Earth System Governance 21 (2024) 100215

Contents lists available at ScienceDirect

Earth System Governance

journal homepage: www.sciencedirect.com/journal/earth-system-governance

A springboard or a safeguard? The repercussions of affinity on environmental treaties' adaptability

Noémie Laurens

International Relations/Political Science Department, Graduate Institute, Geneva, Switzerland

ARTICLE INFO

Keywords:
Institutional design
Institutional adaptability
Affinity
Environmental agreements

ABSTRACT

If international environmental agreements (IEAs) are to remain relevant over time, the institutional capacity to adjust them to changing circumstances, referred to here as adaptability, is an important asset. Yet, while some IEAs include various adaptability features, others do not. This paper develops the concept of affinity, defined as the varying sense of connection between negotiating countries, and argues affinity is a major driver of adaptability variation. Two rationales may explain why negotiators include adaptability provisions in IEAs. When affinity is low, negotiators likely use adaptability as a safeguard in case cooperation does not go according to plan or to gather more information about other signatories before further cooperation. By contrast, when affinity is high, they can use adaptability as a springboard for long-term expansive cooperation. I test both hypotheses on a sample of 1137 IEAs and find that adaptability is negatively associated with affinity, supporting the safeguard rationale.

1. Introduction

The fate of international environmental agreements (IEAs) is plagued with uncertainty (Thompson, 2010). Because they cannot be sure of the future state of the world, nor of the preferences and behavior of other negotiating countries (Koremenos et al., 2001), drafters face the so-called "incomplete contracting problem," i.e., the impossibility of specifying "all the relevant contingencies" *ex-ante* in the treaty (Hart and Moore, 1988). Of critical importance in global environmental governance is the high scientific uncertainty surrounding the issues at stake. For instance, the success of the 1987 Montreal Protocol on the Ozone Layer has been partly due to the growing use of hydrofluorocarbons, which scientists have identified, decades after the negotiations of the treaty, as potent greenhouse gases undermining efforts to mitigate climate change (Birmpili, 2018, 427). Many other environmental issues are changing rapidly and are difficult to predict. As a result, it is hard to make IEAs stay relevant and effective over time. Nevertheless, the challenge is not insurmountable and can be anticipated, at least to some extent.

Negotiators can ramp up the ability of IEAs to evolve and adapt to their new circumstances with various provisions, referred to in this paper as adaptability provisions. Adaptability varies significantly among IEAs. For instance, treaties like the 2013 Minamata Convention on Mercury and the 2015 Paris Agreement on Climate Change include several adaptability provisions, such as an international secretariat, requirements for periodic reporting on implementation, and the possibility of adopting addenda. By contrast, numerous IEAs, such as the 2007 International Convention on the Removal of Wrecks and the 1992 Cooperation Agreement on the Forecast, Prevention, and Mitigation of Natural and Technological Disasters, contain none of these tools.

Two main rationales may explain why states decide to include adaptability provisions in an IEA. On the one hand, adaptability can increase the effectiveness of and pave the way for a long-lasting and expansive international cooperation framework in an uncertain world. I refer to this rationale as the *springboard* hypothesis. On the other hand, adaptability can allow some negotiating countries to postpone tough decisions or gather more information on the behavior of the other treaty signatories before further cooperation. I refer to this rationale as the *safeguard* hypothesis. Drawing on the literature on trust in International Relations (IR) and its various conceptions, this paper argues that the degree of affinity, that is the pre-existing sense of (dis-)connection between countries negotiating a treaty, is a key explanatory factor in the rationale behind the treaty's adaptability. Under the *springboard hypothesis*, adaptability is expected to be a feature of treaties between like-minded or similar countries who are keen to cooperate over time on a specific environmental issue (i.e., there is a positive association between affinity and adaptability). Under the *safeguard hypothesis*, adaptability is expected to be a feature of treaties that bring together unlike-minded or

E-mail address: noemie.laurens@graduateinstitute.ch.

https://doi.org/10.1016/j.esg.2024.100215
Received 16 January 2024; Received in revised form 25 March 2024; Accepted 30 May 2024
Available online 5 June 2024
2589-8116/© 2024 The Author. Published by Elsevier B.V. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

relatively unrelated partners (i.e., there is a negative association between affinity and adaptability). This paper asks which of the springboard or safeguard rationales is more common in IEA negotiations. I test both hypotheses on a sample of 1137 IEAs concluded between 1945 and 2015.

The increasing complexity of interstate and state-environment relationships in the context of globalization and planetary environmental crisis calls for designing adaptive IEAs able to respond to the evolving intellectual, political, and environmental contexts. Against this background, the article sheds light on the various institutional strategies that countries can exploit to enhance IEA dynamism. The argument on the two potential articulations between IEA adaptability and affinity has not been thoroughly explored yet.[1] As such, this article contributes to our limited understanding of causal mechanisms between interstate relationships and IEA design. I find a negative association between adaptability and affinity. This suggests that high affinity between countries tends to be associated with lower levels of IEA adaptability. Conversely, negotiators typically increase the institutional adaptability of IEAs concluded with partners with which they have little affinity. This result indicates that adaptability is prominently used as a design tool for adversaries to mitigate uncertainty about others, rather than for friends to mitigate uncertainty about the state of the world. This supports the *safeguard* rationale and provides important lessons as to how states build upon their existing connection to others to shape their cooperation frameworks.

2. The conceptual boundaries of adaptability

Adaptability, or adaptive capacity, is often described as a condition for success "for it maintains a repertoire of potential solutions to unforeseen problems and unpredictable variations, and allows for learning and adjustment" (Engle, 2011, 648). Unsurprisingly, adaptive capacity has become a central concept in the literature on climate change adaptation. Although most of this literature focuses on societal adaptability (e.g., Mortreux and Barnett, 2017), a few studies investigate the adaptive capacity of institutions (e.g., Gupta et al., 2010).[2]

This paper defines institutional adaptability as *a design feature that anticipates or eases the possibility for states to adjust an international agreement collectively during its lifetime*. Adaptable IEAs can be considered a work in progress. They are endowed with tools that help states adapt their cooperation framework to a changing environment and new information without dismantling it. Like architects, negotiators can "anticipate what will be needed in the future" with "wiring that allows new rooms to be easily added." (Roberts et al., 2021, 27).

Institutional adaptability shares common features with flexibility, an attribute that has been the subject of much IR scholarly discussion. However, some clarifications are required.[3] In the rational design literature, flexibility has repeatedly been equated with the option that states have to suspend or terminate their individual commitments unilaterally. According to Baccini et al. (2015, 766), flexibility provisions give "legally accepted opt-outs". Similarly, Kucik and Reinhardt (2008, 477) describe flexibility provisions as provisions allowing "a country to suspend the concessions it previously negotiated without violating or abrogating the terms of the agreement". This conception of flexibility as a low-cost option to "loosen the ties that bind" (Koremenos, 2001) contrasts with adaptability's potential to limit the future discretion of states since changes to a treaty may lead to additional and stricter commitments. In this sense, flexibility allows more leeway for individual goals, whereas adapting the treaty involves collective decisions.[4] Lastly, flexibility shortens the time horizons of contracting parties (Kuyper, 2013), whereas adaptability lengthens the shadow of the future.

Admittedly, some scholars distinguish adaptive flexibility from transformative flexibility. The former "allow[s] certain actors to depart from institutional rules while the institution itself remains stable". By contrast, transformative flexibility "allows the institution itself to be changed" (Thompson, 2010, 270–271; see also Koremenos et al., 2001, 773; Marcoux, 2009, 211–213). Although adaptability is undoubtedly closer to transformative flexibility, many scholars equate the latter with amendment procedures.[5] This narrow operationalization masks important components of institutional adaptability. For example, delegating lawmaking to intergovernmental treaty bodies, commonly referred to as the "Conference of the Parties" (COP),[6] is a core element of institutional adaptability that remains largely overlooked in discussions on transformative flexibility. The ability of intergovernmental committees to collect, monitor, and respond to new information is an essential source of IEA adaptation though (Gehring, 2008, 474; Wiersema, 2009, 271–273; Schiele, 2014, 43–44). As a result, adaptability partially overlaps with the concept of pooling, which encompasses "joint decision making among [member states]" (Hooghe and Marks, 2015, 307). However, pooling corresponds to intergovernmental decision-making rules and procedures, whereas adaptability involves tools allowing or facilitating the adjustment of the institution, which include but are not limited to intergovernmental bodies.

