Diffusion Across International Organizations: Connectivity and Convergence

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Abstract While extensive research shows that policies and institutions spread across states through processes of diffusion, we know little about diffusion among international organizations (IOs). We develop a novel approach for the study of diffusion among IOs. This approach consists of three components: a theoretical focus on connectivity among IOs as pathways for diffusion; a conceptual differentiation between alternative types of convergence effects; and a methodological strategy combining dyadic and spatial analysis of diffusion. We illustrate the usefulness of this approach through an empirical case: the diffusion of participatory governance arrangements among IOs from 1970 to 2010. The analysis shows that connectivity among IOs contributes to convergence, which typically is manifested through imitation of very specific institutional models. The article's findings have implications both for the study of IOs and for the general study of diffusion.

Extensive research in comparative politics shows that policies and institutions sometimes spread across states through processes of diffusion—decisions in one country are systematically conditioned by prior choices in other countries.[1] Prominent examples include the spread of market reforms,[2] democracy,[3] unemployment policy,[4] and environmental regulation.[5] All are illustrations of diffusion understood as interdependent decision making, where "prior adoption of a trait or practice in a population alters the probability of adoption for remaining non-adopters,"[6] giving rise to a clustering of phenomena in time and space.

To date, however, we know little about diffusion processes at the global level among the many international organizations (IOs) that engage in collective

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1. For overviews, see Gilardi 2012; Graham, Shipan, and Volden 2013; Solingen 2012.
2. Meseguer 2009; Simmons and Elkins 2004.
3. Gleditsch and Ward 2008.
4. Gilardi 2010.
5. Holzinger, Knill, and Sommerer 2008.
6. Strang 1991, 325.

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policymaking in areas such as trade, development, human rights, and the environment. While IOs have featured in earlier research on diffusion, it has been as channels of communication for national governments, facilitating diffusion of policies and norms among member states.[7] Yet there are good reasons to believe that diffusion takes place *among* IOs as well. IO decision makers, too, are likely to search for models to copy in their efforts to design policies and institutions that are effective and legitimate. Global governance provides ample opportunities for diffusion as IOs have grown in number, often overlap in membership, and increasingly occupy the same policy domain within international regime complexes. This intuition is supported by the handful of empirical studies that currently make up existing research on diffusion across IOs.[8] However, these studies are almost exclusively qualitative and focused on regional integration. While important contributions to the field, they do not allow for an assessment of general dynamics of diffusion in global governance.

In this article we offer a new approach for studying diffusion among IOs. It makes four principal contributions. First, we advance a theoretical argument about IO connectivity as a determinant of diffusion. We argue that interconnectedness among IOs increases the likelihood of diffusion by opening channels for the flow of information, experiences, ideas, models, and norms across organizations. This argument is inspired by findings in comparative politics that connections between countries influence diffusion patterns, but recognizes that those links look different among IOs compared to states. In global governance, such connections may be formal, when IOs are organizationally interlinked through memberships or partnerships, or informal, when IOs are engaged in the same issue area, based in the same world region, or located close to each other. Such links may serve as pathways for diffusion driven by multiple underlying motivations, such as learning, emulation, competition, and coercion. The pattern of interconnectedness between IOs generates powerful predictions of when and where we are most likely to see diffusion of policies and institutions in global governance.

Second, we introduce a novel conceptualization of convergence effects. Instead of equating diffusion with convergence on an identical model, which is a too restrictive and often-criticized assumption, we differentiate between three types of convergence effects: imitation, adaptation, and inspiration. This conceptualization makes it possible to establish whether diffusion takes place through exact imitation of specific practices in other IOs, adaptation of available models to local conditions, or general inspiration from prevailing norms in global governance.

Third, we build on recent advances in the general study of diffusion to suggest a methodological strategy for analyzing diffusion among IOs, combining dyadic and spatial analysis. Dyadic analysis closely fits the logic of diffusion by identifying

7. Compare Cao 2010; Greenhill 2010; Holzinger, Knill, and Sommerer 2008; Simmons and Elkins 2004.

8. Alter 2012; Böhmelt and Spilker 2016; Grigorescu 2010; Jetschke and Murray 2012; Lenz and Burilkov 2017; Ovodenko and Keohane 2012; Risse 2016.

an IO with a model, a potential adopting IO, and their mutual interconnectedness. Spatial analysis is complementary by estimating whether the adopting IO in a dyad is more likely to copy the model depending on previous interactions between IOs in broader peer groups. This strategy is different from the predominant way of studying diffusion among IOs, which traces how an outstanding model in one particular IO, such as the European Union (EU), spreads to other IOs in the same field, such as regional integration. In our view, it is superior, since it is open to the possibility that diffusion may occur between multiple IOs in a larger system, rather than from just one, and may be a two-way rather than one-way process.

Fourth, this article offers a first systematic empirical application of this approach for studying diffusion among IOs. Expanding beyond the common focus on regional integration, we analyze diffusion among a large sample of global and regional IOs in multiple policy fields. We focus on one particular design feature of IOs: the adoption of institutional arrangements for participatory governance—or the involvement in policymaking of transnational actors (TNAs), such as nongovernmental organizations (NGOs), businesses, and scientific experts. There are several reasons for this choice. To begin with, participatory governance has spread dramatically across IOs in recent decades, prompting observers to speak of a "transnational turn" bringing about a new era of "complex multilateralism."[9] This development naturally raises the question of whether diffusion has been at play. Participatory governance is a substantively important feature of IOs with implications for power, legitimacy, and effectiveness in international cooperation.[10] Establishing the sources of this development is therefore an essential task. Finally, this empirical focus benefits from a favorable data situation. We analyze the spread of participatory governance over time and across space based on a recent data set on formal TNA access to fifty IOs from 1970 to 2010.

The analysis of participatory governance well demonstrates the usefulness of our proposed approach. The principal conclusions from this empirical case are three-fold. First, interconnectedness among IOs has contributed to a diffusion of participatory governance arrangements. Specifically, IOs tend to copy models from organizations with which they share partnerships and issue-area orientation. It matters less if IOs have overlapping memberships, are based in the same region, or are headquartered next to each other. This finding suggests that cross-IO diffusion operates somewhat differently from cross-country diffusion, where "the classic story … is about geography, with policies spreading from one neighbour to the next."[11] Second, when connectivity generates diffusion, it primarily takes the shape of IOs imitating very specific participatory models in place for the same type of bodies in other IOs. It may also consist of adapting participatory models to local conditions. But it is not about IOs being inspired by each other's participatory arrangements at some

9. Tallberg and Jönsson 2010, 4; O'Brien et al. 2000. See also Risse 2012; Tallberg et al. 2014.
10. Betsill and Corell 2008; Keck and Sikkink 1998; Tallberg et al. 2018.
11. Shipan and Volden 2014, 371; see also, for example, Brinks and Coppedge 2006; Walker 1969.

more general level. This underlines the importance of differentiating between different types of convergence if we want to understand the nature of diffusion effects. Third, while diffusion has been central for the spread of participatory governance, the findings also confirm the importance of independent factors highlighted in existing research. This result supports the idea that independent and interdependent explanations often are complementary in explaining the spread of a particular policy or design.[12]

Pathways of Diffusion: Interconnectedness Among IOs

As the number of IOs in world politics has increased, so has the interconnectedness among them. IOs are not atomistic organizations, each minding its own business in a well-defined governance space, but often interlinked and overlapping in functional or geographical scope. This is the basic insight behind multiple strands of research in recent years. Literature on institutional interplay and regime complexes explores the nature, management, and consequences of interactions among international regimes and organizations.[13] Work on forum shopping shows how the multiplicity of IOs opens up possibilities for actors to pursue their interests in alternative venues, and how the pre-existing menu of IOs conditions the creation of new organizations.[14] Research on inter-organizational relations identifies drivers and patterns of IO cooperation in global governance.[15] Finally, there is work on how IOs create social networks among their member states, and how these networks shape outcomes in world politics.[16]

Our argument builds on the same assumptions about complexity, interconnectedness, and interaction in global governance. At the same time, it is distinct from existing research by theorizing how and why a broad range of interconnections among IOs drives diffusion of policies and institutions across organizations. In particular, it is useful to clarify how our argument relates to, and is distinct from, three important strands of research on (1) social networks in global governance, (2) diffusion from outstanding models in global governance, and (3) diffusion of scripts in global governance.

Network research studies the effects of shared IO memberships among states (networks) on political outcomes such as trade,[17] economic sanctions,[18] democratization,[19] and militarized disputes.[20] The general point is that shared IO memberships

12. Börzel and Risse 2016; Holzinger, Knill, and Sommerer 2008.
13. For example, Gehring and Oberthür 2009; Keohane and Victor 2011.
14. For example, Busch 2007; Jupille, Snidal, and Mattli 2013.
15. For example, Biermann 2008; Jönsson 1986; Koops and Biermann 2016.
16. Kahler 2009.
17. Ingram, Robinson, and Busch 2005.
18. Hafner-Burton and Montgomery 2008.
19. Manger and Pickup 2016; Warren 2016.
20. Dorussen and Ward 2008; Kinne 2013.

create network ties among states that facilitate information exchange, allowing states to expand trade, avoid sanctions, and mitigate conflicts. Our argument shares the basic notion of ties facilitating the exchange of information, but differs in two central respects. First, while the network literature focuses on connectivity among states, we theorize connectivity among IOs. Overlapping memberships are interesting from both perspectives, but for different reasons: to the network literature, because overlapping memberships create ties between states that may facilitate information exchange; to us, because joint memberships create ties between IOs that may facilitate the diffusion of ideas and information across IOs. Second, while the network literature, because of its focus on ties between states, centers on overlapping memberships as a form of connectivity among IOs, we theorize a broader range of formal and informal types of interconnectedness, given our interest in pathways of diffusion across IOs. In recognition of these differences, we use the terminology of interconnectedness and connectivity, rather than networks, to avoid confusion

Our argument is also distinct from research on outstanding models as sources of diffusion in global governance. The general argument is that some models diffuse because they are widely perceived to be successful. Diffusion research in comparative politics speaks of "miracle models"[21] and "learning from success."[22] In the context of global governance, the best example is the role of the EU as a model for regional integration in other parts of the world. As a result of its perceived success in achieving peace, prosperity, and rule of law in Europe, the EU has inspired other regional IOs to adopt some of its features.[23] This type of diffusion from outstanding models does not require that the source and the adopter are connected, although they sometimes are. The logic only presumes that a model is recognized as particularly successful and therefore inspires adoption by others. By contrast, our argument privileges connectivity as a driver of diffusion.

