

Informality and Bias in Studies of International Organizations

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Abstract

Research on international organizations (IOs) has progressed considerably over the past twenty years. However, most studies have focused on a very particular kind of body: formal IOs. These are institutions that have been created by states, have secretariats, and which have been constituted by international treaty. Nonetheless, despite the prominence and importance of these mechanisms of global governance, scholars have noted that there is a much wider variety of institutional forms. We focus on a particular subset of these seemingly new intergovernmental organizations: informal IOs. We explain the concept of informal IOs and analyze state membership in informal IOs using a new time-series cross-sectional dataset. Here we show that existing studies of institutionalized cooperation may be biased as a result of systematically excluding these forums from their analyses. We use this new data to revisit three key findings in the literature: first, that democratization leads states to join more IOs in attempts to consolidate democratic reforms; second, that the ratification of international environmental agreements is largely driven by participation in global governance more generally; and third, that socialization in international institutions affects state practices. We show that existing theories of institutionalized cooperation may apply to a narrower set of cases than was previously realized. The results suggest that a number of existing findings may have to be revisited and considerably qualified in future research.

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1 Introduction

The post-war world order is in a state of transformation. More complex, “second order” problems are emerging and new powers have appeared on the scene, bringing unfamiliar values and interests to global fora. Older institutions are being refashioned or deployed in unconventional ways, and, in many cases, new kinds of governance arrangements are being created.¹ Among the most important of these new arrangements are informal international organizations (IOs), which differ from more traditional “formal” IOs, like the United Nations (UN) or International Monetary Fund (IMF), in that they rest on more tenuous legal foundations and generally have a lighter bureaucratic footprint.² Such bodies, several recent studies have shown, have become increasingly common; are active across a large number of issues areas; and now include some of most important international institutions active in the world today—the Group of 20 (G20), the Asia Pacific Economic Cooperation (APEC), the Nuclear Supplier Group (NSG), the International Energy Forum (IEF) and the Financial Stability Board (FSB).

Given the increasingly high profile of such bodies and their growing presence within the global political landscape, alongside quite serious effectiveness and accountability concerns,³ it should be no surprise then that informal IOs have captured the attention of a large number of scholars in the fields of International Relations and International Law (IR/IL). Numerous studies have appeared in recent years attempting to conceptualize these institutions; trace their rise in the global system; understand why states create them; and, more generally, explain why they have become more common over time.⁴ Methodologically, these studies have moved from theory-building case studies towards systematic qualitative and quantitative analyses that aim to more carefully identify and weigh the effects of different dynamics.

We contend that informal IOs present a resounding challenge to existing theories of international organizations and international cooperation. We note that the discipline has adopted an excessively narrow definition of IOs that privileges legal formality and specific institutional markers that is out of step with how many IR scholars, international lawyers, and practitioners understand contemporary global governance. This is particularly true with respect to quantitative empirical studies that rely on the Correlates of War Intergovernmental Organizations (COW IO) dataset, which has been the workhorse IO dataset since the mid-2000s and *considers binding international legal instruments to be a definitional element of an IO*.⁵ Relying on a subtype of IOs (i.e., formal IOs) to characterize the population of IOs introduces measurement error and bias into statistical

¹Avant, Finnemore, and Sell 2010; Hale and Held 2011.

²Klabbers 2001; Vabulas and Snidal 2013; Di Stasi 2015.

³Verdier 2009; Patrick 2015; Roger 2016.

⁴Vabulas and Snidal 2013; Roger 2015; Di Stasi 2015; Westerwinter 2016.

⁵Pevehouse, Nordstrom, and Warnke 2004. See also Wallace and Singer 1970.

analyses—the direction of which is unclear *ex ante*.

In this paper, we outline the nature of this problem and illustrate its importance by replicating three prominent studies of IOs.⁶ We demonstrate that the concept of IOs that these scholars embed in their theories makes little if any reference to the level of formality of the IOs they investigate and propose to explain. We believe the discrepancy between theoretical scope and empirical measurement justifies revisiting each of these papers with new evidence about state membership in informal IOs, especially given that these studies have had substantial influence on the development of theories of international organizations and international cooperation. Using a more inclusive definition of IOs significantly alters the findings of these studies. This evidence suggests that many studies of IOs may not actually generalize to the population of cases they purport to apply to. Rather, instead of capturing the effect of IOs, they capture a different relationship related to formality. We hope scholars will use this new dataset to construct more rigorous theories of IOs and to better specify the scope conditions under which IOs affect, or are affected by, other phenomenon.

We support our argument with evidence from a new dataset of state membership in informal IOs. At present, our ability to analyze important questions about informal IOs has been limited by a lack of data at the state-IO-year level. In this paper, we discuss our efforts construct the first country-year panel of membership in informal IOs and we show how it can help to answer some of the questions outlined above. The dataset has been constructed by building on a revised version of the database of informal IOs developed by Roger and systematically gathering information about the members of each organization in it. Our dataset complements a dataset developed by the Correlates of War project.⁷ The Correlates of War Intergovernmental Organizations (COW IO) dataset, has been used by scholars to measure membership in international organizations, but, we argue and demonstrate empirically, that membership in formal IOs is not the same as membership in IOs more generally (i.e., including informals ones). Methodologically, we are concerned that existing studies that operationalize IO membership using the COW IO dataset may have biased findings since they rely on a truncated measure of IO membership. Theoretically, we are concerned that these studies may not actually apply to the universe of cases they purport to investigate.

We use this new dataset of informal IOs to revisit three prominent studies in International Relations about IOs.⁸ Together, these three studies explore the determinants of membership in IOs and how membership in IOs affects states' behaviour. We show in replications that existing arguments about IOs often apply only to the subset of IOs that are formal and that the findings are attenuated or even reversed when informal

⁶Bernauer et al. 2010; Greenhill 2010; Mansfield and Pevehouse 2006.

⁷Wallace and Singer 1970; Pevehouse, Nordstrom, and Warnke 2004.

⁸Bernauer et al. 2010; Greenhill 2010; Mansfield and Pevehouse 2006.

IOs are included. Crucially, none of the studies we revisit make theoretical arguments that should depend on levels of formality. This implies that existing theories of international cooperation may indeed apply to a narrower set of cases than was previously realized. Informal IOs are not the only “new” institutional form in contemporary global governance. We also hope that scholars will build on our argument and findings to develop more systematic theories and evidence about how states use transgovernmental networks, public-private partnerships, emanations, and soft law instruments to achieve transboundary cooperation.

2 Mapping Membership in Informal IOs

Informal IOs are now a well known—if little understood—instrument of cross-border governance. They are similar to formal IOs in that they are created by states—or, more precisely, by the individuals and institutions that comprise states. But they differ from formal IOs in two major respects.⁹ First, while all formal IOs are constituted by “legally-binding” international agreements, informal IOs are constituted by agreements that deliberately eschew hard obligations.¹⁰ Second, while most (though not all) formal IOs have independent secretariats that have a distinct corporate and organizational identity, many (perhaps most) informal IOs do not.

Such institutions are “unconventional” from certain perspectives, but hardly uncommon. Several scholars have, in recent years, attempted to measure the total number of informal IOs that have appeared over time.¹¹ Though their estimates differ somewhat, they have uniformly found that informal IOs have grown considerably over time. Figure 1 presents estimates from a recent effort by Roger. It shows that there has been a major shift since 1950 in terms of the kinds of IOs that states have created. Up until the early 1970s, states primarily created formal IOs. However, in the decades afterwards, states began to create an increasing number of informal IOs, especially in comparison to decelerating growth in new formal IOs. From 1975 to 2005, the rate at which formal IOs were being created began to plateau while the number of informal IOs exploded, rising nearly six-fold. By the end of this period, informals comprised around a third of all the currently active IOs. All available evidence suggests that they have continued their ascent.