In summary, adaptability does not simply reflect how easy it is to modify the rules and procedures of a treaty. As is elaborated below, adaptability also captures design devices able to monitor and process signals that an IEA needs to be adapted. Therefore, adaptability is multifaceted. More specifically, I consider adaptability to consist of four types of design strategies.

First, *monitoring* can provide early warnings to states about the need to adjust a given IEA (Bodansky, 2010, 188). Monitoring provisions include impact assessments of the IEA, requirements for the parties to issue regular reports about their implementation, and periodic collective reviews of the IEA's operations. *Monitoring* provisions allow states to obtain information about their partners' behavior, the issue at stake, and the effectiveness of their commitments. These provisions can reduce uncertainty gradually and help states make the necessary adjustments to the terms of cooperation in light of new information or scientific knowledge.

Second, *external feedback* strategies aim to involve a wider range of actors in treaty implementation than only government representatives. External feedback strategies are especially relevant in the context of environmental governance. Environmental issues affect diverse stakeholders whose experience and expertise can inform state decisions and increase state awareness that IEA provisions are outdated, ineffective, or incomplete (Laurens et al., 2023). External feedback provisions typically consist of public participation requirements and the establishment of more formal advisory, scientific, or stakeholder committees.

Third, *anticipatory strategies* provide a framework for the future adaptation of the IEA. More specifically, IEAs can explicitly acknowledge that amending the treaty or its annexes is possible and set out the

[1] As an exception, Green and Colgan (2013) investigate the association between institutional delegation and preference heterogeneity. However, as demonstrated in the present paper, these two concepts constitute only one aspect of adaptability and affinity, respectively.

[2] For a more detailed synthesis of the literature on adaptive institutions, see Koontz et al. (2015).

[3] For a distinction of both concepts in the context of the international investment agreements, see Roberts and St John (2021).

[4] Helfer (2012) introduces a distinction between unilateral and collective flexibility mechanisms. Among the collective flexibility mechanisms he describes, I consider "amendment and revision" as an adaptability strategy.

[5] A notable exception is the literature on freshwater treaties, which tends to associate flexibility with a broader set of measures such as periodic reviews and conflict resolution mechanisms (e.g., De Bruyne et al., 2020, 325).

[6] Other common designations include Commissions, Assemblies, Meetings, and Committees.

procedures to do so. If the IEA does not mention options for amendment, the amendment rules established under article 40 of the Vienna Convention on the Law of Treaties apply. However, numerous IEAs deviate from these residual rules (Boockmann and Thurner, 2006). Negotiators can also anticipate IEAs' future adaptation with provisions providing for the possibility of adopting additional instruments, such as supplementary agreements, protocols, or annexes.

Lastly, *institution-building* strategies allow to centralize decision-making and information-gathering within one or more treaty bodies. In international environmental governance, the most well-known example is the creation of a COP, which periodically brings together state representatives (see, e.g., Wiersema, 2009). An IEA's institutional apparatus can be further fleshed out by establishing a secretariat and subsidiary bodies to assist the intergovernmental committee. These institutions are a central component of adaptability since they are usually in charge of overseeing monitoring, feedback, and amendment processes (Laurens et al., 2023). They constitute a forum for dialogue and decision-making, which may help uncover cooperation problems and discuss potential solutions. According to Gehring (2008, 474), the increasing number of institutional arrangements established under the framework of IEAs results from the negative experience of early "sleeping treaties," which failed to create their own apparatus.

While the four types of provisions have typically been investigated separately (e.g., De Bruyne et al., 2020), they all form part of a broader underlying dimension of institutional design and result from various negotiation trade-offs. Therefore, I argue that scholars should examine them jointly to shed new light on the goals states seek to fulfill when they shape IEAs. To be sure, *monitoring*, *external feedback*, and *institution-building* provisions can serve other purposes than increasing the ability of states to adapt an IEA. In particular, they can enhance country accountability and treaty visibility. Nevertheless, this does not rule out that these tools help states collect information that can inform institutional adaptation and, as such, increase the overall degree of adaptability of an IEA. The next section presents a theory to explain the variation in IEA adaptability.

3. A theory of affinity and institutional adaptability

Incomplete contracting is a pervasive and inescapable challenge in international negotiations and, perhaps to a greater extent, in environmental governance. Neither states nor other actors negotiating an agreement can anticipate every contingency that may arise (Hart and Moore, 1988). In their seminal article, Koremenos et al. (2001) distinguish three types of uncertainty: about the state of the world, about others' behavior, and about others' preferences. While the first kind is external to the negotiation, the two others are internal and differ arguably more significantly from one IEA negotiation to another.

To explain the varying degree of treaty adaptability, I focus on uncertainties about others by developing the concept of affinity, which I define as the pre-existing sense of connection between countries. I consider affinity to consist of 1) *political affinity*, a connection based on a community of interests and preferences; 2) *experiential affinity*, a connection based on prior shared negotiation experience; and 3) *cultural affinity*, a connection based on shared cultural identity.

The term "affinity" is frequently used by scholars measuring the similarity of countries' voting behavior in the United Nations General Assembly (e.g., Gartzke, 1998). However, while preference convergence or "homogeneity" (see Green and Colgan, 2013) is a key component of my concept of affinity, it overlooks other critical aspects, which have received more attention in the literature on trust in IR.[7] The latter distinguishes two forms of trust. First, *strategic trust* is situational and based on cost-benefit calculations. This conception is embodied in the work of Kydd (2010, 2680), who claims that "trust depends on having confidence that one's interests are not in too much conflict with the other side." Political affinity mainly contributes to this type of trust. *Social (or relational) trust*, by contrast, is "not grounded in calculations of predictability, but conceptions of the identity relationship between the parties" (Weinhardt, 2015, 33). Experiential affinity contributes to both strategic and relational trust: "successful experience with specific reciprocity might build deeper trust and allow more diffuse reciprocity in the future." (Rathbun, 2012, 11) Cultural affinity, for its part, is based on shared identities. In the words of Rathbun (2018, 692): "we trust others like us and fear those who are different from us".

While I acknowledge an important intellectual debt to the rich literature on trust to build the concept of affinity, I argue that the two should not be conflated. Specifically, I consider the relationship between affinity and trust to be probabilistic, not deterministic. Put simply, I expect the presence of one or several affinity dimensions to likely influence the perception of trustworthiness, but affinity can be present without trust. Trust is also more elusive and more difficult to capture than affinity.

Two rival hypotheses on the association between affinity and adaptability can be formulated: one positive, the other negative. They are represented by the two diagonals in Fig. 1. On the one hand, when affinity is high, adaptability can be used as a *springboard* for expansive cooperation between negotiating countries. Adaptability provides the necessary tools to ensure that states can adapt the IEA smoothly to its future circumstances. This hypothesis implies that states take a leap of faith, which is unlikely if affinity is low.

On the other hand, if states are risk-averse and affinity is low, cautious negotiators may perceive the institutional ability to modify an IEA as a *safeguard* if cooperation does not go according to plan. It may also be a means to gather more information about other parties' compliance behavior before taking further cooperative action. This protective strategy amounts to using adaptability as a substitute for (or to complement) flexibility.

In both cases, adaptability allows an IEA to be adapted once new information is available or uncertainty is mitigated: in the *springboard* scenario, uncertainty is primarily about the state of the world whereas, in the *safeguard scenario*, it is primarily about others. Thus, the main difference is the relational context in which the treaty is negotiated and the resulting perception of adaptability's utility. To be sure, states with little affinity can also see adaptability as a springboard to foster adaptive cooperation on an issue they are particularly vulnerable to. Similarly, states with high affinity can use adaptability as a safety net, following the well-known Russian proverb "trust but verify". However, the four possible configurations in Fig. 1 only represent ideal types, which can

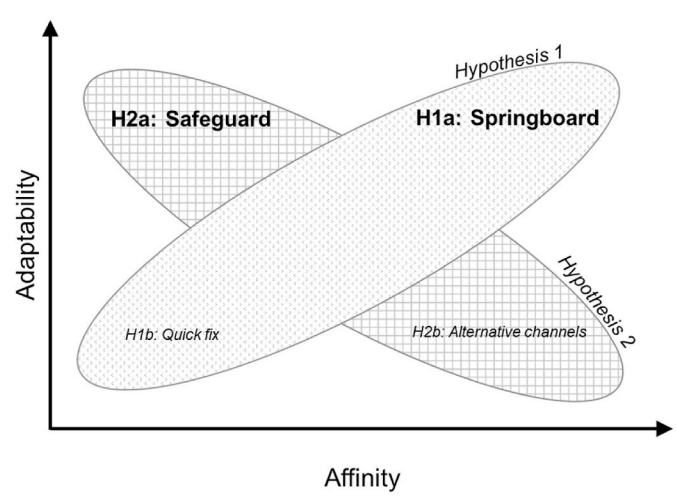

Fig. 1. Two rival hypotheses on the association between affinity and adaptability.