Finally, our argument is distinct from work on global scripts' diffusion in world politics. Informed by sociological institutionalism, this research suggests that organizations adopt designs and policies considered legitimate by their external environment.[24] The environment matters because it conveys standards of appropriateness and because conformance to these standards gives organizations legitimacy, resources, stability, and enhanced survival prospects.[25] A range of contributions draw on this logic to explain the spread of macro-institutional forms in global governance, such as regionalism,[26] transnational governance,[27] and international nongovernmental organizations.[28] In research on IOs specifically, this perspective

21. Meseguer 2009.
22. Brooks and Kurtz 2012; Simmons and Elkins 2004; Volden 2006.
23. Alter 2012; Lenz and Burilkov 2017; Risse 2016.
24. Finnemore 1996.
25. Meyer et al. 1997; Meyer and Rowan 1977.
26. Risse 2016.
27. Dingwerth and Pattberg 2009.
28. Boli and Thomas 1999.

suggests why such organizations sometimes demonstrate significant homogeneity in institutions and policies, despite different functional tasks, memberships, and geographical origins.[29] Similar expectations emerge out of related work on organizational ecology in global governance, emphasizing how organizational environments create competitive pressures that shape institutional design.[30] Our argument shares the idea that IOs look to their external environment when deciding whether to adopt a particular design or policy. However, we go one step further, arguing that IOs are particularly likely to borrow models from organizations in their environment with which they are connected. We remain agnostic on the underlying motivation driving this type of dynamic (emulation, competition, or other).

In our account, interconnectedness among IOs is central because it affects the level of diffusion we can expect. The idea is simple: diffusion is more likely to take place between IOs with a high level of connectivity than between IOs with few links, interactions, and commonalities. When IOs are highly interconnected, this provides greater opportunities for information, ideas, models, and norms to travel across IOs, giving rise to patterns of convergence in policies and institutions. Connections among IOs thus function as pathways or channels for diffusion in global governance.

Anecdotal evidence from our empirical case of participatory governance illustrates how interconnectedness among IOs may give rise to diffusion. The United Nations (UN) Non-Governmental Liaison Service organizes annual meetings of civil society offices in UN agencies and other IOs, among them the Organisation for Economic Co-operation and Development (OECD), the Commonwealth, and the Council of Europe (CoE).[31] These meetings serve as a forum for the exchange of experiences with particular modes of participatory governance. Other examples of IOs holding regular meetings on experiences of NGO involvement are found in the fields of fisheries[32] and security.[33] IOs may also seek inspiration from peer IOs in the absence of common forums. For instance, when preparing new rules on NGO participation in 2006, the International Whaling Commission reviewed the procedures in eleven other IOs in the same field.[34] Likewise, when the Asian Development Bank (ADB) in 1995 set up an inspection function, it assessed the practices of other development banks before adopting versions of models existing in the World Bank and the Inter-American Development Bank.[35]

While we speak of diffusion across IOs as if they were unitary actors, the real agents of convergence are the member state bodies (committees, councils, summits) and supranational bodies (secretariats, courts, parliamentary assemblies) mandated to make decisions on the policies and designs of IOs. In the traditional

29. For example, Börzel and Van Hüllen 2015; Rocabert et al. forthcoming.
30. Abbott, Green, and Keohane 2016.
31. UN NGLS 2011.
32. NAFO 1999.
33. WEU 1999.
34. IWC 2006.
35. ADB 1995.

intergovernmental model, member state bodies rule IOs through consensus decision making. Over time, however, it has become increasingly common that member states adopt decisions through majority voting and that supranational bodies enjoy a role in IO policymaking.[36] As a consequence, both state representatives and international bureaucrats may play a part in the diffusion of IO designs and policies.[37]

The expectation that connectivity matters is not new to diffusion research. In comparative politics, connections among states are regularly identified as sources of cross-country diffusion. Existing research highlights connectivity among states in terms of geographical proximity (neighboring countries), cultural similarities (colonial legacy, language, religion), market position (competitors), and institutional networks (IO membership).[38] While inspirational, these types of connectivity only partially map onto linkages among IOs. In addition, we have to consider the specifics of inter-IO relations when theorizing connectivity in global governance.

We divide connectivity among IOs into two complementary dimensions—formal and informal—and identify multiple variants of each (Table 1). No variant is associated with a particular mechanism of diffusion, as conventionally understood, but may function as a channel for learning, emulation, competition, or coercion. While some research focuses on evaluating the relative presence of such mechanisms, we join others who instead privilege a focus on the channels of diffusion, partly

TABLE 1. *Types of connectivity among IOs*

	Category	*Operationalization*	*Example*
Formal connectivity	Membership linkages	Overlap in membership	All members of CARICOM are UN member states
	Institutional linkages	Official partnership	EU has observer status at WTO
Informal connectivity	Functional reference group	Same issue area	NATO and SCO are both active in security policy
	Regional reference group	Same world region	ASEAN and ADB are both based in Asia
	Social reference group	Same headquarter location	OAS and IMF are both headquartered in Washington DC.

Notes: CARICOM = Caribbean Community; UN = United Nations; EU = European Union; WTO = World Trade Organization; NATO = North Atlantic Treaty Organization; SCO = Shanghai Cooperation Organization; ASEAN = Association of Southeast Asian Nations; ADB = Asian Development Bank; OAS = Organization of American States; IMF = International Monetary Fund.

36. Hooghe et al. 2017.
37. Johnson 2014.
38. Cao 2010; Holzinger, Knill, and Sommerer 2008; Maggetti and Gilardi 2016; Simmons and Elkins 2004.

because of the difficulties of identifying underlying motivations, and partly because of the promise of a focus on connectivity.[39]

We observe *formal connectivity* when IOs are organizationally interlinked, either through memberships or institutional arrangements. The expectation is that IOs with organizational linkages are more likely to draw on each other's experiences, models, and ideas, since such linkages create direct opportunities for communication and exchange.

First, as already recognized, IOs may be linked through their memberships. Global IOs often have extensive overlaps in membership, as do IOs located in the same world region. Since states are the principal decision makers in IOs, adopting or rejecting new policies and institutions, overlap in membership provides a potentially powerful channel of diffusion.[40] In this logic, states draw on information gained in one IO when confronted with a similar policy or design choice in another. One illustration is the compliance system of the Montreal Protocol on ozone depletion, which states with overlapping membership subsequently used as a model for the Kyoto Protocol on climate change.[41]

Second, IOs may be organizationally linked to each other through institutional arrangements. It has become relatively common that IOs recognize each other's existence, mutuality of interests, and functional interconnectedness by engaging in official partnerships.[42] For example, the EU's department for humanitarian aid has formal partnership agreements with the International Organization on Migration, the Food and Agriculture Organization, and the World Health Organization.[43] A common component of such partnerships is mutual observer status. For instance, the World Trade Organization (WTO) offers observer status to the UN, OECD, and World Bank, while the African Union (AU) lists a dozen regional and global IOs as accredited partners. Partnerships may also be operational, such as the cooperation between the North Atlantic Treaty Organization (NATO), Organization for Security and Cooperation in Europe (OSCE), and EU in security policy.[44]

When IOs are linked in other ways than through organizational ties, we observe *informal connectivity*. The basic idea is that IOs not only get inspiration from those IOs they have organizational links with, but also IOs that occupy the same functional, regional, and social space. In diffusion research, the favored term for such communities of similarity is "reference groups."[45] In our case, the logic of reference

39. Lee and Strang 2006; Simmons and Elkins 2004. In early diffusion studies, it was common to identify a reference group (e.g., cultural peers), and then tie this group to a single diffusion mechanism (e.g., emulation). However, recent research points to the limits of this approach, and there is nowadays little consensus in quantitative diffusion research on how indicators and mechanisms could be matched. Gilardi 2012; Graham, Shipan, and Volden 2013, 694–95; Maggetti and Gilardi 2016.

40. Böhmelt and Spilker 2016.

41. Gehring and Oberthür 2009, 134.

42. Grigorescu 2010, 878.

43. On EU partnerships with other regional IOs, see Lenz and Burilkov 2017; Risse 2016.

44. Biermann 2008.

45. Simmons and Elkins 2004; Strang and Soule 1998, 275.

groups suggests that IOs are more likely to adopt a particular policy or design when other IOs in the same issue area, world region, or geographical location do the same because those IOs' experiences, models, and ideas could be considered most relevant.