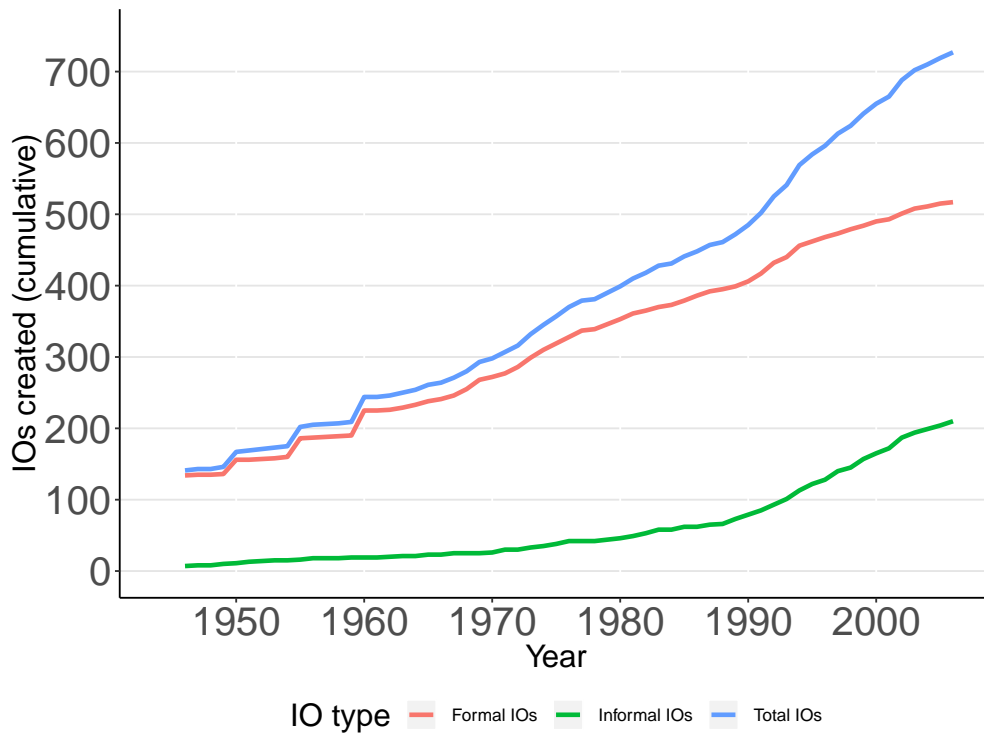
We build on the database of informal IOs developed by Roger, which was inspired by and builds upon the earlier one by Vabulas and Snidal. It uses the same basic source material—the *Yearbook of International Organizations*—but makes a few of different decisions about what to include and exclude. To enter this database, organizations must

⁹This description draws on the conceptualization utilized by Roger (2015) and Roger (2016), which in turn builds on but is somewhat different from that of Vabulas and Snidal (2013). In some ways, it is more similar to Jan Klabbers (2001)’s notion of a “soft organization.”

¹⁰Abbott and Snidal 2000; Shaffer and Pollack 2013.

¹¹Vabulas and Snidal 2013; Roger 2016; Westerwinter 2016.

Figure 1: Growth of international organizations



meet three core criteria.

First, an organization must be constituted by a non-binding international agreement. This is, by far, the most important criterion for determining an organization’s informality. It has both a negative and positive components. Negatively, to count as an informal IO an organization must not be constituted by an international treaty or have actions associated with it suggesting that members regarded it a formal institution. If, for instance, an organization’s constitutive agreement could be found in the United Nations Treaty Series then it was automatically excluded, since this indicates that the agreement was regarded as legally binding. Similarly, if members ratified the agreement or included it in a domestic list of legally binding agreements (such as the State Department’s List of Treaties in Force), this also strongly suggests that it was regarded as such. Positively, for an institution to count as an informal IO, a constitutive agreement had to display evidence indicating that its signatories intended it to be non-binding. In many cases, this intention is made explicit. An agreement may state that it is voluntary and non-obligatory. Article 3 of the Charter of the IEF explains, for example, that it “does not create any legally binding rights or obligations between or among its members.” In most, though, a more complex determination is necessary, since this intention is implicit in an agreement’s use of precatory—as opposed to obligatory—language. An agreement may refer to itself as an “understanding” or “arrangement” or may use terms like “should” in

the place of “shall.”¹²

Second, an organization must be created by states. This criterion excludes bodies created by sub-national actors (such as, regions and municipalities) and non-state actors (such as, non-governmental organizations and business groups), which do not typically have the ability to act on the behalf of states. In contrast with Vabulas and Snidal (but in keeping with the opinion of many international lawyers), this criterion is deliberately interpreted to include organizations created by any components of a state—including heads of state, ministries, or agencies—since all typically have the explicit or implied consent of leaders, are interpreted under international law as acting on the behalf of a state, and these entities usually have the option of pursuing more formal varieties of cooperation if they wish. Many formal IOs have been created by such government ministries or agencies—the Bank for International Settlements (BIS), to take just one prominent example, was constituted by central banks, who are its primary “members”—and therefore it is not clear why informal IOs created by them should be categorically excluded.¹³

Third, an organization must be independent and display evidence of a distinct organizational structure. This criterion is deliberately designed to ensure that a particular institution qualifies as an organization. To meet it, an institution must have a corporate identity, separate from that of other institutions; must involve regular meetings of officials; and must have an internal hierarchy of committees and rules of procedure. This does not require that an organization possesses a secretariat. However, secretariats do not immediately exclude an organization from informality either. We accept, as the definition outlined above implies, that many informally constituted IOs can indeed have secretariats, though these are likely smaller than those found in comparable formal IOs and less frequent overall. This, again, contrasts with the approach taken by Vabulas and Snidal, who regard the absence of a secretariat as a defining feature of an informal IO.¹⁴ However, it does align with the views of a large number of other scholars in the field of IR/IL who have often regarded such institutions as quintessential examples of informal institutions.¹⁵ This criterion is, therefore, more inclusive than Vabulas and Snidal’s in some respects. But in another it is more restrictive: it specifically leaves out organizations that operate within formal ones, such as the Cairns Group or the African Group, which Vabulas and Snidal include. Such organizations only operate within the context of other institutions and are therefore viewed as violating the requirement that an organization be independent.

The most recent version of the database developed by Roger finds that a total of 222

¹²Schachter 1977; Aust 2000.

¹³Klabbers 2001; Hollis, Blakeslee, and Ederington 2005; Hollis 2012; Berman and Wessel 2012; Galbraith and Zaring 2014.

¹⁴Vabulas and Snidal 2013; Snidal and Vabulas 2016.

¹⁵Kahler 2000; Klabbers 2013; Berman and Wessel 2012; Di Stasi 2015.

informal IOs have appeared over the years prior to 2005.¹⁶ Using this list of organizations as our baseline, we then collected data on the members of each body. We also collected information on the dates that members exited organizations, if it became apparent that this had occurred. Overall, though, “exit” seemed to be relatively rare occurrence, as appears to be the case with formal IOs as well. In many cases, membership information was publicly available on an organization’s website. A website could include an official member list that recorded dates of entry and exit, or this information could be assembled by looking at annual reports or similar official documents provided online. If this was not possible, information on membership patterns could often be determined through secondary sources. If that proved to be impossible or if gaps remained, then data was collected through an information request to a secretariat or another official repository. Finally, if this effort failed, then information requests were sent to individual members (or past members, as the case may be).

Overall, this data collection strategy proved to be broadly successful.¹⁷ So far, we have been able to collect complete membership data for 98 percent of all the informal IOs in the baseline dataset.

3 Initial Findings from the Dataset

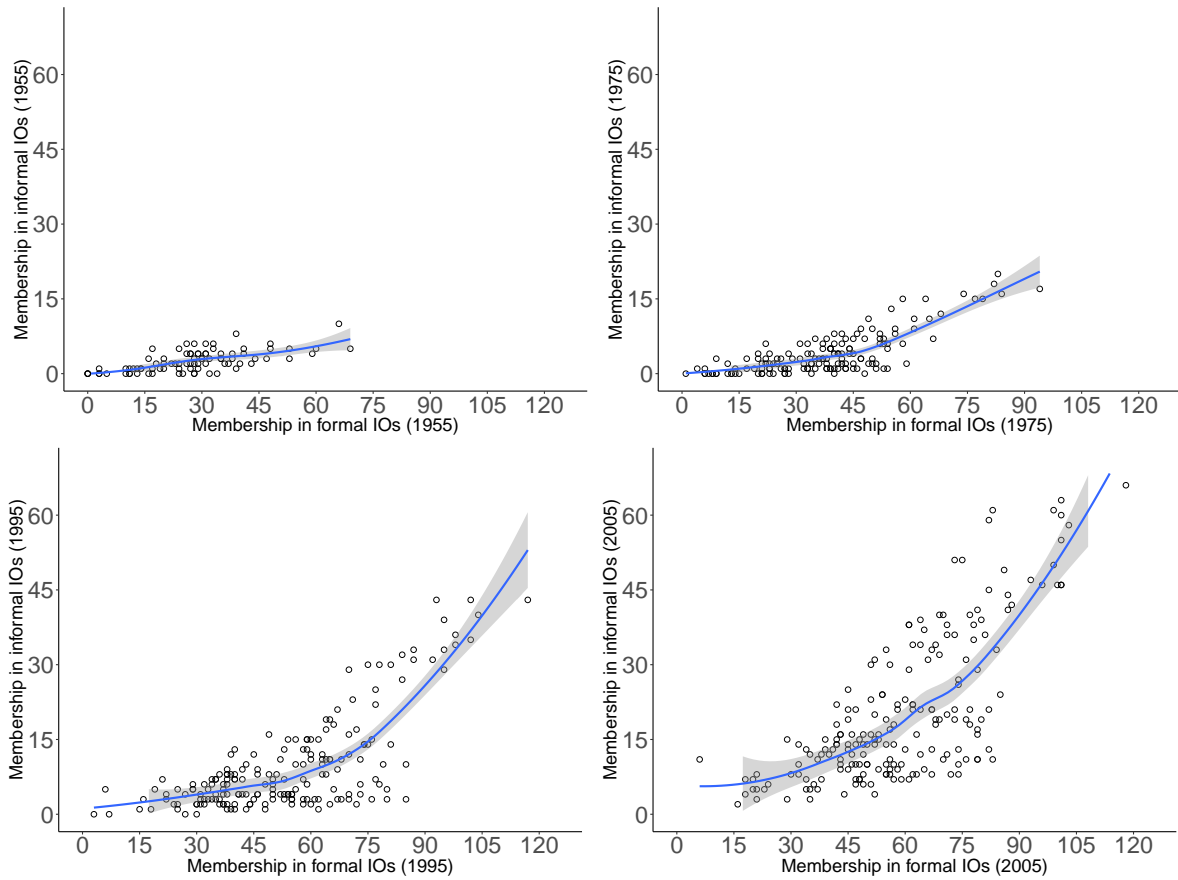
What does the new dataset tell us about membership patterns in informal IOs? In this section, we use this new state membership data to compare membership in formal and informal IOs across countries and over time. State participation in informal IOs varies considerably—just as membership varies in formal IOs. States tend to be members of more formal IOs than informal IOs, though, depending on the year, there are also between 2 and 10 times more formals than informals in operation. In 2005, mean formal IO membership was 58.8 with a standard deviation of 20.2, while mean informal IO membership was only 20.5 with a standard deviation of 14.7.