[7] For a more comprehensive review of this literature, see, e.g., Rathbun (2018).

explain a general trend in the inclusion of adaptability provisions in IEAs. This paper does not report data on negotiators' motivations. Instead, it investigates the theoretical implications of both hypotheses, which are tested empirically in the next section.

As shown in Fig. 1, the *springboard* hypothesis expects a positive association:

H1a. High affinity is associated with high IEA adaptability.

H1b. (corollary) Low affinity is associated with low IEA adaptability.

This first hypothesis is plausible for several reasons. First, states with high affinity might be more willing and confident to create a dynamic IEA that can be adapted as the environmental issue at stake evolves. High affinity is expected to characterize treaties with a small membership and/or circumscribed to a specific region. For example, the close geographical, cultural, and political ties between Middle and Eastern African countries make them ideal candidates to use adaptability as a springboard for adaptive cooperation. Therefore, it is not surprising that the 2007 Agreement on the Conservation of Gorillas and their Habitats, concluded between range states of gorillas (all located in Africa) creates a variety of treaty bodies, including a Meeting of the Parties,[8] a technical committee,[9] and a secretariat.[10] In addition, the agreement requires each party to periodically prepare "a report on its implementation of the Agreement with particular reference to the conservation measures it has undertaken."[11] Lastly, it provides for the possibility to adopt amendments and additional annexes.[12]

Second, although rational design theories generally fail to account for the institutional context, prior successful negotiation experience likely influences later cooperation and design choices (Copelovitch and Putnam, 2014, 472). Countries with experiential affinity may agree more easily on specific obligations by using previous provisions that have proved useful in the past. In other words, adaptability-enhancing provisions from earlier IEAs can become templates for future negotiations. For instance, the review process included in the Convention on Long-Range Transboundary Air Pollution is copy-pasted from one protocol to the next. Authors have documented this "boilerplate" process in international trade (e.g., Peacock et al., 2019) and environmental governance (e.g., Ovodenko and Keohane, 2012).

At the other end of the association, the *springboard* hypothesis expects *low affinity to be associated with low IEA adaptability* (H1b). Low affinity may raise transaction costs because it involves collecting information on other countries and prolongs the negotiations (Keohane, 1984, 102). This means that when affinity is low, the cost of including adaptability provisions in the IEA is likely higher. Put differently, when affinity is lacking, every negotiation round and revision is expected to be equally challenging and unlikely to succeed. For instance, in the case of the United Nations Convention to Combat Desertification, disagreements are so acute that any amendment to the convention has become taboo among delegates (Laurens, 2023, 41). Under such circumstances, states may be reluctant to leave open opportunities to ratchet up obligations in the future. They may decide to agree on a "*quick fix*" to tackle the problem without any intention to go further and, hence, no need for adaptability (see bottom left quadrant of Fig. 1).

By contrast, the *safeguard* hypothesis expects a negative association:

H2a. *Low affinity is associated with high IEA adaptability*.

H2b. (corollary) High affinity is associated with low IEA adaptability.

Here, adaptability is likely perceived as a safeguard against other parties' uncertain or undesirable behavior. This hypothesis is just as credible as the former. First, when there is low political affinity, states are more likely to be dissatisfied with the negotiated outcome. Setting the path for future treaty adaptations may be a way to attract more ratifications by reassuring less satisfied states that the treaty is not written in stone and that further intergovernmental discussions will take place in the future. Second, low affinity may also make it difficult to reach and maintain decisions. It often requires an incremental negotiation approach (Zartman, 1985, 130–133). States may anticipate the need to reconvene to amend or revise an IEA, either after failing to agree on shared goals during the initial negotiations or because the consensus reached is fragile. If this is the case, it is in their interests to multiply tools to ease and inform the adaptation process. Well-known examples of low affinity are North-South IEA negotiations (Najam, 1994). For instance, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity both employ the four adaptability strategies.

At the other end of the relationship, the *safeguard* hypothesis expects *high affinity to be associated with low IEA adaptability* (H2b). If adaptability is considered a safeguard and affinity is high, the need for protection might not appear as pressing. Countries in the same region usually cooperate on various issues, including education exchanges, transnational labor markets, customs duties, and transboundary environmental issues (Hettne and Söderbaum, 2000). The resulting institutions and cooperation frameworks may have created "*alternative channels*" of treaty adaptation, which can constitute a substitute for adaptability provisions (see bottom right quadrant of Fig. 1). For instance, the 1970 Benelux Convention on the Hunting and Protection of Birds does not include any adaptability provisions. Nevertheless, it was amended several times by decision of the Committee of Ministers of the Benelux Economic Union.[13] Therefore, the Committee of Ministers acts as a cooperation channel that can fulfill the role of a COP without creating additional treaty bodies. A further example is the five Nordic countries of Denmark, Finland, Iceland, Norway, and Sweden. They have established a Nordic Council to allow member states to cooperate on various issues, including legislation harmonization, innovation, culture, research, and environmental protection. This may explain why the regional IEAs between the Nordic countries[14] contain few adaptability provisions.

To sum up, both adaptability and affinity are multidimensional and continuous constructs. I consider a treaty that mobilizes the four adaptability strategies (monitoring, feedback, anticipation, and institution-building) more adaptable than a treaty that only includes one or two. Similarly, groups of countries with convergent political interests, past successful negotiation experience, and cultural similarities have more affinity than groups of countries that share only one of these dimensions. If the *springboard* hypothesis holds, we should observe a *positive* association between adaptability and affinity, i.e., the higher affinity, the higher adaptability (H1a) and vice versa (H1b). Conversely, if the *safeguard* hypothesis holds, we should observe a *negative* association between adaptability and affinity, i.e., the lower affinity, the higher adaptability (H2a) and vice versa (H2b). There are compelling theoretical reasons and anecdotal evidence to suggest that both approaches to adaptability could be at work. This paper seeks to assess whether one is more common than the other in environmental governance.

4. Data and method

The empirical analysis relies on an original dataset of adaptability-enhancing provisions included in 1137 IEAs concluded between 1945

[8] Article V.
[9] Article VI.
[10] Article VII.
[11] Article IV, paragraph 1(c).
[12] Article X.

[13] The list of amendments can be found on the IEADB website: https://www.iea.ulaval.ca/en/agreements.
[14] e.g. the 1974 Convention on the Protection of the Environment; the 1993 Agreement on Cooperation in Combatting Pollution of the Sea Caused by Oil or Other Harmful Substances; the 1998 Agreement on the Nordic Environment Finance Corporation.

Table 1
Adaptability-enhancing provisions coded in IEAs.[15]

Strategies	Binary items included
Monitoring	National report; impact assessment; review process; joint research institution
External feedback	Public participation; stakeholder, scientific, or advisory committee
Anticipation	Amendment; addendum
Institution building	Intergovernmental committee; secretariat; subsidiary body

[15] Data on *monitoring* and *institution building* come from Laurens and Morin (2019); data on external feedback and anticipation come from Laurens et al. (2023).

and 2015. The text of these IEAs is drawn from the International Environmental Agreements Database Project (IEADB, Mitchell, 2002–2023; Mitchell et al., 2020). All IEAs in the sample are legally binding agreements under international law concluded by at least two sovereign states. I exclude amendments and protocols because they constitute "adaptations" of existing IEAs. As such, their design is likely influenced by affinity relationships established under the framework of the initiating agreement. Further, amendments and protocols often use the adaptability provisions of the initiating agreement.

4.1. Dependent variable

The dependent variable combines 11 binary items to measure the degree of ADAPTABILITY of a given treaty (see Table 1 below). I construct two ADAPTABILITY measures. The first one ranges *between 0 and 4* and captures how many adaptability strategies – among monitoring, external feedback, anticipation, and institution-building – drafters employed in the IEA. Given the ordinal nature of this measure, I fit an ordinal logistic regression model. Second, I measure ADAPTABILITY with a simple *additive index* of the 11 binary items. While this variable can theoretically range between 0 and 11, the observed values range between 0 and 10. This second variable allows me to measure adaptability more finely, by assigning one point on the adaptability scale for every single item coded in the IEA. I also fit an ordinal logistic regression model with this second measure. I do not assign weights to the items composing the indices because each of the four strategies contributes to adaptability in its own right and the same strategy may matter differently depending on each IEA legal framework.