IOs active in the same issue area normally have commonalities in the societal problems they address and the policy options they confront. When choosing from the menu of models, we expect them to look specifically at the policies and institutions of other IOs in the same issue area—their functional reference group. In the area of regional integration, it is well-known that IOs have adopted designs and policies with an eye to models in other parts of the world.[46] Likewise, development banks are known to have sought inspiration from each other in developing their policies and organizational structures,[47] as have regional fisheries-management organizations.[48]

Similarly, IOs located in the same world region often experience commonalities as a result of being anchored in the same communities. These commonalities go beyond overlapping memberships and build on regional community attributes such as shared collective identities and historical experiences.[49] We consider IOs rooted in the same region to be members of the same cultural reference group. We borrow this term from Simmons and Elkins, who use it for countries with religious, linguistic, and colonial affinities.[50] The basic notion is that ideas about appropriate models reflect deep identity concerns. Diffusion research has found that entities sharing basic cultural features tend to adopt similar practices.[51] For example, in global governance IOs based in Asia are said to embrace a specifically "Asian way" of cooperation, rooted in legal and political culture, and distinguished by informality and intergovernmentalism.[52]

Finally, IOs may be informally connected because of proximity in their headquarters' location. There is a high concentration of IO headquarters in cities such as New York, Washington DC, Geneva, Brussels, London, Paris, and Vienna. Even if IOs have little else in common, being located close to each other entails greater opportunities for informal interaction.[53] As IO staff meet and discuss in social and political arenas, experiences and norms travel more easily. It also happens that staff move between IOs located in the same city. One example is the exchange of staff and lessons between Brussels-based NATO and the EU at the levels of both military personnel and political leadership, exemplified by NATO Secretary General Javier Solana bringing important experiences to the EU when becoming its top foreign-policy representative in 1999.[54] We can therefore expect IOs in proximity of each other (the social reference group) to be particularly likely to adopt each other's designs and policies.

46. Alter 2012; Börzel and Risse 2016.
47. Park 2014.
48. Hollway 2015.
49. Checkel and Katzenstein 2009; Risse 2010.
50. Simmons and Elkins 2004, 175–76.
51. Ibid., 175.
52. Kahler 2000.
53. Grigorescu 2010, 87.
54. Biermann 2008, 172.

Taken together, we expect patterns of formal and informal connectivity to influence the potential for diffusion across IOs. The basic hypothesis we test is whether stronger connectivity between IOs leads to a greater likelihood of diffusion. In addition, we empirically evaluate if some forms or combinations of connectivity are more powerful channels of diffusion than others.

Methods and Data

Our strategy for exploring effects of connectivity consist of three components. First, we combine dyadic and spatial analysis of diffusion across IOs. Second, we introduce a differentiated conceptualization of convergence effects. Third, we control for two alternative explanations of convergence across IOs, privileging outstanding models and independent IO factors. This strategy is generic and potentially applicable to any analysis of diffusion across IOs. It can be used to assess the effects of connectivity on convergence in institutional designs as well as policies. Here, we demonstrate its usefulness through an empirical focus on participatory governance as a dimension of the institutional design of IOs. We first introduce the data on TNA access to IOs and then describe each of the three components of our strategy in the context of this empirical focus.

Data

The empirical analysis is based on a recent data set on formal TNA access to a representative sample of 298 organizational bodies of fifty IOs between 1970 and 2010.[55] TNAs are private nonprofit or for-profit actors with transnational activities, such as NGOs, scientific experts, and multinational corporations. Access is the institutional mechanisms whereby TNAs may take part in an IO's policymaking, and corresponds well to the idea of participatory governance. The data set measures access at the level of IO bodies, such as ministerial councils, committees, and secretariats. It exclusively captures formal access, as laid down in treaty provisions, rules of procedure, or policy guidelines. The large majority of these decisions on access (88%) have been taken by member state bodies and the remainder (12%) by supranational secretariats and courts.

The data reveal that institutional arrangements for TNA access have become much more common over time, and that diffusion may have been at play in this process. Figures 1 and 2 depict the number and share of IO bodies active in four central issue areas and based in four major world regions that have some form of access arrangement in place. The over-time patterns in both figures strongly resemble the first two stages of an S-curve—the typical expected result from a process of

55. Sommerer and Tallberg 2017. See Table A.1 for a full list of IOs.

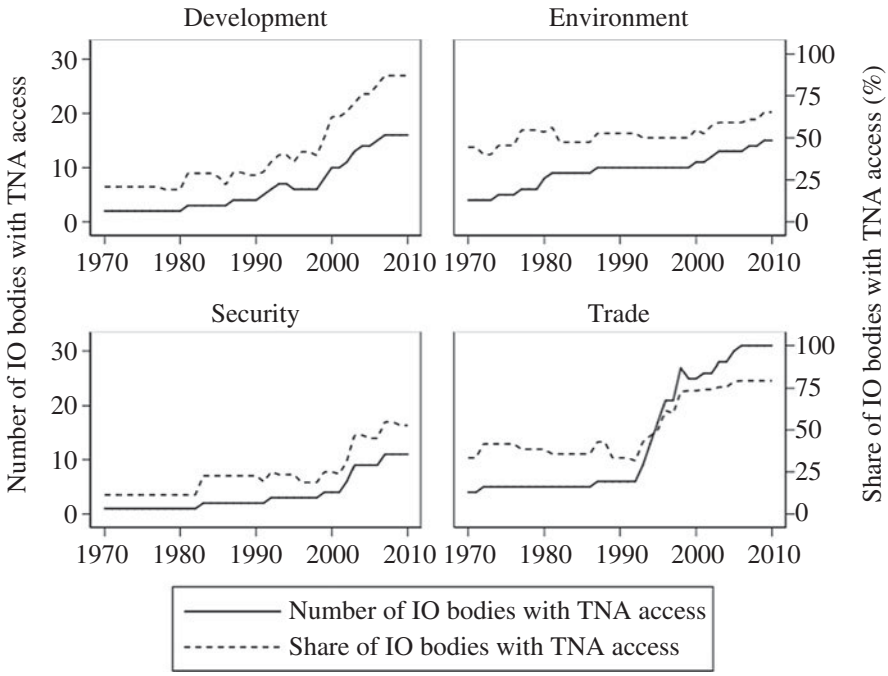

FIGURE 1. *Adoption curves for TNA access to IO bodies in four issue areas*

diffusion.[56] Overall, the number and share of IO bodies with participatory arrangements grew incrementally until around 1990, when the adoption of access arrangements took off dramatically before it began to taper off closer to 2010. IO bodies in some issue areas and regions have been leaders in this development (environment, Europe), others laggards (security, Asia).

Modeling Diffusion: Dyadic and Spatial Analysis

To assess diffusion among IOs, we combine dyadic and spatial analysis. Dyadic analysis well fits the logic of diffusion by estimating the likelihood that an IO with a model is copied by an adopting IO. Spatial analysis is complementary by estimating if the adopting IO is more likely to copy the model depending on previous interactions between IOs in peer groups. The combination of dyadic and spatial analysis thus makes it possible to identify diffusion effects from both specific IOs and larger peer groups of IOs.

56. Gilardi 2012, 454; Rogers 1995, 26; Simmons and Elkins 2004, 174.

Both types of analysis build on a dyadic modeling of diffusion. While dyadic models are common in the general study of diffusion,[57] they are not the only alternative. Monadic models have been a standard tool in the study of policy diffusion since Simmons and Elkins introduced them.[58] Monadic models use individual entities (e.g., countries) as the unit of analysis and capture diffusion through spatial variables that represent the mean of the lagged dependent variable in reference groups. More recently, network models have become a popular way of estimating the effects of complex dependence structures.[59] Inferential network analysis combines the estimation of monadic and dyadic covariates with network structure variables.

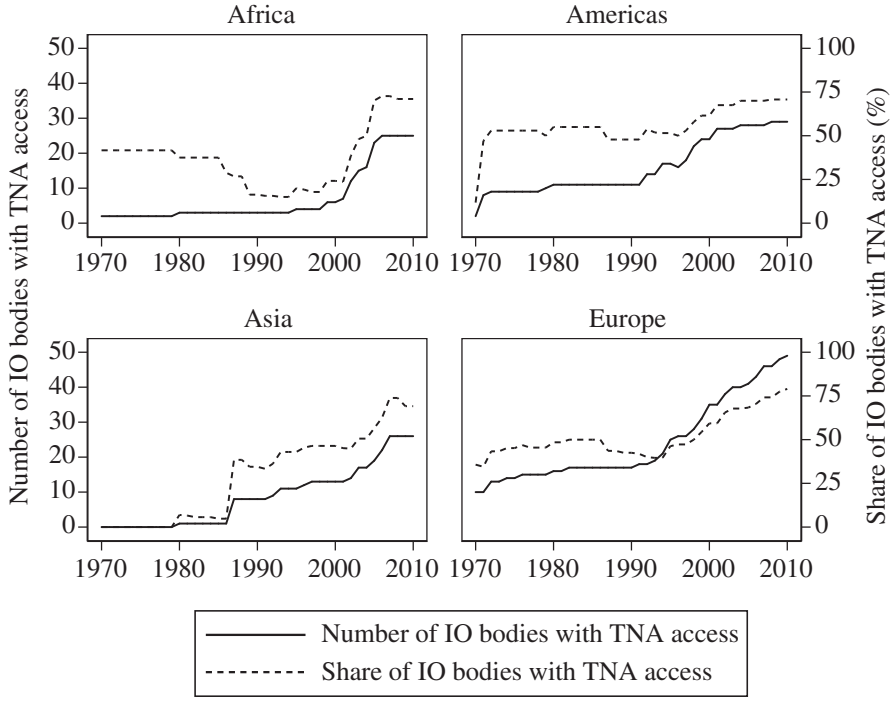

FIGURE 2. *Adoption curves for TNA access to IO bodies in four world regions.*

We have opted for a dyadic approach for its particular advantages when modeling diffusion across IOs. First, the dyadic design offers an intuitive fit with the theoretical

57. For example, Elkins et al. 2006; Gilardi 2010; Volden 2006. Dyadic models are also common in IR; for example, Dorff and Ward 2013; Poast 2016; Russett et al. 1998.