Figure 2 plots the relationship between state membership in formal and informal IOs at four different snapshots in time: 1955, 1975, 1995, and 2005—the final year for which data on formal IO membership is available from the COW-IOs dataset. These plots demonstrates four facts about IO membership. First, state IO membership is increasing over time, which is perhaps not surprising as the number of IOs has also increased. Second, there is substantial state-level variation in formal and informal IO membership, as well as in the composition of state-level formal versus informal IO membership. Third, it is consistently the case that states that join more formal IOs also join more informal

¹⁶Not all remain active. At least another 32 informal organizations also appear to have been created since 2005. However, data collection after 2005 has not been as systematic, since the comparable COW IO data ends at this time. Subsequent data is, therefore, less reliable.

¹⁷Records for each organization, including copies of webpages, official documents, secondary sources, and any communications, are on file with the authors.

Figure 2: Relationship between formal and informal IO membership



IOs, though this should not mask the broader heterogeneity in state IO memberships. Finally, after being a sideshow for many years after the Second World War, it appears, membership in informal IOs is now a relatively common occurrence.

We also compare IO membership patterns by region. Figure 3 depicts mean formal and informal IO membership by region from 1965 to 2005. Across regions there has been steady growth in both types of membership over time. North America and Western Europe are the leaders in both types of membership.¹⁸ East Asian and South Asian states can be considered hold outs from formal IOs, but note that their means levels of informal IO memberships are similar to other regions. This finding is in line with a literature that remarks how East Asian regionalism departs from the European experience in its relative under-institutionalization,¹⁹ though Asia’s participation in informal IOs appears very similar to participation in other regions. East Asia’s exceptionalism with regards to regional integration appears to be conditioned by formality, as East Asian states seem to shun formal IOs, but adopt informal IOs at the same rate as most other world regions. By contrast, Sub-Saharan African states reveal the opposite preferences for formality, as

¹⁸Note the large dips in means reflect waves of creation of new states (with accompanying low IO memberships), particularly in the context of the dissolution of the Soviet Union.

¹⁹Kahler and MacIntyre 2013.

Figure 3: IO membership over time

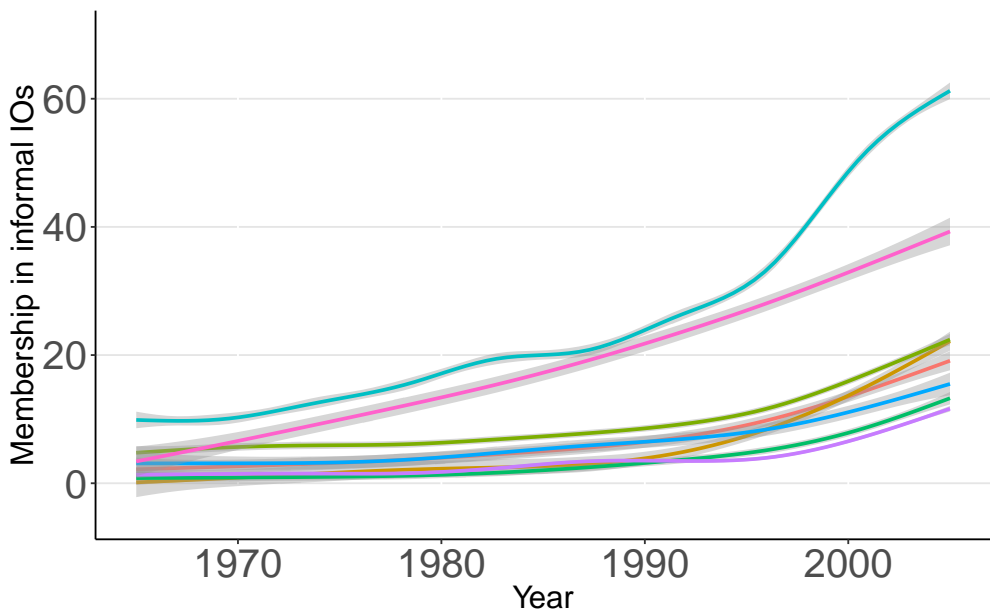
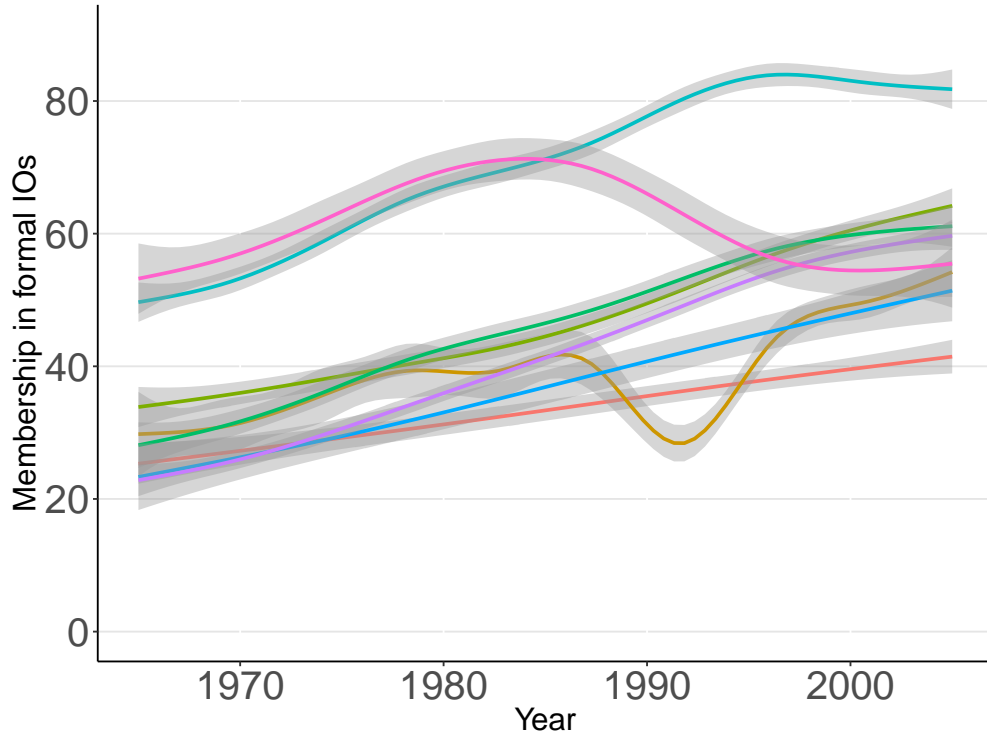
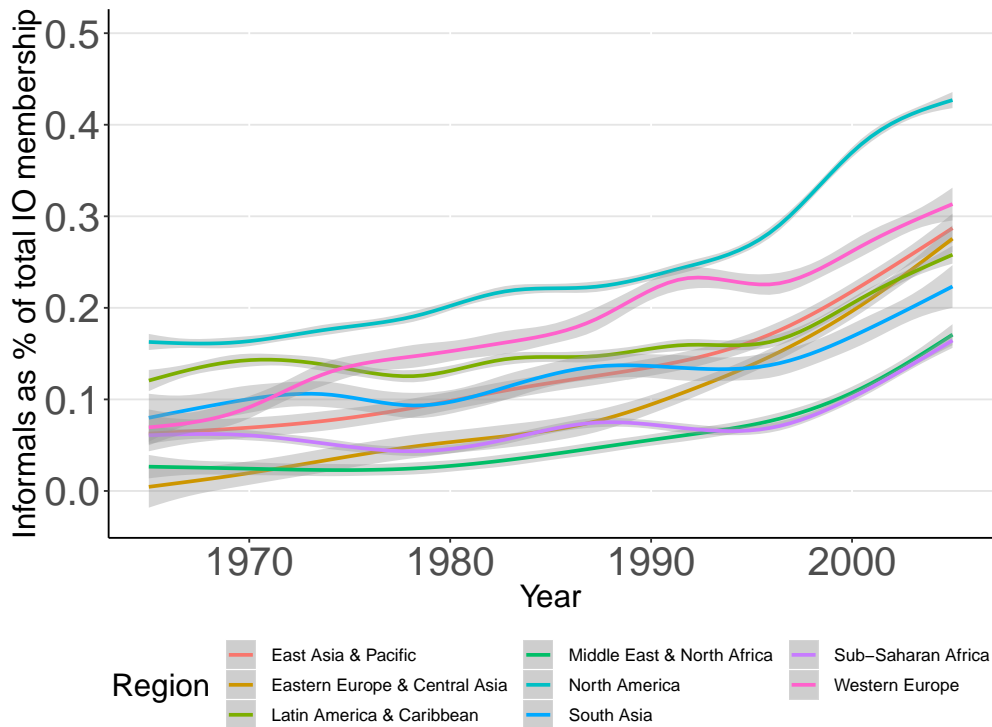