4.2. Independent variables

The regression models include three main independent variables, which each capture a dimension of affinity. First, I measure preference divergence by computing the standard deviation of the signatories' United Nations General Assembly (UNGA) ideal point estimates (Bailey et al., 2017).[16] I consider ideal point estimates to be good proxies for country preferences for two reasons. First, UNGA votes cover, among a broad array of issues, environmental protection (e.g., UNGA, 1985; UNGA, 2000; UNGA, 2006a; UNGA, 2017). Second, country preferences on environmental protection are not formed in a vacuum, isolated from other political considerations. This makes UNGA ideal point estimates even more relevant since UNGA sessions also address strategic non-environmental issues on which state preferences may influence IEA design, such as trade (e.g., UNGA, 2006b), migration (e.g., UNGA, 2012), development (e.g., UNGA, 1988), and human rights (e.g., UNGA, 2006c). To obtain a measure of POLITICAL AFFINITY, I subtract the standard deviation of ideal point estimates from 1 so that the highest values of preference divergence become the lowest values of POLITICAL AFFINITY. Then, I rescale the variable to take positive values.[17]

Second, I measure EXPERIENTIAL AFFINITY as the logged average number of IEAs previously concluded between the signatories. For bilateral agreements, I take the number of agreements that the dyad concluded before the signature of the observed IEA. For multilateral agreements, I first compute the number of IEAs concluded between each pair of signatories and then take the average. To be sure, the mere existence of past cooperation is not sufficient to generate affinity, let alone trust. Past cooperation that led to defection, for instance, may have the opposite effect. However, the successful nature of past experience is challenging to measure. Moreover, it seems reasonable to expect that higher numbers of jointly negotiated IEAs correlate, on average, with higher experiential affinity.

Last, I measure CULTURAL AFFINITY by subtracting the number of geographic subregions[18] involved in the negotiations from 1. In this way, the higher the number of subregions represented in the negotiations, the lower the measure of CULTURAL AFFINITY. Then, I rescale the variable to take positive values. This variable also captures the size of the membership since the higher the number of regions involved, the higher the number of parties to the table of negotiations.

4.3. Controls

I add several control variables in the regression models. First, other factors than affinity may influence the level of uncertainty. The political instability of some partners, even in conditions of high affinity, creates "uncertainty about behavior" (Koremenos et al., 2001). Another factor is the lack of hindsight on the environmental issue addressed by the IEA, especially when there are few or no institutional models to build on, which exacerbates "uncertainty about the state of the world". Both circumstances may call for closer monitoring (of compliance or the environmental issue) and increase the probability that the IEA will need an update once more information is available. I measure POLITICAL INSTABILITY as the proportion of signatories that underwent political unrest in the ten years preceding the conclusion of the IEA. Episodes of political unrest include revolutionary wars, ethnic wars, adverse regime changes, and genocides and politicides (Marshall et al., 2019). PRIOR HINDSIGHT corresponds to the number of IEAs dealing with the same issue concluded before the signature of the observed IEA.

Second, POWER ASYMMETRY is expected to rub off on the relationship regardless of the degree of affinity between partners and, hence, influence IEA design (Moe, 2005). The creation of treaty bodies, for instance, may allow powerful states to maintain some control over the future shape of the treaty. Although powerful states do not necessarily plan to overly influence joint body decisions when they negotiate an IEA, their capacities for research, funding, and the size of their delegation can give their interests disproportionate weight in decision-making (Miller and Dolšak, 2007; Morin et al., 2022). In addition, monitoring provisions make it possible to survey the behavior of weaker states, which often lack the institutional capacity to comply with the treaty. Therefore, I expect POWER ASYMMETRY to increase ADAPTABILITY. It is measured as the Gini coefficient of the parties' GDPs (Bolt et al., 2020).

[16] Ideal point estimates capture the position of each country vis-à-vis a US-led liberal order based on UN resolutions that are identical across years (Bailey et al., 2017). Taking the standard deviation allows me to observe how spread out the signatories of a given IEA are on this liberal-order continuum.

[17] Subtracting the standard deviation from 1 and rescaling the measure to take positive values only changes the sign of the estimate concerned, not its magnitude. This allows me to observe the effect of affinity rather than the effect of divergence, which greatly eases result interpretation.

[18] The 22 subregions are defined in the United Nations publication "Standard Country or Area Codes for Statistical Use" (M49).

Third, DEPTH, "the extent to which [a treaty] requires states to depart from what they would have done in its absence" (Downs et al., 1996, 383), may also influence the degree of IEA ADAPTABILITY. On the one hand, one might expect deeper IEAs to include more adaptability provisions because the more commitments there are and the stricter they are, the more likely they will need adjustments in the future. On the other hand, following the "convention-protocol" approach, states may deliberately conclude shallow IEAs with a view to setting more specific obligations in subsequent instruments (e.g., Sebenius, 1991) and consequently increase adaptability to ease the adaptation process. Following Laurens et al. (2023), I measure the DEPTH of each IEA with an additive index of 8 binary items. The items indicate whether the IEA contains restrictions on one of the following activities: trade, production, extraction, selling, consumption, transport, construction, and pollutant emissions. This measure assumes that the more restrictive an IEA is on the listed aspects, the higher the extent to which it requires changes in behavior from parties.

Fourth, I control for the environmental issue under negotiation with a categorical variable, SUBJECT, which takes on the following values: Agriculture (the reference category), Energy, Biodiversity, Fisheries, Freshwater and ocean, Pollution, and Other issues (Mitchell et al., 2020).

Fifth, I control for the YEAR of conclusion of the treaty, as trends in IEA ADAPTABILITY may change over time. Lastly, I further control for the IEA's membership by distinguishing BILATERAL agreements from multilateral ones. As Morin et al. (2022, 29) explain, "adding a third party creates political dynamics and calls for formalized procedures that would not be necessary in a bilateral setting". Therefore, I expect multilateral treaties to include more adaptability provisions than bilateral ones. Table A in the Appendix presents descriptive statistics for the variables included in the models.

5. Results and discussion

5.1. Main analysis

Table 2 presents simplified models, which include only the main independent variables and basic controls for the year of signature and the bilateral nature of IEAs. Table 3 shows the results with all controls. Both result tables include two models, each based on a different measure of adaptability: Model 1 uses the 0-4 adaptability index as the dependent variable and Model 2 uses the 0-11 additive index. In the simplified models, the three AFFINITY variables have a significant negative effect on ADAPTABILITY at the 0.01 level or higher.

In the models with all controls, both POLITICAL and CULTURAL AFFINITY have a negative and significant effect on ADAPTABILITY at the 0.01 level or higher. Evidence on EXPERIENTIAL AFFINITY is less straightforward. The effect of the variable is negative in the two models, but only significant at the 0.1 level in the first ordered logit model (Model 1).

To clarify the magnitude of the impact of AFFINITY variables on ADAPTABILITY, Tables 4 and 5 show predicted probabilities for each ordered logit model, holding all control variables at the mean. In Model 1, when POLITICAL AFFINITY is set at its minimum value, the probability that an IEA includes the four adaptability strategies (monitoring, external feedback, anticipation, and institution-building) is 9%. This probability decreases to 2% when POLITICAL AFFINITY is set at its maximum value. This means that as POLITICAL AFFINITY increases, the probability that the IEA includes a high number of adaptability provisions becomes closer to 0.

Similarly, the probability of an IEA employing the four ADAPTABILITY strategies is 5% when EXPERIENTIAL AFFINITY is set at its minimum value, and 3% when EXPERIENTIAL AFFINITY is set at its maximum value. Here again, this result shows a decreasing effect of EXPERIENTIAL AFFINITY on ADAPTABILITY, but the effect is small and not highly significant. Lastly, the probability of using the four ADAPTABILITY strategies is 14% when CULTURAL AFFINITY is set at its minimum value, and drops to 3% when CULTURAL AFFINITY is set at its maximum value.

Table 5 shows similar patterns in the predicted probabilities of Model 2, which uses the 0-11 additive adaptability index as the dependent variable. However, the decreasing effect of the AFFINITY variables is more visible when observing middle-range values of the additive ADAPTABILITY index (between 3 and 6). This can be explained by the fact that the probability of a treaty including more than six adaptability provisions is very low, regardless of the level of affinity between partners.