58. Simmons and Elkins 2004; see also Meseguer 2009.

59. Kinne 2013; Manger and Pickup 2016; Manger, Pickup, and Snijders 2012; Minhas, Hoff, and Ward 2016.

model. It closely captures the diffusion logic by identifying a potential adopting organization (IO_i), an organization with a model (IO_j), and their mutual interconnectedness. Second, the dyadic approach has particular advantages in conceptualizing the dependent variable—convergence effects. The dyadic design makes it possible to isolate different types of convergence effects and perform a placebo test. Third, the dyadic approach may integrate features pioneered by monadic models (spatial lags) and network models (complex dependency). Our strategy of combining dyadic and spatial analysis allows us to deal with an important criticism of dyadic models—non-independence of dyads—that has led other researchers to turn to network models.

In sum, the choice of a dyadic design does not reflect a rejection of monadic and network models, as much as an appreciation of the advantages of the dyadic approach when modeling diffusion across IOs.[60] We recognize that alternative modeling strategies might be superior when analyzing, for instance, endogenous phenomena, such as co-evolving networks and agreements.[61]

Based on the dyadic design, we estimate diffusion effects in two complementary ways. First, we assess whether connectivity in dyadic relationships increases the likelihood of IO_i adopting a model from IO_j. This analysis establishes if connectivity in any of the five forms makes it more likely that models diffuse between two IOs. Like other forms of dyadic analysis, it rests on the assumption that dyads are independent of each other. Second, we use the five types of connectivity to construct spatial lags for peer groups of IOs, estimating how prior interactions among IOs in these groups influence the likelihood of IO_i adopting a model from IO_j. This analysis responds to the criticism that standard dyadic designs do not consider the possibility of more complex dependence structures.[62] It complements the dyadic analysis by evaluating whether IO decision makers are sensitive to broader trends within peer groups of IOs—a diffusion logic sometimes referred to as "herding" or "social learning."[63]

We model multiple forms of spatial dependence in directed dyadic data, building on Neumayer and Plümper's pioneering work.[64] Figure 3 summarizes these different forms of spatial dependence in the context of diffusion among IOs. We use Neumayer and Plümper's term *contagion* to characterize how spatial dependence among units affects the likelihood that IO_i will copy IO_j. We use regional connectivity as the illustrative peer group.

60. For a good discussion of the pros and cons of dyadic models, see Poast 2016, 369.

61. Minhas, Hoff, and Ward 2016; Warren 2016. See the section on measuring connectivity for why endogeneity is not an overriding concern in the case of TNA access and IO connectivity.

62. Cranmer and Desmarais 2016; Poast 2016. We describe how we deal with other criticism of dyadic models in the subsection on dyadic analysis.

63. Compare Chamley 2004.

64. Neumayer and Plümper 2010. The five types of spatial dependence presented in the third and fourth columns of Figure 3 build on logics identified by Neumayer and Plümper. The two types in the second column combine dyadic connectivity with their notion of specific contagion. It's important in our analysis to differentiate between IOs in the same peer group and in other peer groups.

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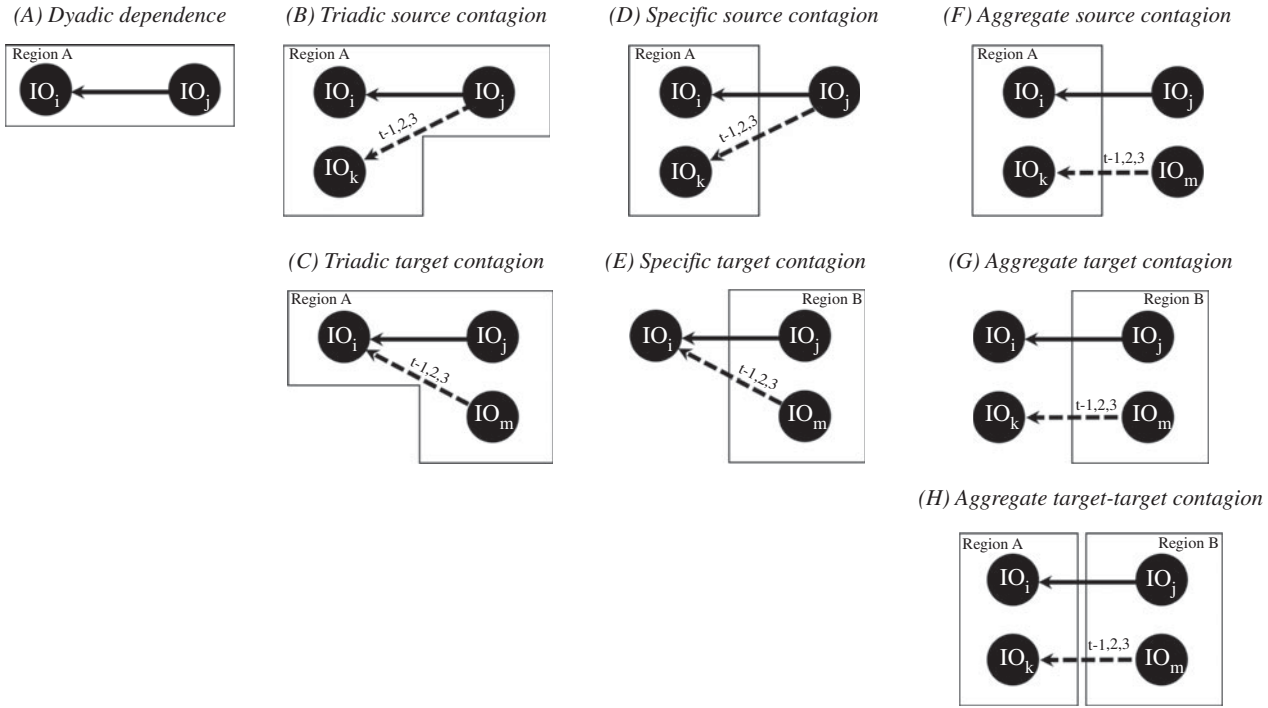

Note: Solid arrow indicates convergence as a flow from the model to the adopter at t_0; dashed arrow indicates previous convergence as a flow from the model to the adopter in t-1, t-2, t-3.

FIGURE 3. *Models of spatial dependence*

The first column depicts simple *dyadic dependence* (A) as a reference category, with convergence illustrated as a flow from the model IO_j to the adopting IO_i. In this case, IO_i is more likely to adopt a model from IO_j if they belong to the same region.

The second column shows two forms of triadic contagion. These models integrate the possibility that prior adoption by other IOs in the *same* peer group influences the likelihood that IO_i adopts a model from IO_j. In the case of *triadic source contagion* (B), IO_i is more likely to adopt a model from IO_j if other IOs *k* from the same region already have converged on this model. In the case of *triadic target contagion* (C), IO_i is more likely to adopt a model from IO_j if IO_i previously has converged on models of other IOs *m* from the same region.

The third column displays two models of specific contagion. These models capture how IO_i may be moved to adopt a model from IO_j, even when the two do *not* belong to the same peer group, as a result of connections to other IOs. In the case of *specific source contagion* (D), IO_i in region A is more likely to adopt a model from IO_j in region B if other IOs *k* in region A already have converged on this model. In the case of *specific target contagion* (E), IO_i in region A is more likely to adopt a model from IO_j in region B if other IOs *m* in region B previously have been copied by IO_i.

Finally, the fourth column depicts three forms of aggregate contagion. These models capture the same logic as specific contagion models, but at an aggregate level. In the case of *aggregate source contagion* (F), IO_i in region A is more likely to adopt a model from IO_j in region B if other IOs *k* in region A previously have converged on models of other IOs *m* in region B. In the case of *aggregate target contagion* (G), IO_i in region A is more likely to adopt a model from IO_j in region B if other IOs *m* in region B previously have been copied by other IOs *k* in region A. A combination of the two aggregate forms of dependence leads to *aggregate source-target contagion* (H), which captures the effects of previous interaction between IOs in the two groups.[65] In this case, IO_i in region A is more likely to adopt a model from IO_j in region B if this has already happened in other dyads similarly composed by IOs from regions A and B.

Conceptualizing Convergence Effects

The specification of the dependent variable is an important and often-underestimated element of the research design in diffusion studies. A precise modeling of the theoretically expected outcome will help to eliminate alternative explanations. Our conceptualization of the dependent variable reflects three important choices.

65. Neumayer and Plümper call this form of dependence "directed dyad contagion," but we prefer this alternative labeling, since it clarifies the combined and aggregate nature of this type of spatial lag.

First, we assume that a process of diffusion leads to convergence, and thereby exclude the scenario of negative lessons.[66] Our dependent variable captures the adoption of a participatory arrangement conditional on the existence of a model in another IO.[67] This eliminates the risk of mistakenly assigning a diffusion effect to the creation of an access arrangement when in fact there is no model to adopt. Yet we should recognize that convergence may also be the result of "spurious diffusion."[68]

Second, we conceptualize convergence at the level of IO bodies, since access arrangements are typically specific to certain types of bodies and we assume that IOs take this into consideration when borrowing models from each other.[69] When establishing an access arrangement for a secretariat, IOs will first and foremost look at other secretariats, not at courts or ministerial councils in other IOs. Since the analysis primarily assesses the effects of IO-level characteristics, such as partnerships and overlapping memberships, we pool convergence scores at the IO level.