Figure 4: Informal IO membership shares over time



they join many more formal IOs than informal ones. Middle Eastern states have a similar formal-informal membership profile, weighted heavily in favour of formal IOs.

Figure 4 depicts regional informal IO membership as a percentage of total IO membership (formals and informals). In the 1970s and early 1980s, informal IOs constitute less than 10% of most states' total IO memberships, but the share of informals has risen for most regions to constitute 20–30% of total IO membership by the 2000s. The same descriptive pattern as above can be seen, only now Western states' informal IO participation seems even more unusual. Similarly, Middle Eastern and Sub-Saharan African states' preference for formal IOs is put into relief. While there is considerable variation in informal IO memberships across the world, the phenomenon is led by OECD states. This new information on IO memberships should be of great interest to scholars of IR and casts what we know about formal and informal IOs in a new light.

4 Studying IO Membership Patterns

Explicitly or implicitly, most existing research on international organizations has focused on formal IOs, like the United Nations, World Bank, International Monetary Fund, World Trade Organization and European Union. Existing datasets used for quantitative analyses, such as those developed by Shanks et al., Pevehouse et al., and Volgy et al. also define their population of interest as formal IOs, even if each study defines this popu-

lation somewhat differently.²⁰ However, the descriptive statistics in section 3 highlight substantial heterogeneity in membership across formal and informal IOs and how their participation changes over time.

We argue that the emphasis on formal IOs is problematic for methodological and theoretical reasons. Methodologically, we are concerned specifically that since informal IOs have constituted a significant portion of the total universe of international organizations that existing theoretical work has sought to explain, existing studies may suffer from substantial bias. Existing studies overwhelmingly purport to study international organizations, as such, and to build theories of international organizations, yet they have been using measurements that omit roughly a third of the population of IO. Rarely do scholars qualify their arguments with reference to levels of formality. But when the population of cases that scholars actually study is selected based on levels of formality, the selection is truncated at theoretically-relevant cut-off point. Measurement error is introduced into indicators of participation in IOs if the indicator only counts formal IOs. When state participation decisions are affected by the level of formality, systematic measurement error is introduced and the indicator is invalid. To the extent that participation in formal and informal IOs diverge for other reasons, the indicator may be unreliable and internally inconsistent.

This has implications for theory-building and theory-testing. Theoretically, arguments about IOs that have been supported empirically with respect to formal IOs may not actually hold for the population of interest they purport to apply to: IOs. Indeed, there is a risk that existing studies tell us more about the formality of an institution than its status as an IO. Findings from existing studies may be unreliable or may only apply to a narrower set of cases than was previously realized if they rely on measures that contain systematic, unrecognized, error. These problems may be particularly severe when biased measures are used as outcome variables compared to independent variables.²¹ The problem, following Oatley's characterization of a similar situation, is not just that scholars fail to explore other major instances of institutionalized cooperation. Instead, omitting informal IOs "leads scholars to draw biased inferences about the empirical relationships that they do explore."²²

Of course, these issues may not affect all studies equally. Some are much more specific than others in terms of what they focus on and how they define key variables. However, we suspect that there are many where these problems are at work: where results may depend significantly on the specific way in which key variables—in this case, IO membership—are operationalized. In what follows, therefore, we aim to assess the seriousness of these

²⁰Shanks, Jacobson, and Kaplan 1996; Pevehouse, Nordstrom, and Warnke 2004; Volgy et al. 2008; see also, Wallace and Singer 1970; Hafner-Burton, Von Stein, and Gartzke 2008.

²¹Geddes 1990.

²²Oatley 2011.

concerns. We do so by using the dataset developed above to revisit three key studies of institutionalized cooperation. In each case, we show that their findings are significantly attenuated when we adopt a broader definition of IOs by takes informal bodies into account. This shows that the answers to many important questions in the field depend heavily on the precise definition of an IO that scholars adopt and this suggests that there is a need for careful reflection on how we think about and operationalize this key concept in research going forward.

4.1 International Versus Domestic Drivers of Global Governance Dynamics?

In an important and well-cited study published in the *British Journal of Political Science*, Bernauer, Kahlbenn, Koubi and Spilker assess whether domestic or international factors are the most important determinants of state participation in global governance.²³ Their work is motivated by the fact that a range of scholars have found both domestic and international variables to be important for explaining outcomes, but no consensus has been reached on whether one is more important overall. Accordingly, the authors study whether state ratification of international environmental agreements (IEAs) is better explained by “domestic” or “international” factors. Domestic factors are those linked to states’ political and economic systems, such as political institutions, and income. International factors, on the other hand, are those linked to states’ external environments and their relationships with other actors, such as regional or peer effects. Bernauer et al. operationalize these latter linkages with several indicators, but crucially rely on the extent of states’ pre-existing IO memberships. They argue that state IO membership is linked to broader global governance behaviour since “more extensive membership in international organizations motivates states to behave more co-operatively when it comes to forms of international co-operation that lie outside the scope of specific international organizations they have joined at some prior time.”²⁴ They justifying this expectation by arguing that “membership in international organizations signals a general willingness of states to behave co-operatively in international matters, which states may also carry over to other very particular issue areas such as environmental policy.”²⁵

In statistical analyses, Bernauer et al. find that international factors (IO memberships) are more important determinants of IEA ratification than domestic factors, and that therefore scholars should devote more attention to international variables, both theoretically and empirically. But to what extent does this finding rest on the particular way that they operationalize the concept of an IO? Do their findings change at all if we

²³Bernauer et al. 2010.

²⁴Bernauer et al. 2010, p. 514.

²⁵Bernauer et al. 2010, p. 515.

Table 1: Replications of Bernauer et al. (2010)

	International environmental agreement ratification					
	(1)	(2)	(3)	(4)	(5)	(6)
BKKS IOs	0.011** (0.004)					
COW IOs		0.012** (0.004)				
Formal IOs			0.012** (0.004)			0.015** (0.004)
Informal IOs				-0.001 (0.007)		-0.015** (0.005)
Total IOs					0.007* (0.003)	
Observations	574,196	574,196	574,196	574,196	574,196	574,196
Number of countries	156	156	156	156	156	156
Log likelihood	-27208	-27199	-27205	-27257	-27227	-27190
Pseudo R ²	0.197	0.197	0.197	0.195	0.196	0.197

Replications of Bernauer et al. 2010: table 3, model 2
Logistic regression with cubic time polynomials
Outcome variable: country i ratification of treaty j in year t
Unit of observation: country-treaty-year, 1950–2000
Control variables suppressed, see supplementary table S1
Robust standard errors clustered by country in parentheses
** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

operationalize the concept differently, and, if so, what does this say about the theory they advance? In their quantitative analysis, Bernauer et al. measure state IO membership using the COW IO dataset. This, as discussed above, focuses primarily on formally-constituted bodies. However, Bernauer et al.’s causal mechanism does not provide strong grounds for limiting the analysis to formal institutions. Their argument is stated as applying to IOs as such, and they do not offer any explanation to qualify their argument’s scope with respect to formality. More memberships in any kind of IO, it appears, should indicate a greater “general willingness” to cooperate internationally. If only formal IOs have the effect they find, then it would seem that their inference should more qualified: membership in more legalized institutions—not IOs, per se—sends a cooperative signal that can carry over into other areas, perhaps because greater formality “screens” co-operators more effectively. Further, if only some international institutions have this effect, then their broader conclusion about the overall importance of international factors may be open to question.