Considering the foregoing, the results provide strong support to the *safeguard* rationale. They suggest that countries with low affinity tend to include more adaptability provisions in their IEAs, in line with H2a. Conversely, they indicate that when signatories share convergent political interests or cultural similarities, they may be more confident about the future behavior of their partners or do not feel the need to protect themselves against their partners' behavior. Thus, they use fewer adaptability provisions in their IEAs. This is in line with the "alternative channel" argument (H2b). The results are more conclusive for political and cultural affinities than experiential affinity. A plausible explanation may lie in the fact that political and cultural affinities create a general

Table 2
Regression results on IEA adaptability (simplified models).

	0-4 Index (1)	Additive Index (2)
Political affinity	−0.401 (0.074)***	−0.363 (0.073)***
Experiential affinity	−0.286 (0.061)***	−0.305 (0.060)***
Cultural affinity	−0.061 (0.021)**	−0.067 (0.021)**
Bilateral	−1.351 (0.142)***	−1.637 (0.144)***
Year	0.041 (0.000)***	0.045 (0.000)***
Num.Obs.	1067	1067
AIC	2999.0	3608.5
BIC	3043.7	3683.1
Log.Lik.	−1490.485	−1789.236

+ p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
The table presents results from ordered logistic regressions with robust standard errors in parenthesis.

Table 3
Regression results on IEA adaptability (full models).

	0-4 Index (1)	Additive Index (2)
Political affinity	−0.406 (0.077)***	−0.383 (0.076)***
Experiential affinity	−0.132 (0.068)+	−0.152 (0.068)*
Cultural affinity	−0.075 (0.023)**	−0.075 (0.022)***
Political Instability	0.527 (0.057)***	0.602 (0.051)***
Prior hindsight	0.219 (0.073)**	0.173 (0.071)*
Power asymmetry	0.293 (0.223)	0.229 (0.219)
Depth	0.469 (0.081)***	0.517 (0.076)***
Energy	−0.652 (0.164)***	−0.578 (0.163)***
Biodiversity	−0.514 (0.182)**	−0.730 (0.178)***
Fisheries	−1.019 (0.138)***	−1.041 (0.134)***
Freshwater and ocean	−0.256 (0.130)*	−0.284 (0.130)*
Pollution	−0.643 (0.177)***	−0.638 (0.177)***
Others issues	0.196 (0.166)	0.033 (0.161)
Bilateral	−1.436 (0.153)***	−1.759 (0.155)***
Year	0.023 (0.000)***	0.030 (0.000)***
0|1	41.691 (0.027)***	54.264 (0.024)***
1|2	43.109 (0.083)***	55.529 (0.079)***
2|3	44.559 (0.113)***	56.659 (0.102)***
3|4	46.045 (0.159)***	57.605 (0.124)***
4|5		58.486 (0.150)***
5|6		59.187 (0.178)***
6|7		60.347 (0.248)***
7|8		61.434 (0.253)***
8|9		63.224 (0.255)***
9|10		63.923 (0.255)***
Num.Obs.	1042	1042
AIC	2889.5	3474.2
BIC	2983.5	3597.9
Log.Lik.	−1425.748	−1712.088

+ p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
The table presents results from ordered logistic regressions with robust standard errors in parenthesis.

Table 4
Predicted probabilities based on the 0-4 adaptability index.

Values of the 0-4 adaptability index	Minimum political affinity	Maximum political affinity	Minimum experiential affinity	Maximum experiential affinity	Minimum cultural affinity	Maximum cultural affinity
0	0.11 [0.07–0.17]	0.33 [0.28–0.39]	0.20 [0.13–0.28]	0.32 [0.26–0.40]	0.07 [0.03–0.18]	0.28 [0.24–0.32]
1	0.23 [0.16–0.32]	0.34 [0.29–0.40]	0.31 [0.21–0.42]	0.34 [0.27–0.42]	0.17 [0.07–0.36]	0.34 [0.29–0.38]
2	0.35 [0.25–0.46]	0.22 [0.18–0.27]	0.31 [0.22–0.42]	0.23 [0.18–0.29]	0.34 [0.16–0.58]	0.26 [0.22–0.30]
3	0.22 [0.15–0.30]	0.08 [0.06–0.10]	0.14 [0.09–0.21]	0.08 [0.06–0.11]	0.28 [0.13–0.51]	0.10 [0.08–0.12]
4	0.09 [0.06–0.14]	0.02 [0.02–0.03]	0.05 [0.03–0.08]	0.03 [0.02–0.04]	0.14 [0.06–0.31]	0.03 [0.03–0.04]

The table presents predicted probabilities for each affinity variable's minimum and maximum values, with confidence intervals in brackets.

Table 5
Predicted probabilities based on the 0-10 additive adaptability index.

Values of the additive adaptability index	Minimum political affinity	Maximum political affinity	Minimum experiential affinity	Maximum experiential affinity	Minimum cultural affinity	Maximum cultural affinity
0	0.12 [0.08–0.18]	0.34 [0.28–0.40]	0.19 [0.13–0.28]	0.34 [0.27–0.42]	0.07 [0.03–0.18]	0.28 [0.24–0.33]
2	0.27 [0.19–0.37]	0.20 [0.17–0.25]	0.27 [0.18–0.37]	0.20 [0.16–0.26]	0.25 [0.11–0.46]	0.23 [0.19–0.27]
4	0.11 [0.07–0.16]	0.04 [0.03–0.05]	0.07 [0.05–0.11]	0.04 [0.03–0.05]	0.15 [0.06–0.32]	0.05 [0.04–0.06]
6	0.03 [0.02–0.05]	0.01 [0.01–0.01]	0.02 [0.01–0.03]	0.01 [0.01–0.01]	0.06 [0.02–0.13]	0.01 [0.01–0.02]
8	0.00 [0.00–0.01]	0.00 [0.00–0.00]	0.00 [0.00–0.00]	0.00 [0.00–0.00]	0.01 [0.00–0.02]	0.00 [0.00–0.00]

The table presents predicted probabilities for each affinity variable's minimum and maximum values, with confidence intervals in brackets.

sense of trust between *countries*, whereas experiential affinity rather generates trust between *individuals*. Therefore, experiential affinity may be more sensitive to frequent changes in interlocutors. Nevertheless, both types of trust (strategic and relational) seem to influence adaptability-related decisions.

Turning to control variables, the *safeguard* approach is further supported by the positive effect of POLITICAL INSTABILITY in the two models. The political instability of some partners likely increases the utility of safeguards, and states appear to consider that adaptability provisions can provide at least part of such protection. While Koremenos et al. (2001) were expecting flexibility to increase with uncertainty about the state of the world, this finding further indicates that uncertainty about others' behavior seems more influential.

Unlike expected, the effect of PRIOR HINDSIGHT is positive in both models. This means that the existence of numerous IEAs covering the same issue, indicating a relatively low level of uncertainty about the state of the world, is associated with increased ADAPTABILITY in subsequent agreements. This result may point to a certain boilerplate effect of adaptability provisions across IEAs dealing with the same problem, whereby provisions in older treaties become standard practice in subsequent ones (Peacock et al., 2019). Another plausible explanation may be a combinatorial effect, whereby a higher number of IEA templates to draw from increases the number of possible combinations of adaptability provisions, which gradually makes new generations of treaties more elaborate in terms of adaptability provisions than the previous generation (Beaumier et al., 2023).

The results also indicate that deep agreements tend to include more adaptability provisions than shallow ones. There is a potential simultaneity bias between DEPTH and ADAPTABILITY. However, it seems likely that provisions related to monitoring, amendments, and institution-building are negotiated once the substantive content of the IEA has been agreed upon. Therefore, the findings suggest that adaptability is perceived as a tool to adjust deeper IEAs rather than to complement shallow ones. Nonetheless, this result is inconclusive with regard to the *springboard* and *safeguard* rationales. It may both indicate that countries include *safeguards* in an IEA when their hands are more tightly tied; or that countries that are able to negotiate a deep IEA in the first place are more inclined to include *springboards* for further additions.

Lastly, regarding the negotiation context, most environmental SUBJECTS are associated with a decrease in ADAPTABILITY compared to the reference category of Agriculture. This could indicate that delegates tend to be more protective when negotiating agricultural issues. One possible explanation is that issues such as plant protection and crop management are more volatile and thus may call for more frequent treaty updates than other issues. BILATERAL agreements, for their part, tend to include less adaptability provisions than multilateral agreements. This, again, provides support to the *safeguard* hypothesis and is hardly surprising. Bilateral settings allow to collect more information about the political interests and preferences of the partner country than negotiations between higher numbers of participants. Likewise, in most cases, adapting a bilateral environmental agreement to altered circumstances is less challenging than engaging in multilateral negotiations of subsequent instruments. This, in turn, likely reduces the perceived need for safeguards in the bilateral context.

