2011), which sees investments in education as difficult to track (Menashy 2016) despite high-profile calls to increase private funding (Brown 2015; Rose and Steer 2014; Sachs 2015). It seems unlikely that the structure of partnership networks alone can explain the minimal levels private sector funding when compared to other sectors. A better explanation is that the peripheral status of the private sector is symptomatic of a larger lack of engagement in the education sector. The private companies have an 'exit option' in that international educational development does not constitute part of their core activities and is only minimally required in order to maintain some levels of legitimacy. In the context of

declining bilateral aid to education (GEM 2016), our results suggest that the network of partnerships needs the private sector more than the private sector needs to be part of the network.

Limitations

While contributing new insights to the literature, there are certain important limitations to our study. First, by taking co-memberships as our unit of analysis, the analysis focuses more on conduits of connectivity than the substance of interactions between organisations. Thus, ties delineate potential flows of information (and potential blockages) rather than actual engagement or interactions. While the study of co-membership networks is well-established (Borgatti and Halgin 2011), co-membership should not be conflated with the presence or substance of interactions. In this context, an analysis of the latter phenomenon would likely require prolonged qualitative investigation. Similarly, our evidence in differences of centrality and brokerage across different types of organizations should not be used to draw conclusions about particular organizations, which may be well-served by their partnerships.

Second, our sample of partnerships is limited due to the emerging nature of the field, and as a result structural differentiation within the network is limited. In other words, many actors are members of one partnership only, and their positionality cannot be differentiated from other actors who are only members of the same partnership. As seen in Figure 1, the positionality of these actors is largely determined by the comparatively small number of actors who do engage across multiple partnerships. Finally, our analysis is cross-sectional rather than longitudinal. Those who support the shift towards partnerships would likely argue that this approach has not removed power inequalities but has rather decreased them over time. This is an interesting empirical question, and in this respect our study and data may serve as a possible foundation for future research.

Conclusion

Our analysis indicates that partnerships formed following the Paris Declaration introduce a great diversity of actors in international development education, many of which are relatively new to the sector. However, it is important not to associate this collectivity with egalitarianism; using social network analysis, we argue that the shift towards partnership perpetuates rather than transforms power relationships in international development education. In particular, donors maintain a position within the network that suggests they would maintain the greatest influence over both the resource flows and normative preferences of partnerships. These networks also demonstrate the strong influence of civil society organisations in both the North and South and provide evidence that private sector actors are minimally engaged in the field.

Relationships between different organisations in international development—and in particular the role of the private sector—are longstanding concerns of comparative education research (Mathew 1970). To this body of literature, our research demonstrates the utility of the social network approach as a way to understand and analyse power inequalities in international development. The identification of hegemony in relationships that are presented as apolitical

or non-hierarchical is a key theme of critical studies of international development (Colclough and Webb 2012; Escobar 1995; Ferguson 1990; Verger et al 2014). It is therefore less surprising that inequalities exist than that these inequalities are so readily observable in the network structure, and that the analysis is able to clearly distinguish how different types of actors are integrated into the network. The study therefore supports the findings of policy analyses, country case studies, and ethnographic research that expose North-South power asymmetries and the concentration of power within Northern organisations (see Ball 2012; Chabbott 2003; Draxler 2008; Kamat 2004; Vavrus and Seghers 2010; Verger et al 2014), using a quantitative empirical approach.

Additionally, our study contributes to research on privatisation and the political economy of aid. Literature has demonstrated that private actors are increasingly involved in international education networks (Ball 2012), and our exploration of those participating in these networks empirically confirms a significant presence of the private sector. However, our analysis shows that the integration of the private sector is relatively weak. To explain these results, we argue that private actors have an 'exit option.' For instance, businesses are less dependent on network integration for their core activities and revenue, and in this respect they differ from other organisations involved in partnerships. In most cases, private businesses' primary benefit from the partnerships is to achieve and maintain normative legitimacy.

While this study demonstrates several key characteristics of partnership networks, it is far from a final analysis of the networks involved in international educational development. A foundational assumption of the network approach is that actors form relationships intentionally and strategically. In this respect, one can expect that organisations involved in aid to education and global education policy will continue to reshape the network in response to a continually changing strategic environment. The processes and dynamic aspects of the network evolution will yield important and unique insights into the political, economic and institutional influences on the education of many.