We investigate these questions by revisiting the main findings from Bernauer et al.’s

paper using our new dataset of state memberships in formal and informal IOs. We begin in table 1, model 1, by replicating Bernauer et al.’s main findings using their published dataset.²⁶ In model 2, we conduct an exact replication using state-IO membership from the COW-IO dataset. In both models, we match the original finding that IO membership is associated greater ratification of international environmental agreements (IEAs). In model 3, we remove several informal IOs from the COW IO dataset and run the same model, again finding that formal IO membership is associated with a higher likelihood of ratifying individual IEAs.

In models 4 and 5, things start to look quite different. In model 5, we replace Bernauer et al.’s measure of IO membership with a measure of state membership in both formal and informal IOs. We continue to find that states that join more IOs ratify more IEAs, but the substantive effect of IO membership is nearly halved. When we adopt a broader definition of IOs, the contribution of this “international factor” decreases. Relative to the impact of democracy, for instance, a one-standard deviation increase from the mean has an effect that is roughly 40 percent smaller. We are forced, therefore, to modify the final conclusion that Bernauer et al. derive from their statistical analysis: this international factor turns out to be much more comparable to domestic ones for driving global governance dynamics.

A key implication from this paper is, in short, not robust to this alternative specification of the independent variable. But what is driving this result? Investigating informal IOs separately, in model 4, we find no evidence that membership in informals leads states to ratify more IEAs. In this model the coefficient is not statistically significant, and, puzzlingly, even points in the opposite direction. If anything, it seems, participation in more informal IOs tends to reduce the likelihood of IEA ratification. To probe this result further, we analyse the individual impacts of formal and informal IO membership in model 6. Here, we again find divergent effects on IO membership on IEA ratification: states that are members of more formal IOs typically ratify more IEAs than states that are members of fewer formal IOs; however, states with greater informal IO memberships ratify fewer IEAs than states with fewer informal IOs membership, all else being equal. Both results are statistically significant at the .01 confidence level or greater. This indicates that membership in IOs does not have uniform effects on IEA ratification, as Bernauer et al.’s argument seems to suggest. We find, instead, a more complicated relationship that forces us to rethink the causal processes underlying these statistical results and any putative link between IOs and broader global governance dynamics.

All of this helps to illustrate the main concern at the core of this paper: that findings in the field may be highly sensitive to different ways of measuring IOs and they may offer

²⁶Regression tables in the main text have been truncated to save space. Full tables that include the control variables can be found at the end of the document. The model specifications are the same between tables.

biased insights into international cooperation. However, it begs the question of how, in view of these specific results, we might rethink the relationship between IO memberships and IEA ratification? The null finding for informal IOs on their own and the negative relationship between informal IO membership controlling for formal IO membership is puzzling. Evidently, not all IO memberships are equal, but it seems implausible that formal IO membership signals cooperativeness while informal IO membership signals the opposite (see model 6). Instead, we believe this divergence indicates that there may be significant unobserved heterogeneity across the states that participate extensively in formal IOs and those that participate more in informal IOs. This heterogeneity could be as follows. One “type” of states prefers “harder” forms of international cooperation, which manifests in governing transboundary environmental problems using binding environmental treaties and governing other international issues similarly with formal, hard law IOs. By contrast, another type of state may opt for less institutionalization in international cooperation, which manifests as a greater share of IO memberships and choices to address transboundary environmental problems using a range of “softer” policy instruments that are not fully captured by the IEA ratification variable. In this sense, Bernauer et al.’s argument that “like does like” may still hold, but the mechanism relates to the legal status of international instruments rather than to underlying dispositions toward cooperation.

4.2 IO Membership, Socialization and Human Rights

The second study that we consider, by Brian Greenhill, examines the relationship between states’ membership in IOs and their human rights practices.²⁷ Greenhill engages with a large literature that argues IOs provide venues for socialization, wherein members internalize or mimic the norms, ways of thinking, or practices of other members.²⁸ Theories of socialization argue that IOs may do so by providing a forum for regular meetings where state officials interact with, learn from, and engage in dialogue with their peers. Greenhill investigates, specifically, whether IO membership socializes states towards greater respect for human rights. The ability of IOs to act as socializers, Greenhill argues, is conditioned by the human rights practices of its members. IOs provide an effective forums for socialization when members have “better” domestic human rights practices than when members have “worse” human rights practices. Indeed, Greenhill finds support for socialization in that states’ human rights practices improve when they are members of IOs that have more human rights-respecting members.

Greenhill tests this theory by developing a new measure of the human rights “context” that membership in IOs affords. His indicator measures the average level of respect

²⁷Greenhill 2010.

²⁸Checkel 2001; Deitelhoff 2009.

for human rights among the members of an IO averaged over each IO that a country is a member of, at the country-year level. As in the previous replication, the population of IOs is drawn from the COW IO dataset. The COW IO dataset’s accessibility and widespread use make it an obvious data source for testing empirical claims about IOs. However, Greenhill’s theory does not outline scope conditions that limit the mechanisms to formal IOs. Furthermore, formal IOs constitute only a fraction of the venues in which state officials interact with their foreign counterparts. Informal IOs, for instance, also offer potential forums for norm diffusion of the kind that Greenhill has in mind. Indeed, some scholars, such as Uwe Puetter, have argued that informals may even offer superior environments for the transmission of norms than formal IOs.²⁹ As informal IOs appear to offer government officials greater privacy than formal IOs, they may help to limit politicization, enable franker discussion and thereby facilitate more effective persuasion. Accordingly, socialization may be easier within informal IOs than within formal ones.³⁰

There are, therefore, good reasons to think that evaluating theories of IO socialization using the COW IO dataset may yield different results than would other sources. Essentially, the paper tests whether IOs socialize states using a subset of IOs (i.e., formal IOs as measured by the COW IO dataset) that is theoretically distinct from the “true” population of IOs that the theory should in fact apply to. If informal IOs also provide opportunities for socialization, then using the COW IO measure may yield biased estimates of the real causal effect.

Greenhill’s analysis therefore provides us with another opportunity to test the argument that we have advanced in this paper. To do so, we re-create the IO-context variable using our expanded population of IOs. The informal IO context indicator is broadly similar to the formal IO context measure, though not perfectly so. Figure 5 plots the two measures against one another, allowing us to compare the two sets of values. States could, theoretically, decide to be members of formal or informal IO at least partially based on their contrasting membership patterns, so it is possible that significant differences across these two kinds of institutions could show up. However, this turns out to not be the case. The informal and formal IO-context variables are highly correlated (Pearson’s $r = 0.86$), though informal IO context scores are higher than formal IO context scores, on average, and there is plenty of variation around the local means. Yet, generally, it appears that states when states are members of formal IOs with high respect for human rights they also tend to be members of informal IOs with high respect for human rights.

Table 2 reports the results of our reanalysis.³¹ Model 7 presents the baseline model from Greenhill’s paper, using his own IO context variable and the full set of controls

²⁹Puetter 2006.

³⁰Checkel 2001; Vabulas and Snidal 2013.

³¹Several lag structures are plausible. Greenhill’s results are robust to one through five-year lags. We report only the one-year lag, though our results are unchanged with different lag structures.

Table 2: Replications of Greenhill (2010)

	Cignarelli & Richards Physical Integrity scores					
	(7)	(8)	(9)	(10)	(11)	(12)
Greenhill IO context	0.296** (0.099)					
COW IO context		0.325** (0.104)				
Formal IO context			0.296** (0.106)			0.042 (0.144)
Informal IO context				0.203** (0.062)		0.186* (0.081)
Total IO context					0.296** (0.101)	
Observations	2,118	2,118	2,118	2,100	2,118	2,100
Number of countries	137	137	137	137	137	137
Pseudo R ²	0.282	0.282	0.282	0.282	0.282	0.282
Log likelihood	-3227	-3227	-3229	-3201	-3227	-3200

Replications of Greenhill 2010: table 2, model 1
Ordered probit model with lagged dependent variable
Outcome variable: 8-point Cignarelli and Richards Physical Integrity Score
Unit of observation: country years, 1981–2000
IGO context: Mean physical integrity score of common IGO members
Independent variables lagged one year
Control variables suppressed, see supplementary table S2
Robust standard errors clustered by country in parentheses
** p<0.01, * p<0.05, + p<0.1

that he employs. In model 8, we re-create the IO context variable using the COW IO dataset and find the same result. In model 9, we evaluate a formal IO context variable that removes a number of stray informal IOs that are in the COW IO dataset. The coefficient remains statistically significant and the magnitude of the effect is stable across specifications.