5.2. Robustness checks

As a first set of robustness checks, I use alternative measures of the three affinity variables. First, I measure POLITICAL AFFINITY by subtracting the standard deviation of the signatories' civil society participation indices (Coppedge et al., 2022) from 1. Then, I rescale the variable to take positive values. Democracy has been demonstrated to be a good proxy for the level of international environmental commitments (Neumayer, 2002; Carbonell and Allison, 2015). Therefore, it is expected to reflect reasonably well preference convergence in IEA negotiations. The civil society participation index from the V-Dem project is preferred (though highly correlated) to simple democracy scores. It captures whether policymakers routinely consult civil society organizations, a prominent actor in global environmental governance (Eastwood, 2018). The results are presented in Table 6.

With this alternative measure of POLITICAL AFFINITY, and when all other measures remain the same, the significant negative effects of POLITICAL and CULTURAL AFFINITY remain. The predicted probabilities are also similar. POLITICAL INSTABILITY and DEPTH are still positively associated with ADAPTABILITY in both models. However, the association between EXPERIENTIAL AFFINITY and ADAPTABILITY is not statistically significant in any model. This confirms the overall findings presented in Table 3.

Regarding EXPERIENTIAL AFFINITY, for multilateral agreements, I take the lowest number of IEAs concluded by a dyad of signatories (following the "weakest link" assumption) instead of the mean. The results are presented in Table 7. When all other measures remain the same as in the main analysis, the negative effect of the three dimensions of affinity becomes significant. Therefore, this result is in line with the *safeguard* argument. The magnitude of the effect of the three AFFINITY variables remains similar.

Lastly, regarding CULTURAL AFFINITY, I subtract the average

Table 6
Regression results on IEA adaptability (Political affinity robustness).

	0-4 Index (1)	Additive Index (2)
Political affinity	−0.932 (0.015)***	−1.037 (0.018)***
Experiential affinity	−0.004 (0.068)	−0.033 (0.068)
Cultural affinity	−0.079 (0.023)***	−0.078 (0.022)***
Political Instability	0.787 (0.054)***	0.810 (0.051)***
Prior hindsight	0.074 (0.071)	0.042 (0.069)
Power asymmetry	0.159 (0.221)	0.136 (0.218)
Depth	0.472 (0.079)***	0.518 (0.075)***
Energy	−0.551 (0.161)***	−0.429 (0.161)**
Biodiversity	−0.433 (0.178)*	−0.592 (0.174)***
Fisheries	−0.791 (0.135)***	−0.776 (0.131)***
Freshwater and ocean	−0.243 (0.129)+	−0.222 (0.129)+
Pollution	−0.679 (0.175)***	−0.623 (0.174)***
Others issues	−0.128 (0.160)	−0.207 (0.156)
Bilateral	−1.396 (0.148)***	−1.724 (0.150)***
Year	0.023 (0.000)***	0.030 (0.000)***
0|1	41.959 (0.032)***	55.430 (0.028)***
1|2	43.271 (0.079)***	56.610 (0.075)***
2|3	44.682 (0.107)***	57.671 (0.097)***
3|4	46.158 (0.153)***	58.603 (0.118)***
4|5		59.499 (0.145)***
5|6		60.209 (0.174)***
6|7		61.368 (0.244)***
7|8		62.450 (0.250)***
8|9		64.233 (0.252)***
9|10		64.931 (0.252)***
Num.Obs.	1073	1073
AIC	3003.0	3592.7
BIC	3097.6	3717.2
Log.Lik.	−1482.514	−1771.374

+ p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
The table presents results from ordered logistic regressions with robust standard errors in parenthesis.

Table 7
Regression results on IEA adaptability (Experiential affinity robustness).

	0-4 Index (1)	Additive Index (2)
Political affinity	−0.422 (0.077)***	−0.400 (0.076)***
Experiential affinity	−0.288 (0.066)***	−0.318 (0.065)***
Cultural affinity	−0.050 (0.024)*	−0.048 (0.023)*
Political Instability	0.404 (0.057)***	0.478 (0.048)***
Prior hindsight	0.219 (0.074)**	0.175 (0.073)*
Power asymmetry	0.206 (0.223)	0.140 (0.219)
Depth	0.453 (0.081)***	0.502 (0.076)***
Biodiversity	−0.413 (0.181)*	−0.632 (0.177)***
Energy	−0.617 (0.165)***	−0.548 (0.164)***
Fisheries	−0.949 (0.139)***	−0.969 (0.135)***
Freshwater and ocean	−0.214 (0.129)+	−0.243 (0.128)+
Pollution	−0.601 (0.176)***	−0.609 (0.176)***
Others issues	0.250 (0.166)	0.074 (0.161)
Bilateral	−1.210 (0.160)***	−1.519 (0.161)***
Year	0.028 (0.000)***	0.035 (0.000)***
0|1	52.175 (0.027)***	65.451 (0.024)***
1|2	53.602 (0.084)***	66.725 (0.080)***
2|3	55.065 (0.114)***	67.864 (0.103)***
3|4	56.568 (0.160)***	68.823 (0.125)***
4|5		69.716 (0.152)***
5|6		70.423 (0.179)***
6|7		71.592 (0.249)***
7|8		72.687 (0.254)***
8|9		74.476 (0.256)***
9|10		75.175 (0.256)***
Num.Obs.	1042	1042
AIC	2877.3	3459.5
BIC	2971.4	3583.2
Log.Lik.	−1419.673	−1704.725

+ p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
The table presents results from ordered logistic regressions with robust standard errors in parenthesis.

Table 8
Regression results on IEA adaptability (Cultural affinity robustness).

	0-4 Index (1)	Additive Index (2)
Political affinity	−0.399 (0.080)***	−0.382 (0.079)***
Experiential affinity	−0.132 (0.068)+	−0.151 (0.068)*
Cultural affinity	−0.087 (0.057)	−0.067 (0.056)
Political Instability	0.487 (0.059)***	0.587 (0.053)***
Prior hindsight	0.247 (0.073)***	0.197 (0.072)**
Power asymmetry	0.301 (0.217)	0.231 (0.214)
Depth	0.463 (0.081)***	0.503 (0.076)***
Biodiversity	−0.528 (0.181)**	−0.684 (0.178)***
Energy	−0.700 (0.164)***	−0.594 (0.163)***
Fisheries	−1.086 (0.137)***	−1.060 (0.134)***
Freshwater and ocean	−0.239 (0.134)+	−0.251 (0.134)+
Pollution	−0.551 (0.176)**	−0.543 (0.175)**
Others issues	0.200 (0.166)	0.053 (0.160)
Bilateral	−1.473 (0.150)***	−1.773 (0.151)***
Year	0.021 (0.000)***	0.028 (0.000)***
Number of signatories	0.015 (0.004)***	0.017 (0.004)***
0|1	37.995 (0.016)***	52.238 (0.014)***
1|2	39.414 (0.079)***	53.503 (0.076)***
2|3	40.864 (0.109)***	54.634 (0.099)***
3|4	42.362 (0.153)***	55.581 (0.120)***
4|5		56.472 (0.146)***
5|6		57.183 (0.173)***
6|7		58.342 (0.240)***
7|8		59.357 (0.247)***
8|9		61.452 (0.251)***
9|10		62.151 (0.251)***
Num.Obs.	1047	1047
AIC	2898.3	3489.6
BIC	2997.4	3618.4
Log.Lik.	−1429.151	−1718.822

+ p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.
The table presents results from ordered logistic regressions with robust standard errors in parenthesis.

geographical distance between the signatories' capitals (Mayer and Zignago, 2011) from 1 before removing negative values. In contrast with the number of subregions, the average geographical distance does not capture membership size. Hence, I also add a control for the NUMBER OF SIGNATORIES in these models. The results are presented in Table 8. With this specification, CULTURAL AFFINITY loses its significant effect in both models (although the estimate is still negative). This may suggest that regional effects, which are better captured in the main analysis, are more influential than the number of kilometres separating countries. When geographical distance is used, POLITICAL AFFINITY is still found to have a significant negative effect on ADAPTABILITY, regardless of the measure of ADAPTABILITY or the type of model. In addition, the NUMBER OF SIGNATORIES has a positive and highly statistically significant effect in both models. Therefore, the larger the number of participants, the higher the perceived need for adaptability provisions. This is in line with the *safeguard* hypothesis because affinity (especially political and cultural affinities) is likely to be much lower among large groups of participants than in smaller settings.