Third, we introduce a novel method for differentiating between alternative forms of convergence effects. The dyadic approach makes it possible to include three versions of the dependent variable, defining convergence as (1) imitation, (2) adaptation, or (3) inspiration. In moving beyond simple adoption toward more differentiated diffusion effects, we are inspired by recent research.[70] The strength of the convergence logic declines as we move from imitation to adaptation to inspiration. This conceptualization avoids the fallacy of equating diffusion with convergence on an identical model.[71] It recognizes that diffusion also may be expressed through convergence in a particular direction, with room for local adjustments of a model.

To identify these three types of convergence effects in the context of participatory governance, we rely on a measurement of access along two main dimensions: depth and range (see Table A.3). These dimensions are constitutive of all participatory arrangements by defining what rights are granted to whom, and thus allow us to define institutional models of access in the abstract, recognizing the myriad of ways that participatory governance may be organized. The depth of access captures the level of involvement offered to TNAs through institutional rules. Deep access entails active and direct involvement that may even mirror the privileges of member states, while shallow access equals passive and indirect involvement, such as observing negotiations. The range of access captures the breadth of TNAs entitled to participate. It features a spectrum from broad access, where all interested TNAs can have access, to narrow access, where only those that fulfill a very restrictive set of selection criteria are included. Both depth and range of access are measured on a five-point scale.

66. On negative lessons, see Starke 2013.
67. Compare Volden 2006.
68. Gilardi 2010, 654.
69. We use eight different types of IO bodies. See Table A.2.
70. Risse 2016.
71. Acharya 2004; Risse 2016.

Imitation, then, refers to the existence of similar participatory arrangements among the same type of IO bodies, where similarity is defined as the exact same combination of depth and range of access. *Adaptation* captures convergence among the same type of IO bodies to arrangements with varying levels of depth and range of access. In this case IO_i adapts a model from IO_j to its own needs through modifications.[72] *Inspiration*, finally, refers to the adoption of a participatory model from a different type of body in IO_j. In this case, it is the general idea or norm of participatory governance that diffuses rather than body-specific models.[73] Inspiration is uniquely well suited to capture such a diffuse convergence effect, since it goes beyond the functional imperatives of specific types of bodies.[74]

In the diffusion literature, imitation is sometimes used as a synonym for the causal mechanism of emulation.[75] In our approach, imitation, adaptation, and inspiration are not associated with particular mechanisms of diffusion, but may result from emulation as well as learning, competition, and coercion. Taken together, these three choices lead to a threefold measure of convergence, where *x* and *y* represent body types, *t* and *t-1* stand for two subsequent years.[76]

(1) Imitation $(IO_iIO_{j,t}) = 1$ if $IO_{it,x} \neq IO_{it-1,x} \wedge IO_{it,x} = IO_{jt-1,x}$
$= 0$ in all other cases

(2) Adaptation $(IO_iIO_{j,t}) = 1$ if $IO_{it,x} \neq IO_{it-1,x} \wedge IO_{it,x} \neq IO_{jt-1,\ x} > 0$
$= 0$ in all other cases

(3) Inspiration $(IO_iIO_{j,t}) = 1$ if $IO_{it,x} \neq IO_{it-1,x} \wedge IO_{it,x}\ , IO_{jt-1,y \neq x} > 0 \wedge IO_{jt-1,x} = 0$
$= 0$ in all other cases

Finally, we use a fourth version of our dependent variable to conduct a placebo test of diffusion.[77] Specifically, we assess whether IO_i introduces an access arrangement in the absence of a model in IO_j. If we find that our privileged connectivity variables explain this outcome as well—and not only imitation, adaptation, and inspiration—then we have reason to suspect that the positive results are the product of spurious diffusion.

(4) Placebo test $(IO_iIO_{j,t}) = 1$ if $IO_{it,x} \neq IO_{it-1,x} \wedge IO_{it,x} > 0 \wedge IO_{jt-1,x,y} = 0$
$= 0$ in all other cases

A simple example illustrates these measures. In 1994, the Council of Europe adopted a resolution establishing an annual meeting of its secretariat with NGOs in consultative

72. Adaptation includes all kinds of changes, from minor to major ones.
73. On the influence of a global participatory norm, see Charnovitz 1997; Saurugger 2010.
74. However, the absence of an effect for inspiration cannot be taken as evidence that a participatory norm has not been at play, since it could have contributed to imitation or adaptation effects.
75. Shipan and Volden 2008.
76. The maximum score for each type of dyadic change is limited to 1, even if more than one body changes its access rules within one year.
77. Lloyd, Simmons, and Steward 2011.

status (CoE Resolution 1993/38). This arrangement is coded with a range of "2" and a depth of "2" (see Table A.3). In 1993, thirty-four IOs in the sample had a secretariat, leading to thirty-three pairwise comparisons. Two of these secretariats (UN and OECD) had a participatory arrangement in 1993 with the exact same range and depth of access as the arrangement adopted by the CoE in 1994. Theoretically, the CoE could have *imitated* these models. In addition, ten IOs provided a different type of access to their secretariats in 1993, which opens up for the possibility that the CoE could have *adapted* its participatory arrangements based on a basic model provided by, for instance, the OSCE Secretariat. Nine IOs did not grant access to their secretariats, but to another organizational body. These IOs could have served as general *inspiration* for the CoE. Finally, twelve IOs did not provide any kind of access in 1993, among them NATO and the AU, and could not have inspired the CoE's adoption of an access arrangement for its secretariat (*placebo test*).

Measuring Connectivity

For these analyses, we operationalize formal and informal connectivity. First, some IOs are connected through their membership. We construct the variable OVERLAP IN MEMBERSHIP based on membership data from the Correlates of War–Intergovernmental Organizations (COW-IGO) data set at the country-year level. To get at the actual overlaps, we run pairwise comparisons for each of the fifty IOs in the sample. A score of 1 is assigned to this variable if the share of identical member states within a directed dyad is higher than 90 percent.[78] The overlap in membership differs between dyad IO_iIO_j and IO_jIO_i. For instance, all member states of the CoE are UN members, whereas only 24 percent of all UN members are part of the CoE. In 2010, more than one-fifth of all IO pairs had such an overlap in membership (21.2%; in 1990 13.8%).

Second, IOs are frequently connected through institutional arrangements. We capture all types of official relations at the general level of IOs in our variable PARTNERSHIP. It builds on data from the *Yearbook of International Organization,*[79] which provides information on bilateral arrangements such as observer status, partnership agreements, memoranda of understanding, and other forms of cooperation. Since the data are based on self-reporting by IOs, and the terms depend on the language used in a particular IO, we merge all yearbook categories into a binary variable. This type of connectivity is less common. At the end of our observation period, only 7.8 percent of all IO dyads reported such a relation. Partnership-based linkages were slightly more frequent in earlier years, suggesting that a longer history for an IO increases the likelihood of such links (10.5% in 1990).

78. The COW-IGO time-series data on state membership has a number of gaps. Since the within-dyad variation is extremely low (standard deviation of 0.03, compared to 0.35 for cross-sectional variation), we imputed from the closest available year.

79. UIA 2011. For a similar approach, see Grigorescu 2010, 881, and Murdie 2014, 13.

Third, IOs may be connected through the same functional reference group. We operationalize such connectivity through the variable SAME ISSUE AREA, which captures similarities in functional orientation based on a distinction between nine issue areas (Table A.4). IOs can be part of more than one issue community. The OSCE, for example, shares the issue area of security with NATO and the field of human rights with the International Criminal Court. We observe an increase in such issue-area linkages over time, from 14.8 percent in 1970 to 32.2 percent in 2010, confirming the common perception of a growing density of regimes in global governance.

Fourth, IOs can be part of the same regional reference group. This aspect is only partly covered by OVERLAP IN MEMBERSHIP. For instance, the Intergovernmental Authority on Development and the Niger Basin Authority are rooted in the same regional community, but have no overlap in membership. For the variable SAME REGION, we code IOs by world region (Figure 2), and assign similarity scores to IO dyads. Regional linkages are relatively stable over time, with 23.7 of all IO pairs having such linkages in 2010.

Fifth, IOs may be linked to each other through their social reference group, conceptualized as geographical proximity. We construct the variable SAME HEADQUARTER LOCATION by extracting information on IO headquarters from the *Yearbook of International Organization*, and by assigning a score of 1 if the distance within the dyad is less than 100 miles. This type of connectivity is rare, with only 2.3 percent of all IO dyads in 2010 having their headquarters in close proximity, like the IMF and OAS in Washington DC.

These five forms of connectivity represent different aspects of inter-IO relations, with only minor overlaps. The correlation between the five variables is low. We observe a positive relation between only SAME ISSUE AREA and PARTNERSHIP ($r = 0.2$), and between PARTNERSHIP and OVERLAP IN MEMBERSHIP (0.2). These types of connectivity among IOs are unlikely to be endogenous to TNA access. Even if IOs increasingly appear to value access for TNAs, such arrangements are not likely to be a powerful determinant of memberships, general partnerships, issue-area orientation, regional belonging, and headquarter location.[80]

Control Variables

IOs may adopt participatory arrangements for other reasons than diffusion based on connectivity. We control for two alternative sources.