In model 10, we predict human rights practices using the informal IO context variable. The coefficient remains positive and statistically significant, but is weaker than the original result. In model 12, we include formal and informal IO context separately and find divergent effects. Formal IO context has no effect on human rights practices after controlling for informal IO context. By contrast, the human rights context of states' informal IO memberships has a strong, positive and statistically significant effect on states' human rights practices. Notice as well that the effect is roughly 40% weaker than Greenhill's

original finding.³²

The results from our reanalysis cast Greenhill’s original findings in a new light. In our statistical tests, we support Greenhill’s theory that IOs can socialize states, however we note that the scope that IOs have for socialization is more limited than originally proposed. Formal IO membership appears to have no independent effect on states’ human rights practices after accounting for patterns of informal IO membership. However, it appears that informal IOs offer a superior environment in which socialization processes can take place and may even be doing the bulk of the explanatory work. Interaction with more human rights respecting states in informal IOs is associated with improved domestic human rights practices. This finding matches the theoretical expectation of Puetter who argues that informal IOs may be better suited to changing states’ interests and practices than formal ones. More research will surely be needed to fully understand these dynamics.

What is clear, though, is that by leaving informal IOs out of the analysis there is a real risk that we bias our findings about IOs as a general phenomenon. As a broader implication for IR, it appears that using the COW IO dataset as representative of all IOs again fails to recover valid and robust statistical relationships. The subsample of IOs that Greenhill uses to evaluate his theory is indeed systematically different from the broader population of IOs that we track in our new dataset.

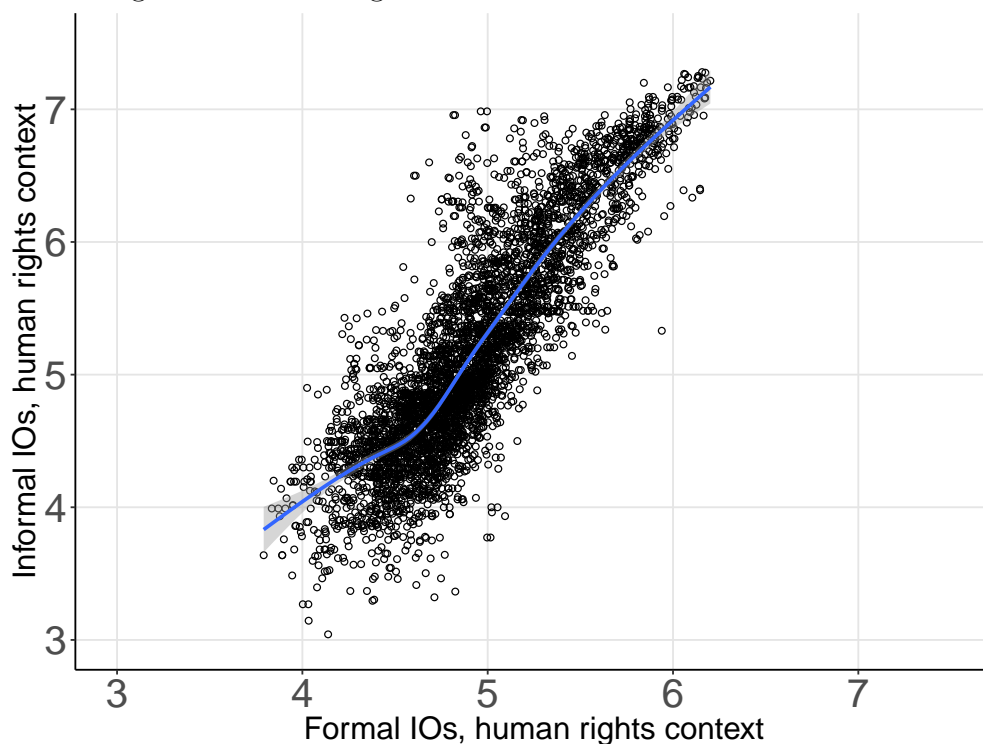
4.3 Democratization and State Membership in IOs

The two studies that we examined above each look at the effects of membership in IOs. Each asks, in its own way: how does membership in IOs shape states’ subsequent behaviour? The final study that we consider, by Mansfield and Pevehouse, investigates the analytically prior question: what causes states to join IOs in the first place?³³ Somewhat surprisingly, this question had seldom been asked or answered in a rigorous way prior to their effort. Functionalist explanations offer that states join IOs because they facilitate cross-border cooperation, but these explanations say little about the tremendous variation in the extent and timing of state membership in IOs. Mansfield and Pevehouse argue that a major driver of membership stems from domestic political processes. They argue, specifically, that democratizing states are more likely to join IOs. When states undergo regime change, Mansfield and Pevehouse explain, leaders find it difficult to credi-

³²In contexts where independent variables are highly correlated—such as with the formal and informal IO context variables—regression models can struggle to estimate the independent relationships efficiently. Multicollinearity can lead to inflated standard errors, but research suggests that coefficients are not biased. The reduced magnitude of the formal IGOs context variable in model 12 suggests that even if the standard errors are poorly estimated, the substantive effect of formal IGO context is severely attenuated. Model 6 continues to support the argument that interacting in human rights-respecting contexts is associated with improved domestic human rights practices, however the most important location for these interactions is actually informal IOs.

³³Mansfield and Pevehouse 2006.

Figure 5: Human rights context in formal and informal IOs



bly commit to liberal democratic reforms. They face considerable pressure to consolidate their position that may incentivize behaviour that is at odds with broader liberal reformist goals. During a transition period, it can therefore be hard for politicians that are genuinely committed to reform to differentiate themselves—in the eyes of domestic and international audiences—from those that simply aim to increase their personal power. “Real” reformers, however, can benefit from devices that signal their commitment to reforms, and in this regard IOs offer a useful tool.

There are several reasons. First, IOs can provide information about leaders’ behaviour and can “sound an alarm” if reforms fall short. Second, they can impose conditionality on those seeking membership. This helps to convey to audiences that a leader is indeed committed since it shows that they are willing to make costly policy investments that further the aim of reform. And, finally, membership in an IOs raises the costs of reform-reversals, since such moves may be punished through sanctions, suspensions or expulsions that can disrupt the stream of benefits that flow from international cooperation.

The empirical analysis tests this theory by examining whether states undergoing a process of democratization are indeed more likely to join IOs. To do so, Mansfield and Pevehouse make use of the COW IO database, as we have seen elsewhere. However, as we have argued in the previous two cases, there is no immediate reason to think that the theory they advance should be strictly limited to the formal IOs. In their theoretical exposition, Mansfield and Pevehouse define IOs in an expansive way and do not explic-

Table 3: Replications of Mansfield & Pevehouse (2006)

	Δ M&P (13)	Δ COW IOs (14)	Δ Formal IOs (15)	Δ Informal IOs (16)	Δ Total IOs (17)
Democratization	0.34** (0.10)	0.29** (0.08)	0.26** (0.08)	0.03 (0.04)	0.23* (0.09)
Autocratization	-0.13 (0.09)	-0.08 (0.07)	-0.05 (0.07)	-0.05 (0.03)	-0.03 (0.08)
Stable Democracy	0.25** (0.07)	0.16** (0.06)	0.17** (0.06)	-0.09+ (0.05)	0.23** (0.08)
Observations	4,665	4,665	4,665	4,665	4,665
Number of countries	173	173	173	173	173
R ²	0.05	0.09	0.08	0.46	0.25

Replications of Mansfield and Pevehouse 2006: table 2, model 1.1
OLS models with panel-corrected standard errors
Outcome variable is number of new IOs joined, $\Delta_{t,t-1}$
Period of observation: 1965–2000
Reference region is Africa
Control variables suppressed, see supplementary table S3
Panel corrected standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

ity refer to the formality of IOs in their account.³⁴ More importantly, we would add, informal IOs can theoretically perform many of the same functions that Mansfield and Pevehouse think make them attractive to democratizers—providing information, imposing conditionality, and raising reversal costs. There are, of course, some reasons why we may think that formal IOs may be special, perhaps because they of the higher domestic political costs associated are ratifying international legal instruments. But, if so, this raises the question of whether the key finding in Mansfield and Pevehouse’s paper generalizes when we adopt a more inclusive dependent variable—one that is, arguably, more aligned with way that they themselves appear to define an IO.