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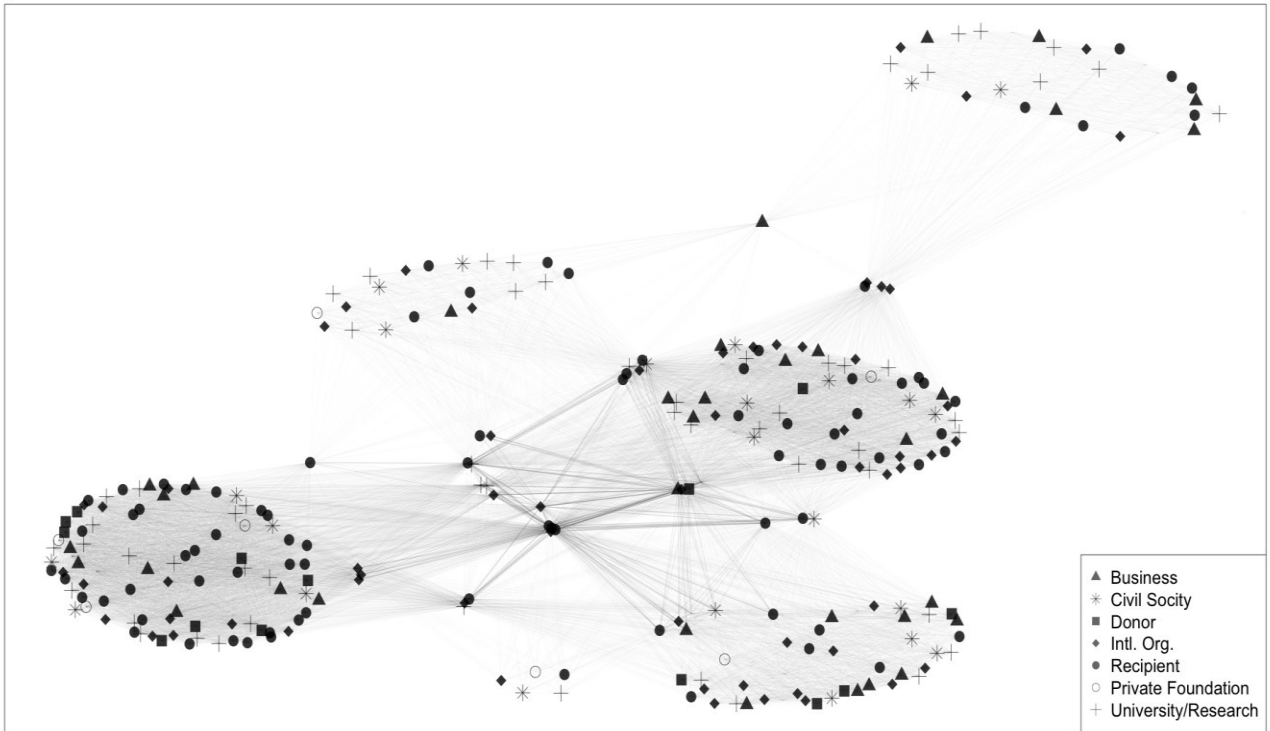
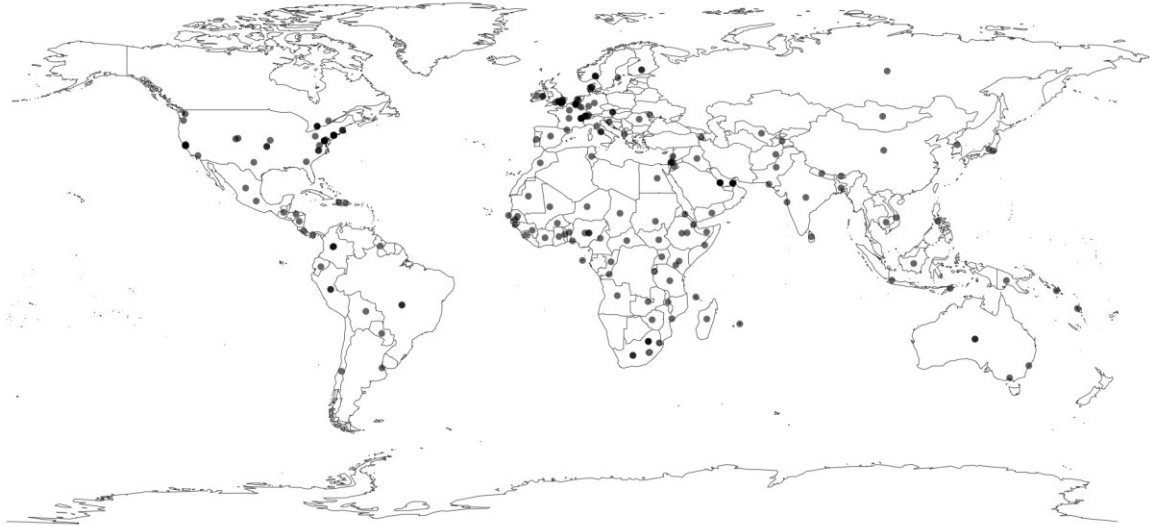*Figure 1: Valued Sociogram*