To begin with, we assess if convergence could be the result of diffusion from an IO with an outstanding model. An outstanding model is an IO_j that takes on an extreme

80. The same is probably true for other design features of IOs, such as decision rules. However, endogeneity may be a greater concern when analyzing the diffusion of important policies, which are more likely to affect memberships, partnerships, and, of course, issue-area orientation. In such cases, the co-evolution of IO connectivity and IO policies may be better studied using alternative approaches (e.g., Manger and Pickup 2016).

value and thereby may be particularly inspirational for IO_i. We use two measures to capture this notion. First, we develop a measure that is based on the difference in TNA ACCESS between IO_j and IO_i. The greater the lagged general openness of IO_j relative to IO_i, the greater its potential status as a norm leader. General openness is captured through a composite index of access based on all participatory arrangements in an IO. Second, we develop a measure for the general success of IO_j. This is more difficult for IOs than countries, for which objective measures of performance (e.g., growth rates) are more readily available. Instead, we use information on MEMBERSHIP EXPANSION, assuming that states wish to join only a successful IO. IO_j is defined as successful if a country has joined it within the past five years.

In addition, we control for a range of alternative independent predictors of change in TNA access identified by previous research.[81] First, we assess whether openness is driven by the presence of a GOVERNANCE PROBLEM that favors TNA engagement. This is assumed to be the case if an IO's policies require local implementation or present the parties with noncompliance incentives.[82] Second, we control for the adoption of access rules in response to PROTEST, assuming that IOs may open up for purposes of organizational legitimation.[83] The variable captures media coverage of protests. Third, we control for the effect of an IO's DEMOCRATIC DENSITY, measured as its share of democratic member states, based on the expectation that IOs with more democratic memberships are more likely to open up to TNAs.[84] Fourth, we assess if IOs are more likely to open up if there is a high TNA SUPPLY, using data from the UN on the regional distribution of NGOs.[85] Fifth, we control for the possibility that IO RESOURCES affect TNA access, based on the expectation that IOs with more extensive resources are more willing to bear the costs involved in managing participatory governance arrangements.[86] Finally, we control for the presence of an unchallenged DEMOCRATIC MAJOR POWER in an IO, assuming that great power preferences may matter for TNA access.[87]

Empirical Analysis

Diffusion has helped to drive the expansion of participatory governance in world politics. Interconnectedness among IOs has had a positive influence on convergence in institutional design in a number of ways. IOs sharing partnerships and issue-area orientation are particularly likely to copy models from each other. Diffusion mainly manifests through imitation of very specific models. We present the results

81. For a summary, see Table A.5. For an inventory of existing literature on TNA access, see Tallberg et al. 2014.
82. Raustiala 1997.
83. O'Brien et al. 2000.
84. Grigorescu 2010.
85. Reimann 2006.
86. Liese 2010.
87. Clark et al. 1998, 32.

in three parts, beginning with the dyadic analysis, continuing with the spatial analysis, and concluding with a summary of the findings.

Dyadic Analysis

The dyadic analysis estimates the effect of connectivity on the convergence of participatory arrangements in IO dyads. We use an ordinary logit estimator since the absolute number of convergence cases is sufficiently large, even if we observe imitation of participatory arrangements within the same category of bodies in only 1.9 percent of all cases, adaptation in 6.7 percent, and inspiration in 3.3 percent. We control for time dependence and enter all time-variant independent variables with a lag of one year if no other specification is mentioned.[88] Boehmke highlights the risk of an inflation of negative cases if dyads are not excluded where there is no model that could be imitated.[89] We follow his suggestion to condition on "emulation opportunity" and therefore eliminate all dyads where IO_j has no model in place. The nature of the data allows us to capture two-way effects, thus avoiding one problematic aspect of hyper-dyadic dependence.[90] The dyad IO_iIO_j expresses the pooled aggregation of comparisons between all relevant bodies (secretariats, councils, etc.) of IO_i and IO_j, and makes it possible to observe diffusion in both directions within the same year, but pertaining to different types of bodies or rules.

Directed dyadic data sets contain complex dependence structures. In our case, IO_i and IO_j appear both as the adopter and the model IO in a dyad, and in multiple combinations. We control for this dependence in three ways. First, we apply the standard solution, clustering the data by dyad and calculating robust standard errors.[91] Second, in recognition of Gilardi's criticism of the clustering strategy, we apply his own multi-level approach as a robustness check. Third, we complement the dyadic analysis with a spatial analysis to explicitly model the effects of complex dependence.

We begin by comparing the effects of connectivity variables and a set of control variables on convergence through imitation (Model 1; Table 2), adaptation (Model 2), and inspiration (Model 3). This first step demonstrates whether the interconnectedness of two IOs has a significant effect on participatory arrangements' convergence when controlling for alternative explanations of adoption. We conduct the placebo test of the diffusion effect in Model 4. A positive result for connectivity variables in this model would mean that effects identified in Models 1–3 are not the result of diffusion.

Table 2 shows that several forms of connectivity have a positive effect on convergence through imitation and adaptation, but not inspiration. Beginning with formal connectivity, we find support for a positive role of PARTNERSHIP on the imitation of access rules. This means that an IO is more likely to imitate the exact participatory

88. Carter and Signorino 2010.
89. Boehmke 2009.
90. Cranmer and Desmarais 2016, 355; Poast 2016.
91. Shipan and Volden 2014; Volden 2006.

TABLE 2. *Determinants of convergence in participatory arrangements (dyadic analysis)*

		Imitation	*Adaptation*	*Inspiration*	*Placebo*
		1	*2*	*3*	*4*
Connectivity (dyadic)	OVERLAP IN MEMBERSHIP	0.077	−0.086	−0.187	−0.283
		[0.108]	[0.075]	[0.119]	[0.214]
	PARTNERSHIP	0.404	0.004	0.109	−0.502
		[0.148]***	[0.120]	[0.133]	[0.287]*
	SAME ISSUE AREA	0.346	0.447	0.083	0.082
		[0.119]***	[0.099]***	[0.091]	[0.166]
	SAME WORLD REGION	0.094	−0.093	−0.110	−0.075
		[0.159]	[0.107]	[0.097]	[0.151]
	SAME HEADQUARTER	−0.403	−0.240	−0.117	−0.647
		[0.290]	[0.164]	[0.240]	[0.498]
Outstanding model	TNA ACCESS	0.430	0.053	−0.942	
		[0.091]***	[0.060]	[0.062]***	
	MEMBERSHIP EXPANSION	−0.061	−0.167	−0.096	−0.172
		[0.077]	[0.048]***	[0.054]*	[0.056]***
Independent factors	GOVERNANCE PROBLEM	0.318	0.453	0.207	0.446
		[0.112]***	[0.070]***	[0.098]**	[0.127]***
	PROTEST	−0.001	0.013	−0.045	0.026
		[0.039]	[0.022]	[0.028]	[0.036]
	DEMOCRATIC DENSITY	0.158	−0.136	−0.475	0.100
		[0.173]	[0.099]	[0.134]***	[0.163]
	TNA SUPPLY	0.037	0.283	0.317	0.250
		[0.072]	[0.048]***	[0.057]***	[0.080]***
	IO RESOURCES	0.084	0.135	0.058	0.133
		[0.022]***	[0.015]***	[0.017]***	[0.023]***
	DEMOCRATIC MAJOR POWER	0.069	−0.125	−0.087	−0.294
		[0.130]	[0.090]	[0.096]	[0.142]**
	Time	−1.484	−1.031	−1.231	−1.626
		[0.408]***	[0.213]***	[0.221]***	[0.276]***
	$Time^2$	0.038	0.027	0.034	0.045
		[0.010]***	[0.005]***	[0.005]***	[0.007]***
	$Time^3$	−0.000	−0.000	−0.000	−0.000
		[0.000]***	[0.000]***	[0.000]***	[0.000]***
	Constant	11.697	6.178	7.646	11.872
		[5.289]**	[2.698]**	[3.053]**	[3.557]***
	N	37,989	37,989	37,989	51,929
	Ll	−3,429.97	−8,602.02	−5,158.80	−5,017.03
	Chi^2	262.06	819.82	673.43	331.69
	AIC	6893.9	17238.0	10351.6	10066.1
	BIC	7039.2	17383.3	10496.9	10207.8

Notes: Logit estimates with STATA 13.1, robust standards in parentheses. Estimations clustered by dyad. *p <.10; **p <.05; ***p <.01.

arrangement of another IO if the two have mutual observer status or some other sort of formal cooperation. However, we do not find the same effect of PARTNERSHIP on adaptation (Model 2) or inspiration (Model 3), suggesting that formal cooperation among two IOs yields diffusion of very specific access models across like bodies. The result of the placebo test provides additional evidence for a diffusion interpretation of the positive effect of PARTNERSHIP on imitation, since this variable shows a negative result even when IO_j has no such rules in place and there was no model to transfer (Model 4).

We observe a weak positive, but nonsignificant, effect of a large OVERLAP IN MEMBERSHIP in Model 1 on imitation. This effect even turns negative and significant in Model 2 (adaptation) and Model 3 (inspiration). Since we obtain the same negative result for the placebo test (Model 4), there is little to support the notion that participatory governance spreads across IOs through overlaps in membership. One explanation could be that states are sensitive to the functional specificity of IOs and do not promote similar models in all IOs they are members of.

Turning to informal connectivity, we observe strong positive support for SAME ISSUE AREA as a source of convergence in access arrangements. It is the only connectivity variable with a positive and significant effect for both imitation and adaptation (Models 1–2). The placebo test lends additional support to these positive results (Model 4). With regard to the remaining types of informal connectivity, SAME WORLD REGION and SAME HEADQUARTER, there are no significant effects.