As a second set of robustness checks, I include only one measure of AFFINITY in each model. This specification allows to mitigate the multicollinearity risk between the main independent variables. The results are available upon request and confirm the statistically significant negative effect of POLITICAL AFFINITY and CULTURAL AFFINITY. Like in the main analysis, EXPERIENTIAL AFFINITY is not statistically significant even when included separately from the other affinity measures.

In sum, the results confirm the initial intuition that affinity matters when it comes to adaptability-related decisions. A trend that emerges from the analysis is that when affinity affects IEA adaptability choices, it primarily does so negatively, even when controlling for the negotiation context and period. In other words, the evidence points towards a general tendency among negotiators to increase institutional adaptability when they have reason to be concerned about the trustworthiness or the behavior of other countries (i.e., when there is high uncertainty about

others). Consequently, adaptability is more likely conceived as a safety net, just like flexibility. Conversely, this indicates that, on average, like-minded and similar partners (i.e., when there is low uncertainty about others) are less prone to equip their IEAs with tools for adaptation, which casts doubt on the hypothesis that negotiators perceive adaptability provisions as a springboard for long-term expansive cooperation.

In addition, political and cultural affinities are found to be more strongly associated with IEA adaptability than shared prior negotiation experience. While this finding provides preliminary evidence that both strategic and relational trust may be at play, it also suggests that past environmental cooperation may not be the best predictor of an IEA's ability to be adjusted over time. Compared to shared negotiation experience, cultural affinities may contribute to a more robust and less situational kind of trust, which is at the core of the constructivist theory in IR: in the words of Wendt (1999, 359), "trust evolves as the result of collective identity formation".

6. Conclusion

This paper presents a first attempt to explain why some IEAs include more provisions facilitating the possibility for future adjustments than others. It contends that institutional adaptability overlaps with but differs conceptually and operationally from other design features discussed in the rational design literature. As a result, it deserves further and separate investigation. The paper also develops the concept of affinity, i.e., the strength of the relationship between negotiating countries, which is expected to help build trust among them. The fine-grained empirical analysis breaks down three distinct dimensions of affinity: preference and interest convergence, prior shared negotiation experience, and shared cultural identity. The study also considers various negotiation characteristics, which remain poorly addressed in statistical modeling on institutional design despite early calls to better capture the problem structure (Mitchell, 2006).

The results lend support to the *safeguard* rationale, which expects higher levels of institutional adaptability when there is low affinity between negotiating countries, and vice versa. This provides reasons to believe that the rationale for including adaptability provisions in IEAs is protective. This strategy is likely to matter in the subsequent stages of treaty-based cooperation. Although the question deserves more empirical investigation, it seems plausible that using design as a shield could be less conducive to substantive treaty change based on new knowledge about the state of the world than having a springboard perspective. Therefore, the safeguard perspective could limit the capacity of IEAs to tackle rapidly changing issues effectively and may explain why environmental institutions "often remain in place long after mismatches between regimes and the biophysical and socioeconomic settings with which they interact become severe and widely understood" (Young, 2010, 379).

This paper presents a preliminary treatment of the complex relationship between affinity and institutional design. The question calls for more research though. Specifically, future research could use process tracing to disentangle the causal mechanisms that link adaptability and each facet of affinity. This will allow researchers to examine if specific factors make one dimension of affinity prevail over the other two and why. Such research endeavor would also greatly benefit from interview data on negotiators' motivations to include adaptability-enhancing provisions in their IEAs and the perceived trustworthiness of their partners.

In addition, IEAs are numerous, more heterogeneous than standardized sets of treaties, such as preferential trade agreements or investment treaties, and cover a wide variety of issues, such as climate change, forests, waste, and endangered species. Therefore, the results of this paper could apply to other fields of governance. Nevertheless, the empirical analysis could usefully be extended to other fields or, as Koremenos (2016) does, a random sample of agreements in multiple issue areas. Finally, this paper examines design tools that *can* facilitate the subsequent adaptation of a treaty. The relationship between treaty design and adaptation remains to be more thoroughly and systematically explored.

CRediT authorship contribution statement

Noémie Laurens: Writing – review & editing, Writing – original draft, Visualization, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The author declares that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data availability

Data is publicly available and referenced in the text.

Acknowledgments

I thank Vincent Arel-Bundock, Julia Gray, Matthew Hoffmann, James Hollway, Philippe Le Prestre, Jean-Frédéric Morin, Marielle Papin, participants to the 2022 Barcelona Workshop on Global Governance, and participants to the 2022 Political Economy of International Organization Conference for their excellent comments on previous versions of this manuscript.

APPENDIX

Table A
Descriptive statistics

Variables	Min	Max	Mean	SD	Subject	N	%
Adaptability (0–4)	0.00	4.00	1.55	1.25	Agriculture	102	9.0
Adaptability (additive index)	0.00	10.00	1.99	1.88	Biodiversity	92	8.1
Political affinity	0.00	3.38	2.51	0.80	Energy	114	10.0
Experiential affinity	0.00	5.07	2.77	0.97	Fisheries	390	34.3
Cultural affinity	1.00	22.00	20.26	3.37	Freshwater and ocean	221	19.4
Political instability	0.00	1.00	0.11	0.20	Pollution	91	8.0
Prior hindsight	0.00	6.71	4.82	1.09	Other issues	127	11.2
Power asymmetry	0.00	1.00	0.67	0.27			
Depth	0.00	6.00	0.63	0.81			
Bilateral	0.00	1.00	0.67	0.47			

References

Baccini, Leonardo, Dür, Andreas, Elsig, Manfred, 2015. The politics of trade agreement design: revisiting the depth–flexibility nexus. Int. Stud. Q. 59 (4), 765–775.

Bailey, Michael A., Strezhnev, Anton, Voeten, Erik, 2017. Estimating dynamic state preferences from united Nations voting data. J. Conflict Resolut. 61 (2), 430–456.

Beaumier, Guillaume, Papin, Marielle, Morin, Jean-Frédéric, 2023. A combinatorial theory of institutional invention. International Theory 16 (1), 50–76.

Birmpili, Tina, 2018. Montreal protocol at 30: the governance structure, the evolution, and the kigali amendment. Compt. Rendus Geosci. 350 (7), 425–431.

Bodansky, Daniel, 2010. The Art and Craft of International Environmental Law. Harvard University Press, Cambridge.

Boockmann, Bernhard, Thurner, Paul W., 2006. Flexibility provisions in multilateral environmental treaties. Int. Environ. Agreements Polit. Law Econ. 6 (2), 113–135.

Carbonell, Joel R., Allison, Juliann E., 2015. Democracy and state environmental commitment to international environmental treaties. Int. Environ. Agreements Polit. Law Econ. 15 (2), 79–104.

Copelovitch, Mark S., Putnam, Tonya L., 2014. Design in context: existing international agreements and new cooperation. Int. Organ. 68 (2), 471–493.

Coppedge, Michael, et al., 2022. V-dem codebook v12. Varieties of democracy. Retrieved. https://www.v-dem.net/vdemds.html. (Accessed 25 March 2024).

De Bruyne, Charlotte, Fischhendler, Itay, Haftel, Yoram Z., 2020. Design and change in transboundary freshwater agreements. Climatic Change 162 (2), 321–341.

Downs, George W., Rocke, David M., Barsoom, Peter N., 1996. Is the good news about compliance good news about cooperation? Int. Organ. 50 (3), 379–406.

Eastwood, Lauren E., 2018. Negotiating the Environment: Civil Society, Globalisation and the UN. Routledge, London.

Engle, Nathan L., 2011. Adaptive capacity and its assessment. Global Environ. Change 21 (2), 647–656.

Gartzke, Erik, 1998. Kant we all just get along? Opportunity, willingness, and the origins of the democratic peace. Am. J. Polit. Sci. 42 (1), 1–27.

Gehring, Thomas, 2008. Treaty-making and treaty evolution. In: Bodansky, Daniel, Brunnée, Jutta, Hey, Ellen (Eds.), The Oxford Handbook of International Environmental Law. Oxford University Press, Oxford, pp. 467–497.