Here, we investigate this question: whether Mansfield and Pevehouse’s focus on what is, in fact, a subset of IOs makes a difference for their causal inferences. Do their conclusions extend to the broader population of IOs? If not, what does that mean for theories of international cooperation? We do so, as before, by revisiting their main findings using the dataset of informal IOs (table 3). We start, in Model 13, by replicating their original finding. This shows that the key independent variable of interest—democratization—is statistically significant and positively associated with IO membership. This is their key

³⁴Specifically, they cite the definition offered by Shanks, Jacobson, and Kaplan (1996), which states that IOs are “associations established by governments or their representatives that are sufficiently institutionalized to require regular meetings, rules governing decision-making, a permanent staff, and a headquarters.” This is, it is worth noting, broad enough to encapsulate most emanations and informal IOs.

piece of evidence, and it proves to be robust to a range of different model specifications. In keeping with our previous analyses, we re-analyze the relationship after removing informal IOs that nonetheless appear in the COW-IO dataset. The results for formal IOs only are essentially the same (see model 15).

We investigate changes in total IO membership (formal and informal IOs) in model 17. Here the results are weaker—10–30% depending on the model it is compared to—but still positive and statistically significant. We demonstrate that this attenuation stems from the role of informal IOs. In model 16, we find that democratization has no effect on states’ decisions to join informal IOs. Accordingly, Mansfield and Pevehouse’s result is driven entirely by changes in democratizing states’ formal IO memberships. Thus, while the general conclusion that they arrive at appears to hold when we consider the broader population of IOs, it does seem that there is a systematic difference between this and the specific subsample they look at. In contrast to Mansfield and Pevehouse’s findings and theoretical expectations, democratization has no effect whether states join informal IOs.

These findings, again, helps to illustrate our concerns about the robustness of analyses to different ways of measuring IOs. In our reanalysis of Mansfield and Pevehouse’s argument, we have found that their results change quite significantly when we use a broader measure of IOs that is more aligned with how they themselves appear to think about the concept. The magnitude of the effect declines sharply. It disappears altogether when we consider informal IOs on their own.

At a general level, this suggests that we as researchers may need to be more reflective about the alignment between the concepts and measures we use, and more specific about the cases our theories are intended to apply to. More specifically, our findings suggest that we may need to further theorize the relationship between democratization and IO membership. If formal and not informal IOs matter for would-be democratizers, as we have found, then it seems likely that it is not IOs—and their corresponding organizational properties, which Mansfield and Pevehouse highlight—that they desire per se. Instead, it is likely to be something related to the legal nature of these institutions, or, perhaps, their greater “publicness,” which may facilitate more effective signalling. To some degree, it may be a combination of all of these features. However we choose collectively think about this moving forward, though, it seems certain that the mechanism underlying these patterns is a different one that Mansfield and Pevehouse have hypothesized. Further research to explore these dynamics will certainly be needed.

5 Conclusion

Many scholars have noted that the structure of global governance has changed dramatically over the past decades, as new actors and new institutional forms have emerged and

challenged the status quo. Yet, aside from a number of studies of high-profile instances of this new phenomenon, we have little systematic empirical knowledge about this new landscape of international organization. This is problematic in two senses. First, we lack thorough knowledge about some of these institutional forms on their own terms. Second, it remains unclear how changes in international organization impact prevailing theories of institutionalized cooperation.

In this paper, we outline a research program to address one of these emergent organizational forms—informal IOs—and begin to show how it challenges existing theories of international cooperation. Informal IOs are one of, if not the most, promising avenues for future research in this domain. Compared to other institutional forms, informal IOs have obvious similarities to formal IOs in terms of their actor membership and the tasks they perform, but they have very different institutional forms. Informal IOs are the nearest neighbours to formal IOs, but different enough to allow us to tease out the implications existing theories of international cooperation that have been hampered by insufficient variation in design.

That informal IOs have been overlooked by IR scholars is perhaps unsurprising given that the existing datasets in IR adopt a narrow legalistic definition of IOs that identifies the presence of a binding international legal agreement as a necessary component of an IO.³⁵ We note that this definition frequently truncates the variable of interest—some measure of international organizations—at a theoretically relevant cut-off point related to formality. In replications of existing works, we show that often what scholars are capturing in their studies of IOs is actually the formality of international cooperation rather than something general about international organizations. This is ironic given that Wallace and Singer’s stated ambition in building the ur-IO dataset was to “measur[e] and describ[e] ... the amount of intergovernmental organization (or IGO) in the international system.”³⁶ We argue that this key concept in IR has been systematically mismeasured with deleterious consequences for theory building and theory testing.

In this paper, we analyzed how variation in institutional form affects key existing findings about IOs. In the case of Mansfield and Pevehouse, we demonstrate that the authors’ finding is very sensitive to the formality of the organizations in question, though the theory the paper advances should plausibly apply to both formal and informal IOs.³⁷ While the Mansfield and Pevehouse results are driven by formal IOs, we show that Greenhill’s results are actually driven by informal IO memberships. We find no effect of interaction in formal IOs when controlling for interaction in informal IOs.³⁸ Since formal and informal IO memberships often move in tandem, the COW IO indicator was

³⁵Wallace and Singer 1970; Pevehouse, Nordstrom, and Warnke 2004.

³⁶Wallace and Singer 1970, p. 240.

³⁷Mansfield and Pevehouse 2006.

³⁸Greenhill 2010.

capturing a spurious relationship. Finally, we confirm Bernauer et al.'s original finding with respect to membership in IOs and the ratification of international environmental agreements, but show that, similar to Mansfield and Pevehouse, the result is actually driven by membership in formal IOs, while informal IO memberships are associated with fewer ratifications.³⁹ Nothing in Bernauer et al.'s argument suggests different effects for different types of organizations.

Taken together, these findings suggest important weaknesses in existing theories of international cooperation and bias in empirical findings about the determinants of membership in IOs and the effect of IO membership on other behaviour. In this paper, we have shown that these biases exist when formal IO membership is substituted for total IO membership as the dependent variable (Mansfield and Pevehouse (2006)), as well as when it is used as an independent variable (Bernauer et al. (2010) and Greenhill (2010)). Furthermore, we find evidence of bias using an indexed IO membership independent variable (Greenhill (2010)). We take it as an open question whether fuller attention to the range of institutional forms condition other findings.

In a sense, our conclusions align with those of the rational design project.⁴⁰ We suggest that scholars pay closer attention to features of IOs that they think matter for their arguments. If legally binding founding documents are important, then using the COW IO dataset may be the best option. However, if formality is a minor aspect, then using our fuller measure of membership in formal and informal IOs may be more appropriate.

³⁹Bernauer et al. 2010.

⁴⁰Koremenos, Lipson, and Snidal 2001; Koremenos 2016.

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Supplementary tables

In this section, we provide the full regression tables for the replications conducted above.

Table S1: Bernauer et al. BJPS 2010: table 3, model 2

	International environmental agreement ratification					
	(1)	(2)	(3)	(4)	(5)	(6)
BKKS IOs	0.011** (0.004)					
COW IOs		0.012** (0.004)				
Formal IOs			0.012** (0.004)			0.015** (0.004)
Informal IOs				-0.001 (0.007)		-0.015** (0.005)
Total IOs					0.007* (0.003)	
Trade openness	-0.125* (0.054)	-0.131* (0.053)	-0.124* (0.053)	-0.032 (0.049)	-0.111+ (0.057)	-0.096+ (0.054)
Polity	0.010+ (0.006)	0.010 (0.006)	0.011+ (0.006)	0.016** (0.006)	0.011+ (0.006)	0.013* (0.006)
GDP pc (log)	0.931 (0.617)	0.964 (0.614)	0.940 (0.616)	0.426 (0.655)	0.944 (0.639)	0.648 (0.626)
GDP pc (log, squared)	-0.039 (0.037)	-0.041 (0.037)	-0.040 (0.037)	-0.011 (0.040)	-0.041 (0.039)	-0.023 (0.038)
SO ₂ pc	0.090** (0.034)	0.092** (0.033)	0.089** (0.033)	0.052 (0.035)	0.088* (0.035)	0.069* (0.035)
No. of other countries ratified	0.023** (0.002)	0.023** (0.002)	0.023** (0.002)	0.022** (0.002)	0.023** (0.002)	0.023** (0.002)
% same income group that ratified	0.000 (0.004)	0.000 (0.004)	0.000 (0.004)	0.001 (0.004)	0.001 (0.004)	0.000 (0.004)
% same region that ratified	0.030** (0.002)	0.030** (0.002)	0.030** (0.002)	0.031** (0.002)	0.031** (0.002)	0.030** (0.002)
GDP (log)	-0.073 (0.070)	-0.080 (0.069)	-0.072 (0.069)	0.064 (0.060)	-0.050 (0.073)	-0.037 (0.070)
Africa	-0.506** (0.147)	-0.512** (0.147)	-0.514** (0.147)	-0.417** (0.158)	-0.447** (0.149)	-0.592** (0.148)
North America	-0.547** (0.158)	-0.527** (0.159)	-0.520** (0.169)	-0.703** (0.190)	-0.594** (0.176)	-0.477** (0.169)
Latin America	-0.543** (0.124)	-0.556** (0.125)	-0.552** (0.125)	-0.477** (0.129)	-0.523** (0.125)	-0.565** (0.127)
East Asia	-0.461** (0.140)	-0.444** (0.140)	-0.445** (0.143)	-0.692** (0.166)	-0.501** (0.145)	-0.467** (0.144)
West Asia	-0.713** (0.159)	-0.709** (0.158)	-0.718** (0.158)	-0.798** (0.167)	-0.705** (0.164)	-0.790** (0.165)
Time	-0.328** (0.017)	-0.328** (0.017)	-0.328** (0.017)	-0.329** (0.017)	-0.329** (0.017)	-0.327** (0.017)
Time ²	0.010**	0.010**	0.010**	0.010**	0.010**	0.010**