As a next step, we explore if connectivity has a greater impact when linkages co-occur. Tables A.8.1–A.8.3 present the results for the pairwise interactions between the five types of connectivity with imitation, adaptation, and inspiration as the dependent variables (Models 15–44).[92] We find two positive and significant interaction terms that point to an additive effect of IO connectivity under specific circumstances, while all main results remain unchanged. IOs from the same world region that have headquarters in close proximity to each other have a higher likelihood of imitating each other (Model 24). Likewise, when IOs both share world region and partnerships, this raises the likelihood of diffusion through adaptation (Model 30). One interaction term deserves attention because of the absence of a significant finding. In the literature on regional integration, it is often posited that institutional designs and policies diffuse among regional IOs that are based in different parts of the world but confront similar governance problems. However, we find no support for this dynamic (Model 32).

Next to evidence on diffusion among interconnected IOs, there is also support for some of the control variables. Beginning with diffusion from outstanding models, it appears that a reference IO_j with comparatively generous access rules increases the likelihood of exact imitation of that model (Model 1), but not of convergence on this model through adaptation or inspiration (Models 2–3).[93] In fact, Model 3 shows a negative significant result, suggesting that outstanding access models have the opposite of a general inspirational effect. The insignificant result for the other measure of outstanding models, MEMBERSHIP EXPANSION, indicates that the general attraction of an IO does not translate into a status as a model to be adopted.

We also find some support for independent explanations of changes in the access arrangements of IO_i. As Table 2 shows, IOs are more likely to open up if they deal with a demanding governance problem, face a strong population of TNAs, and have

92. The model specification is the same as in Table 2.

93. Since the construction of the dependent variable in our placebo Model 4 excludes a reference IO_j with some form of TNA access, we cannot integrate this variable in the estimation.

the resources to manage their involvement. The other independent factors have insignificant effects. None of these independent factors has a significant effect on convergence through imitation of specific models, which is best explained by IO connectivity.

The results for the connectivity and control variables are robust when estimated separately (Table A.6). To compare the different models, we look at the Bayesian information criterion (BIC), which takes into account both the goodness of fit and the number of model parameters. BIC values similar to the basic Model 1 in Table 2 reveal that the dyadic connectivity variables are particularly effective in predicting convergence through imitation (Model 1a) and to a lesser extent adaptation (Model 2a), while the control variables contribute more to the performance of the model for inspiration and the placebo model (Models 3b and 4b).

To corroborate our main results from Table 2, we offer a number of robustness checks, summarized in Table A.7. First, we assess the implications of the clustering strategy and re-estimate Models 1–4, instead clustering by IO_i (Models 5–8).[94] The results confirm our previous findings, with only minor deviations in the significance levels for some control variables. For instance, the coefficient for GOVERNANCE PROBLEM drops in significance.

Second, in recognition of Gilardi's criticism of the clustering strategy as a way of solving the problem of dyadic dependence, we apply his own multilevel approach as a robustness check.[95] We re-estimate Models 1–3 (Models 9–11). The results lend support to our modeling strategy and confirm our major findings.

Third, we assess the implications of not correcting the data in line with Boehmke to avoid a possible inflation of negative cases (Models 12–14).[96] These models serve the additional purpose of providing a more accurate point of comparison for the results from Model 4 (Table 2), which was based on a different sample than Models 1–3. Our main results hold even for this specification. However, additional positive effects of PARTNERSHIP and SAME ISSUE AREA on inspiration when using uncorrected data (Model 14) illustrate that this correction is important, since including "irrelevant" dyads may lead to an overestimation of the explanatory power of dyadic connectivity.

Spatial Analysis

We next assess whether and how complex dependence among IOs influences the effects of connectivity on convergence by adding spatial lags to the dyadic model.[97] This serves the dual function of corroborating our results and exploring how

94. Volden 2006.
95. Gilardi 2010.
96. Boehmke 2009.
97. As an alternative to our combination of dyadic and spatial analysis, we also offer a monadic model (Table A.9). The purpose is twofold: to show that diffusion effects of IO connectivity may be studied using a monadic model as well, and to assess the robustness of our results using an alternative approach common in diffusion studies. However, as a general approach, the monadic model suits our purposes less well. For

connectivity might matter beyond bilateral relations. We explore all forms of spatial dependence described in Figure 3. For each type of model, we estimate spatial lags for the five types of connectivity. Because of the time it takes for IOs to decide on changes to their institutional design, and the high volatility of changes from year to year in the data, we take the average spatial effect of t-1, t-2, and t-3.

We begin by assessing the effects of past behavior by IOs in the *same* peer group as IO_i and IO_j,, in line with the two models of triadic contagion. For this purpose, we replace the dyadic connectivity variable with a triadic variable by adding information on how other IOs in the same peer group have either copied IO_j (triadic source contagion) or been copied by IO_i (triadic target contagion). Table A.10 shows that the results from the dyadic analysis (Table 2) do not change greatly. In the case of *triadic source contagion*, partnerships still have a positive effect on imitation (Model 57), as do issue-area links on both imitation and adaptation (Models 57 and 59). The main difference compared to the dyadic analysis is a significant positive effect of PARTNERSHIP on adaptation as well (Model 59). Overall, the BIC values reveal that the additional information on triadic source contagion does not significantly improve the model.

The results are equally robust when considering *triadic target contagion*, which confirms the initial findings of the dyadic analysis. However, we find that Model 58 and, in particular, Model 60 perform better than the corresponding Models 1 and 2 (Table 2), suggesting that a consideration of triadic target contagion improves the model fit.

We then explore the effects of dependence among IOs when IO_i and IO_j are *not* part of the same peer group, estimating spatial lags for all five types of specific and aggregate dependence in Figure 3. Since most of these spatial lags are correlated at a critical level, we estimate them separately.[98] This strategy leads to a large number of models, and we provide an overview of changes in the BIC values and in the direction and significance of the coefficient of the spatial variable in Figure 4.[99]

First, we consider the effects of other IOs in the peer group of IO_i already having converged on the model of IO_j, (*specific source contagion*). Table A.11.1 shows that the likelihood of an IO to imitate (Model 63b), adapt (Model 64b), or be inspired by a model (Model 65b) increases with the number of partnership IOs that have already adopted the same model, independent of the effects of dyadic connectivity, which remain robust. This means that partnerships not only channel diffusion of models from specific IOs, as established in the dyadic analysis, but also information about popular models in the broader peer group. We also observe that other forms of connectivity matter that did not yield significant results at the dyadic level. The spatial lag for OVERLAP IN IO MEMBERSHIP has a positive and significant coefficient for adaptation

instance, it allows for only a binary measure of adoption as dependent variable–not the more refined threefold measure of convergence or a placebo test.

98. See Neumayer and Plümper 2010, 162 for a similar problem.

99. The complete regression tables can be found in Table A.11.1–5.

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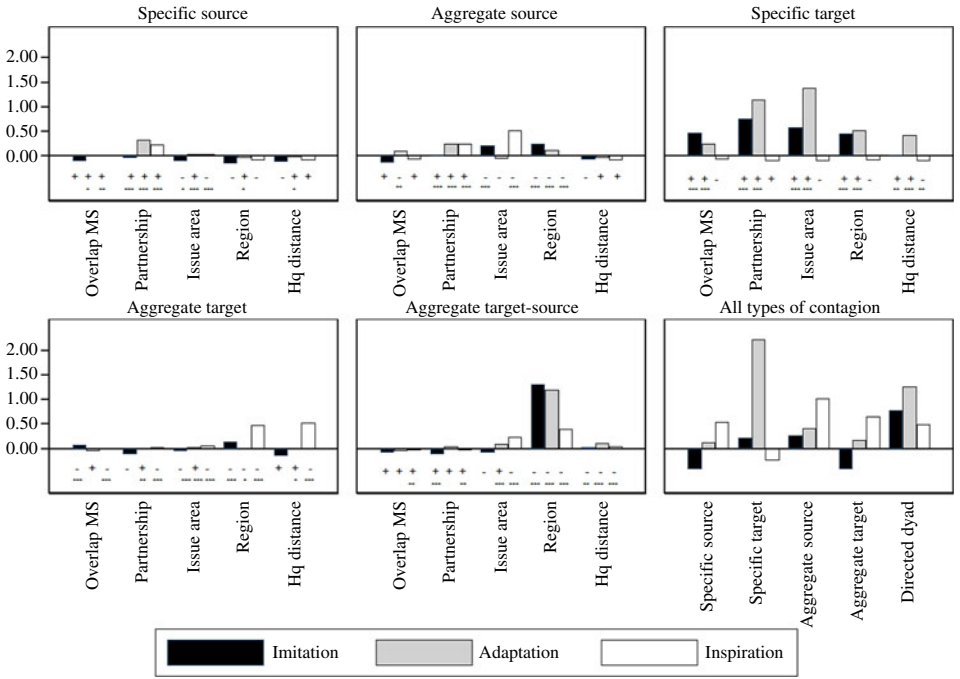

Notes: Changes in the BIC value refer to Models 1–3 in Table 2. +/- indicates the direction of the coefficent for the spatial variable. Significance level of spatial variable represented by *p <.10; **p <.05; ***p <.01.

FIGURE 4. *Model comparison, different forms of spatial dependence, percentage changes in BIC value*

and inspiration (Models 64a and 65a). Likewise, diffusion through adaptation is more likely when other IOs with headquarters close by have converged on a model. The spatial lags for SAME ISSUE AREA and SAME WORLD REGION are positively related to adaptation as well, while issue area is significant in the wrong direction for imitation and inspiration (Model 63c and 65c). A negative result for issue area suggests that the general popularity of a model among IOs in the same issue area decreases the likelihood of adoption by IO_i. Overall, integrating information on specific source contagion improves model performance mainly for PARTNERSHIP and for convergence in the form of adaptation and inspiration (Figure 4). For all other variables and for convergence in the shape of imitation, it does not add much in terms of model fit.