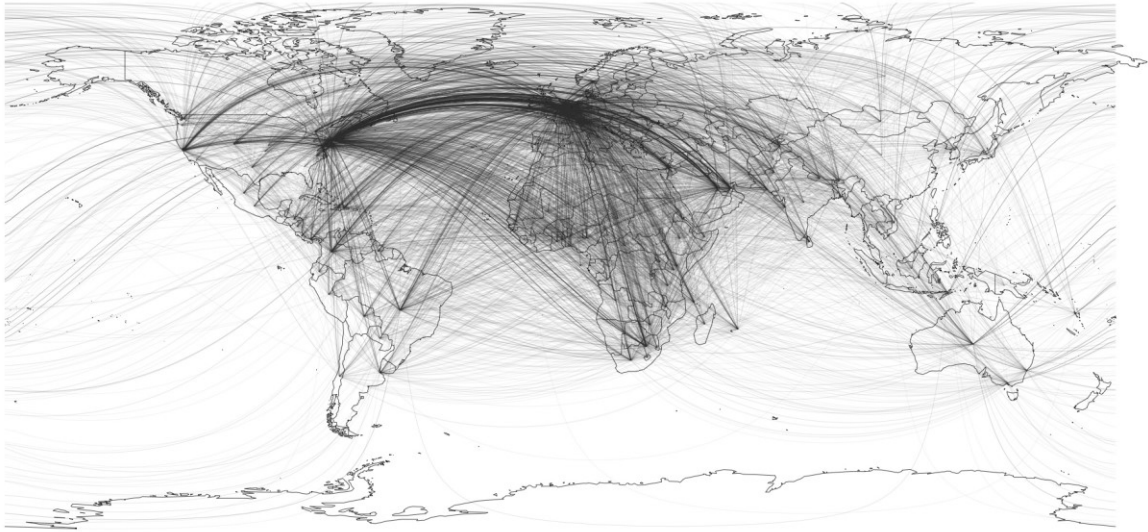*Figure 2A: World Map*

Figure 2B: World Map

Table 1: Number of organisations, network centrality and brokerage

	N	Degree	Eigenvector	Brokerage
Organization Type				
Bilateral Donor	24	1.028	0.574	1.157
Civil Society Org. (North)	83	-0.008	0.122	0.019
Civil Society Org. (South)	57	0.444	1.011	-0.261
International Org.	14	-0.141	-0.618	0.553
Private Business	34	-1.087	-1.262	-0.154
Private Foundation	7	-0.357	-0.636	-0.059
Recipient Government	60	0.030	-0.217	-0.214
University/Research Org.	14	-0.692	-0.895	-0.269
Income Classification				
Low	47	0.264	0.353	-0.220
Lower-mid	69	0.184	0.373	-0.247
Upper-mid	34	0.131	0.397	-0.019
High	143	-0.207	-0.391	0.196

Table 2: Regression analysis of centrality and brokerage as an outcome of organisation type and national GDP

	Dependent variable:		
	Degree	Eigenvector	Brokerage
	(1)	(2)	(3)
Intercept	-0.17	0.39	-0.57
	(0.56)	(0.47)	(0.62)
Log GDP	-0.09	-0.16**	0.04
	(0.05)	(0.04)	(0.06)
Bilateral Donor	2.14**	1.89**	1.30**
	(0.23)	(0.19)	(0.25)
CSO (North)	1.08**	1.38**	0.17
	(0.17)	(0.14)	(0.19)
CSO (South)	1.25**	1.77**	0.02
	(0.25)	(0.21)	(0.27)
International Org.	1.00**	0.74**	0.68*
	(0.27)	(0.23)	(0.30)
Private Foundations	0.76*	0.69*	0.08
	(0.35)	(0.29)	(0.39)
Recipient Government	0.82**	0.52*	0.07
	(0.25)	(0.21)	(0.28)
University/Research Org.	0.45	0.47*	-0.14
	(0.27)	(0.23)	(0.30)
Observations	291	291	291
r^2	0.30	0.51	0.15
Adjusted r^2	0.28	0.50	0.13
Residual Std. Error	0.85	0.71	0.94
F Statistic	14.87**	37.18**	6.45**

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