Green, Jessica F., Colgan, Jeff, 2013. Protecting sovereignty, protecting the planet: state delegation to international organizations and private actors in environmental politics. Governance 26 (3), 473–497.

Gupta, Joyeeta, Termeer, Catrien, Klostermann, Judith, Sander, Meijerink, Jong, Pieter, Brink, Margo van den, Nooteboom, Sibout, Bergsma, Emmy, 2010. The adaptive capacity wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. Environ. Sci. Pol. 13 (6), 459–471.

Hart, Oliver, Moore, John, 1988. Incomplete contracts and renegotiation. Econometrica: J. Econom. Soc. 56 (4), 755–785.

Helfer, Laurence R., 2012. Flexibility in international agreements. In: Dunoff, Jeffrey L., Pollack, Mark A. (Eds.), Interdisciplinary Perspectives on International Law and International Relations: the State of the Art. Cambridge University Press, Cambridge, pp. 175–196.

Hettne, Björn, Söderbaum, Fredrik, 2000. Theorising the rise of regionness. New Polit. Econ. 5 (3), 457–472.

Hooghe, Liesbet, Marks, Gary, 2015. Delegation and pooling in international organizations. The Review of International Organizations 10 (3), 305–328.

Keohane, Robert O., 1984. After Hegemony: Cooperation and Discord in the World Political Economy. Princeton University Press, Princeton.

Koontz, Tomas M., Gupta, Divya, Mudliar, Pranietha, Ranjan, Pranay, 2015. Adaptive institutions in social-ecological systems governance: a synthesis framework. Environ. Sci. Pol. 53 (B), 139–151.

Koremenos, Barbara, 2001. Loosening the ties that bind: a learning model of agreement flexibility. Int. Organ. 55 (2), 289–325.

Koremenos, Barbara, 2016. The Continent of International Law: Explaining Agreement Design. Cambridge University Press, Cambridge.

Koremenos, Barbara, Charles, Lipson, Duncan, Snidal, 2001. The rational design of international institutions. Int. Organ. 55 (4), 761–799.

Kucik, Jeffrey, Reinhardt, Eric, 2008. Does flexibility promote cooperation? An application to the global trade regime. Int. Organ. 62 (3), 477–505.

Kuyper, Jonathan W., 2013. Designing institutions for global democracy: flexibility through escape clauses and sunset provisions. Ethics Global Polit 6 (4), 195–215.

Kydd, Andrew H., 2010. Learning together, growing apart: global warming, Energy policy and international trust. Energy Pol. 38 (6), 2675–2680.

Laurens, Noémie, 2023. Institutional adaptation in slow motion: zooming in on desertification governance. Global Environ. Polit. 23 (2), 31–53.

Laurens, Noémie, Morin, Jean-Frédéric, 2019. Negotiating environmental protection in trade agreements: a regime shift or a tactical linkage? Int. Environ. Agreements Polit. Law Econ. 19 (6), 533–556.

Laurens, Noémie, Hollway, James, Morin, Jean-Frédéric, 2023. Checking for updates: ratification, design, and institutional adaptation. Int. Stud. Q. 67 (3), sqad049.

Marcoux, Christopher, 2009. Institutional flexibility in the design of multilateral environmental agreements. Conflict Manag. Peace Sci. 26 (2), 209–228.

Marshall, Monty G., Gurr, Ted R., Harff, Barbara, 2019. Pitf - state failure problem set: internal wars and failures of governance, 1955-2018. Retrieved March 25, 2024. http://www.systemicpeace.org/inscrdata.html.

Mayer, Thierry, Zignago, Soledad, 2011. Notes on CEPII's distances measures: the GeoDist Database. CEPII Working Paper 2011–2025.

Miller, Andrew R., Dolšak, Nives, 2007. Issue linkages in international environmental policy: the international whaling commission and Japanese development aid. Global Environ. Polit. 7 (1), 69–96.

Mitchell, Ronald B., 2006. Problem structure, institutional design, and the relative effectiveness of international environmental agreements. Global Environ. Polit. 6 (3), 72–89.

Mitchell, Ronald B., Andonova, Liliana B., Axelrod, Mark, Balsiger, Jörg, Bernauer, Thomas, Green, Jessica F., Hollway, James, Kim, Rakhyun E., Morin, Jean-Frédéric, 2020. What we know (and could know) about international environmental agreements. Global Environ. Polit. 20 (1), 103–121.

Moe, Terry M., 2005. Power and political institutions. Perspect. Polit. 3 (2), 215–233.

Morin, Jean-Frédéric, Tremblay-Auger, Benjamin, Peacock, Claire, 2022. Design trade-offs under power asymmetry: COPs and flexibility clauses. Global Environ. Polit. 22 (1), 19–43.

Mortreux, Colette, Barnett, Jon, 2017. Adaptive capacity: exploring the research frontier. Wiley Interdisciplinary Reviews: Clim. Change 8 (4), e467.

Najam, Adil, 1994. The South in international environmental negotiations. Int. Stud. 31 (4), 427–464.

Neumayer, Eric, 2002. Do democracies exhibit stronger international environmental commitment? A cross-country analysis. J. Peace Res. 39 (2), 139–164.

Ovodenko, Alexander, Keohane, Robert O., 2012. Institutional diffusion in international environmental affairs. Int. Aff. 88 (3), 523–541.

Peacock, Claire, Milewicz, Karolina, Snidal, Duncan, 2019. Boilerplate in international trade agreements. Int. Stud. Q. 63 (4), 923–937.

Rathbun, Brian C., 2012. Trust in International Cooperation: International Security Institutions, Domestic Politics and American Multilateralism. Cambridge University Press, Cambridge.

Rathbun, Brian C., 2018. Trust in international Relations. In: Uslaner, Eric M. (Ed.), The Oxford Handbook of Social and Political Trust. Oxford University Press, Oxford, pp. 687–707.

Roberts, Anthea, Taylor, St John, 2021. Complex designers and emergent design: reforming the investment treaty system. Am. J. Int. Law 116 (1), 1–57.

Schiele, Simone, 2014. Evolution of International Environmental Regimes: the Case of Climate Change. Cambridge University Press, Cambridge.

Sebenius, James K., 1991. Designing negotiations toward a new regime: the case of global warming. Int. Secur. 15 (4), 110–148.

Thompson, Alexander, 2010. Rational design in motion: uncertainty and flexibility in the global climate regime. Eur. J. Int. Relat. 16 (2), 269–296.

UNGA, 1985. Resolution 40/200 of 17 December 1985. Retrieved. https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/479/07/IMG/NR047907.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 1988. Resolution 43/182 of 20 December 1988. Retrieved. https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/531/61/IMG/NR053161.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2000. Resolution 55/8 of 30 October 2000. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N00/559/87/PDF/N0055987.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2006a. Resolution 61/166 of 19 December 2006. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N06/504/39/PDF/N0650439.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2006b. Resolution 61/186 of 20 December 2006. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N06/505/59/PDF/N0650559.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2006c. Resolution 61/201 of 20 December 2006. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N06/506/43/PDF/N0650643.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2012. Resolution 67/219 of 21 December 2012. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N12/491/74/PDF/N1249174.pdf?OpenElement. (Accessed 25 March 2024).

UNGA, 2017. Resolution 72/224 of 20 December 2017. Retrieved. https://documents-dds-ny.un.org/doc/UNDOC/GEN/N17/466/75/PDF/N1746675.pdf?OpenElement. (Accessed 25 March 2024).

Weinhardt, Clara, 2015. Relational trust in international cooperation: the case of North–South trade negotiations. Journal of Trust Research 5 (1), 27–54.

Wendt, Alexander, 1999. Social Theory of International Politics. Cambridge University Press, Cambridge.

Wiersema, Annecoos, 2009. The new international law-makers? Conferences of the parties to multilateral environmental agreements. Mich. J. Int. Law 31 (1), 231–288.

Young, Oran R., 2010. Institutional dynamics: resilience, vulnerability and adaptation in environmental and resource regimes. Global Environ. Change 20 (3), 378–385.

Zartman, William, 1985. Negotiating from asymmetry: the North-South stalemate. Negot. J. 1 (2), 121–138.

Bolt, Jutta, van Zanden, Jan, L., 2020. Maddison Project Database (version 2020). Maddison style estimates of the evolution of the world Economy. A new 2020 update. Accessed. https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020?lang=en.

Mitchell, Ronald, B., 2002-2023. Retrieved International environmental agreements Database project -2023 (version 2020.1). Accessed. https://www.iea.ulaval.ca/en.