Second, we assess the effects of other IOs in the peer group of IO_j already having been copied by IO_i (*specific target contagion*). This analysis yields the strongest spatial effects of connectivity (Figure 4). Table A.11.2 shows positive effects for all five forms of connectivity on top of robust results for the dyadic analysis. For instance, IO_i is more likely to imitate (Model 66a) and adapt (Models 67a) the model of IO_j, when it has previously converged to IOs that have overlapping memberships with IO_j. The basic model performs better when this type of spatial dependence is included, in particular regarding the effects of PARTNERSHIP and SAME ISSUE AREA, and regarding diffusion through imitation and adaptation (Figure 4).

Third, we examine the effects of other IOs in the peer group of IO_i already having converged on a model held by any other IO (*aggregate source contagion*), indicating that this particular group has a higher likelihood of following other IOs. Table A.11.3 shows that the aggregate trend among IOs connected through partnerships has a positive and significant effect on all three types of convergence—imitation, adaptation, and inspiration (Model 69b, 70b, and 71b). Other forms of connectivity also show significant results, but in the negative direction. The results of the dyadic analysis remain robust. Apart from improving the model's performance in estimating partnership effects, integrating lags for aggregate source contagion adds relatively little to model fit (Figure 4).

Fourth, we consider the effects of other IOs in the peer group of IO_j already having been copied by any IO in the same peer group as IO_i (*aggregate target contagion*). Table A.11.4 shows that this form of spatial contagion increases the likelihood of diffusion through adaptation when IOs are connected through partnerships (Model 73b), issue areas (Model 73c), and headquarter locations (Model 73f). For imitation and inspiration, we observe only significant negative coefficients. The results of the dyadic analysis remain robust. The contribution of this type of spatial dependence to the performance of the base model is much more limited than in the case of specific target contagion and mainly based on the negative effects.

Finally, we evaluate the effects of previous convergence between IOs belonging to the peer groups of both IO_i and IO_j (*aggregate source-target contagion*). The results reported in Table A.11.5 are similar to those for aggregate target contagion. The spatial lags for PARTNERSHIP (Model 76b) and SAME ISSUE AREA (Model 76c) again have positive effects on adaptation, while the spatial lags for other forms of connectivity do not contribute to a higher likelihood of convergence.

Summary of Findings

Taken together, the dyadic and spatial analyses yield three important results. First, IO connectivity has facilitated diffusion of participatory arrangements in global governance. The dyadic analysis showed that IO decision makers draw direct lessons from the experiences of specific IOs with which they are linked. The spatial analysis revealed that connectivity also matters beyond bilateral ties because IO decision makers respond to trends in broader peer groups. In particular, an IO is more likely to adopt a model if other IOs in its peer group already have done so (*specific source contagion*), or if it has a history of copying other IOs in the same peer group as its model IO (*specific target contagion*). The types of connectivity that matter are consistent across the two forms of analysis: IOs are most likely to borrow participatory models from each other when sharing partnerships and issue-area orientation. By contrast, it matters less if IOs have overlapping memberships, are based in the same region, or are headquartered close to each other. This finding ties in with the results of Grigorescu, who finds that IOs with working relationships and similar orientation are more likely to adopt oversight mechanisms, while IOs with headquarters in the same city are not.[100] This finding also highlights an interesting difference compared to studies of cross-country diffusion, where geographical proximity often matters.[101] One possible explanation might be that cross-country diffusion operates more through societal agents, mass media, and business contacts than cross-IO diffusion, in which internationalized elite agents in IO secretariats and member state delegations assume a greater role.

Second, the results highlight the importance of distinguishing between different forms of convergence. When connectivity generates convergence, this primarily takes the shape of IOs imitating very specific models in place for the same type of body in other IOs. It might also occur through adaptation of those models to the specific conditions of an IO's own body. It does not occur through IOs being inspired by the participatory orientation of other IOs at a more general level. These results hold for both the dyadic and spatial analyses. This suggests that diffusion is a very specific process, where human rights courts, development bank secretariats, and similar groups of specialized issue-area bodies either imitate or slightly adapt each other's models. This finding resonates well with the results of some qualitative studies, emphasizing imitation across courts and banks,[102] while other qualitative studies highlight more selective adaptation and localization.[103]

Third, while important, diffusion through connectivity is not alone in driving the spread of participatory governance. Diffusion from outstanding models and independent explanatory factors also play some role in generating participatory governance within IOs. Attention to diffusion does not overthrow existing explanations

100. Grigorescu 2010.
101. Brinks and Coppedge 2006.
102. Alter 2012; Park 2014.
103. Acharya 2004; Risse 2016.

based on independent factors, as much as improve general explanatory power. This lends support to the notion that independent and interdependent factors often are complementary in explaining the spread of policies and institutions in world politics.[104]

Conclusion

While diffusion across countries is a well-established topic in comparative politics, diffusion among IOs has only recently begun to gain attention in IR. We contribute to this emerging literature by proposing and applying a new approach for the study of diffusion among IOs. Our more specific contribution is four-fold: a theoretical argument about IO connectivities as pathways of diffusion; a novel conceptualization of convergence effects, making it possible to identify multiple expressions of diffusion; a methodological strategy for analyzing diffusion among IOs, combining dyadic and spatial analysis; and a first systematic empirical evaluation of this approach through the case of participatory governance.

The empirical case yielded several important findings that highlight the usefulness of this approach to diffusion. First, connections among IO have contributed to the diffusion of participatory arrangements in global governance. IO decision makers look to both specific connected IOs and larger peer groups of IOs when adopting participatory designs. Sharing partnerships and issue-area orientation is particularly consequential. This finding demonstrates the importance of connectivity between IOs as a driver of diffusion, and the value of combining dyadic and spatial analyses. Second, diffusion has mainly occurred through very specific imitation of models in place in similar bodies in other IOs, but also through adaptation of models to local conditions. This finding confirms the importance of differentiating between alternative types of convergence effects. Third, these effects of connectivity were established while controlling for two alternative accounts with complementary explanatory power: independent IO factors and diffusion from outstanding models. This finding underlines the necessity of a methodological strategy that simultaneously evaluates interdependent and independent factors.

The application of our approach to the case of participatory governance raises two issues of generalizability. The first pertains to the usefulness of our approach beyond this specific case. While the case of participatory governance well illustrated its potential, the approach is generic in its formulation and may be applied beyond this area. We suggest this approach could be useful for studying the diffusion of other dimensions of institutional design, such as parliamentary institutions and chairmanship arrangements, as well as the diffusion of substantive policies, such as sustainable development and gender mainstreaming. The second relates to the generalizability of our findings. This is a question for future studies to settle. However, examples from existing research suggest that participatory governance

104. For a discussion in the context of regionalism, see Börzel and Risse 2016.

may not be unique. Sharing partnerships and issue orientation has been found to matter for the diffusion of oversight mechanisms across IOs.[105] Similarly, convergence through imitation and adaptation has been established among development banks[106] and economic integration courts.[107]

Expanding the perspective, this article has three broader implications. It directs our attention to sources and patterns of homogeneity in global governance. While there is a growing body of research on the design of international institutions,[108] this literature has primarily sought to explain variation and heterogeneity across IOs. Yet, as this article and other contributions indicate, there are important regularities in global governance. Much like other organizations, IOs frequently adopt similar institutional designs and policies. These trends extend beyond the area of regional integration, which so far has received most attention. Developing the systematic study of diffusion can help us to better understand such patterns of convergence and homogeneity in global governance. While we have focused on connections among IOs as pathways of diffusion, bracketing the question of underlying motivations, a dual focus on both is likely to be rewarding as this research agenda expands.

We also show the benefits of complementing existing qualitative studies of diffusion across IOs with quantitative designs. Such designs permit assessments of diffusion in larger populations or samples of IOs over more extended time spans. Whereas dyadic analysis allows us to examine pairwise diffusion between model IOs and adopting IOs, spatial analysis makes it possible to capture more complex diffusion effects in larger groups of IOs. While we believe this combination of methods to be particularly promising, recent advances in longitudinal network analysis may also be productive in the quantitative study of IO diffusion.[109] We also see a potential for experimental methods in studying the motivations behind diffusion, which have been difficult to credibly isolate in earlier quantitative work.[110] The benefits from importing these techniques to the study of diffusion across IOs demonstrate the value of greater integration across subdisciplines.[111]

Finally, this article helps to open up an important empirical domain for diffusion research in general. So far, IOs have primarily featured in diffusion research as channels that facilitate learning and emulation across countries. Together with other recent contributions, this article suggests that diffusion research should pay equal attention to IOs as actors adopting and exporting models. Expanding the study of diffusion to IOs makes it possible to identify similarities and differences across levels of governance, with implications for our general understanding of diffusion. Illustrating these advantages, we have shown that connectivity matters for both cross-country and

105. Grigorescu 2010.
106. Park 2014.
107. Alter 2012.
108. For example, Hooghe et al. 2017; Koremenos 2016; Smith 2000; Tallberg et al. 2014.
109. Manger and Pickup 2016; Minhas, Hoff, and Ward 2016.
110. Gilardi 2012; Graham, Shipan, and Volden 2013, 694–95; Maggetti and Gilardi 2016.
111. Gilardi 2012, 469–70.

cross-IO diffusion, but in different ways. While geographical proximity is central to diffusion across countries, it appears to be of less importance for diffusion across IOs, where collaboration and functional commonalities are the principal drivers.

Supplementary Material

Supplementary material for this article is available at <https://doi.org/10.1017/S0020818318000450>.

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