	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Time ³	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-9.394**	-9.491**	-9.433**	-8.281**	-9.563**	-8.540**
	(2.970)	(2.963)	(2.971)	(3.110)	(3.022)	(2.990)
Observations	574,196	574,196	574,196	574,196	574,196	574,196
Number of countries	156	156	156	156	156	156
Log likelihood	-27208	-27199	-27205	-27257	-27227	-27190
Pseudo R ²	0.197	0.197	0.197	0.195	0.196	0.197

Replications of Bernauer et al. 2010: table 3, model 2

Logistic regression with cubic time polynomials

Outcome variable: country i ratification of treaty j in year t

Unit of observation: country-treaty-year, 1950–2000

Robust standard errors clustered by country

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Table S2: Greenhill 2010: table 2

	Cignarelli & Richards Physical Integrity scores					
	(1)	(2)	(3)	(4)	(5)	(6)
Greenhill IO context	0.296** (0.099)					
COW IO context		0.325** (0.104)				
Formal IO context			0.296** (0.106)			0.042 (0.144)
Informal IO context				0.203** (0.062)		0.186* (0.081)
Total IO context					0.296** (0.101)	
Lagged dependent variable	0.530** (0.023)	0.518** (0.024)	0.521** (0.024)	0.515** (0.024)	0.519** (0.024)	0.514** (0.024)
<i>Domestic controls</i>						
FDI	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Trade	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)
Population density	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Polity	0.014* (0.005)	0.014** (0.005)	0.014** (0.005)	0.014** (0.005)	0.013* (0.005)	0.014** (0.005)
Regime durability	0.003* (0.001)	0.003* (0.001)	0.003* (0.001)	0.003* (0.001)	0.003* (0.001)	0.003* (0.001)
<i>International controls</i>						
Common language	0.025 (0.017)	0.026 (0.017)	0.026 (0.017)	0.029+ (0.017)	0.026 (0.017)	0.029+ (0.017)
Common colonial history	-0.025 (0.020)	-0.025 (0.020)	-0.023 (0.020)	-0.024 (0.020)	-0.024 (0.020)	-0.024 (0.020)
Neighbourhood effect	0.029 (0.021)	0.029 (0.021)	0.032 (0.021)	0.029 (0.021)	0.029 (0.021)	0.028 (0.022)
Hard PTA membership	-0.129 (0.092)	-0.133 (0.092)	-0.123 (0.092)	-0.148 (0.093)	-0.145 (0.093)	-0.150 (0.093)
Soft PTA membership	0.123+ (0.073)	0.121+ (0.073)	0.119 (0.073)	0.112 (0.073)	0.112 (0.073)	0.113 (0.073)
Civil war	-0.383** (0.096)	-0.384** (0.095)	-0.378** (0.095)	-0.390** (0.096)	-0.382** (0.095)	-0.392** (0.096)
Interstate war	-0.507** (0.126)	-0.495** (0.124)	-0.485** (0.122)	-0.436** (0.114)	-0.474** (0.119)	-0.444** (0.122)
GDP (log)	0.101** (0.034)	0.103** (0.033)	0.104** (0.033)	0.096** (0.033)	0.099** (0.033)	0.096** (0.033)
/cut1	2.103** (0.468)	2.192** (0.480)	2.096** (0.490)	1.576** (0.321)	2.043** (0.458)	1.686** (0.527)
/cut2	2.800** (0.467)	2.888** (0.479)	2.793** (0.489)	2.272** (0.315)	2.740** (0.456)	2.381** (0.525)
/cut3	3.428**	3.516**	3.421**	2.897**	3.367**	3.007**

	(0.471)	(0.483)	(0.493)	(0.324)	(0.461)	(0.530)
/cut4	4.010**	4.099**	4.003**	3.481**	3.950**	3.591**
	(0.470)	(0.483)	(0.492)	(0.325)	(0.461)	(0.530)
/cut5	4.772**	4.861**	4.764**	4.243**	4.712**	4.353**
	(0.474)	(0.486)	(0.495)	(0.329)	(0.464)	(0.531)
/cut6	5.507**	5.595**	5.498**	4.979**	5.446**	5.089**
	(0.476)	(0.488)	(0.497)	(0.334)	(0.466)	(0.533)
/cut7	6.257**	6.346**	6.248**	5.730**	6.197**	5.839**
	(0.480)	(0.491)	(0.500)	(0.337)	(0.469)	(0.536)
/cut8	7.263**	7.352**	7.252**	6.737**	7.203**	6.846**
	(0.494)	(0.505)	(0.513)	(0.351)	(0.483)	(0.549)
Observations	2,118	2,118	2,118	2,100	2,118	2,100
Number of countries	137	137	137	137	137	137
Pseudo R ²	0.282	0.282	0.282	0.282	0.282	0.282
Log likelihood	-3227	-3227	-3229	-3201	-3227	-3200

Replications of Greenhill 2010: table 2, model 1

Ordered probit model with lagged dependent variable

Outcome variable: 8-point Cignarelli and Richards Physical Integrity Score

Unit of observation: country years, 1981–2000

IGO context: Mean physical integrity score of common IGO members

Independent variables lagged one year

Reference region is Europe

Robust standard errors clustered by country in parentheses

** p<0.01, * p<0.05, + p<0.1

Table S3: Mansfield & Pevehouse (2006)

	Δ M&P	Δ COW IOs	Δ Formal IOs	Δ Informal IOs	Δ Total IOs
	(1)	(2)	(3)	(4)	(5)
Democratization	0.34** (0.10)	0.29** (0.08)	0.26** (0.08)	0.03 (0.04)	0.23* (0.09)
Autocratization	-0.13 (0.09)	-0.08 (0.07)	-0.05 (0.07)	-0.05 (0.03)	-0.03 (0.08)
Stable Democracy	0.25** (0.07)	0.16** (0.06)	0.17** (0.06)	-0.09+ (0.05)	0.23** (0.08)
M&P IOs	0.00 (0.00)				
COW IOs		0.02** (0.00)			
Formal IOs			0.01** (0.00)		
Informal IOs				0.08** (0.01)	
Total IOs					0.03** (0.00)
Dispute	-0.05** (0.02)	-0.04* (0.01)	-0.03* (0.01)	-0.01 (0.01)	-0.03+ (0.02)
Hegemony	-23.11** (7.39)	-10.60 (6.46)	-9.83 (6.23)	-0.89 (2.63)	-10.57 (7.50)
Year	-0.06** (0.02)	-0.03+ (0.02)	-0.03+ (0.02)	-0.00 (0.01)	-0.02 (0.02)
Former Communist	0.99** (0.20)	1.13** (0.21)	1.12** (0.21)	0.53** (0.17)	1.65** (0.22)
Independence	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
North America	-0.25 (0.16)	-0.12 (0.10)	-0.15 (0.10)	-0.20* (0.08)	-0.14 (0.12)
South America	-0.25 (0.15)	-0.22+ (0.12)	-0.24* (0.11)	-0.24** (0.09)	-0.36** (0.13)
Middle East	-0.11 (0.14)	-0.18* (0.09)	-0.20* (0.09)	0.05 (0.05)	-0.27** (0.09)
Asia	-0.31* (0.14)	-0.05 (0.11)	-0.08 (0.11)	-0.05 (0.05)	0.07 (0.11)
Oceania	-0.54** (0.15)	-0.18 (0.12)	-0.21+ (0.13)	-0.01 (0.07)	-0.08 (0.13)
Europe	-0.39* (0.15)	-0.23* (0.11)	-0.26* (0.11)	0.02 (0.09)	-0.09 (0.15)
Constant	124.63** (37.81)	64.22+ (33.05)	60.59+ (31.71)	0.24 (13.06)	50.33 (37.87)
Observations	4,665	4,665	4,665	4,665	4,665
Number of countries	173	173	173	173	173
R ²	0.05	0.09	0.08	0.46	0.25

Replications of Mansfield and Pevehouse 2006: table 2, model 1.1

OLS models with panel-corrected standard errors

Outcome variable is number of new IOs joined, $\Delta_{t,t-1}$

Period of observation: 1965–2000

Reference region is Africa

Panel corrected standard errors in parentheses

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$
