My Club Runneth Over: Congestion, Embedded Clubs, and the UN Global Compact

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Abstract

Why do some clubs in international affairs keep attracting new members even though overcrowding diminishes the value of the goods they offer? We offer a novel explanation with what we call the "embedded clubs," i.e., clubs that become embedded in the operations of other institutions where such exogenous changes incentivize new members to join them even when they are crowded. We empirically test this explanation with the case of the United Nations Global Compact (UNGC), whose membership became a key criterion for companies to be included in the S&P 500 ESG Index in April 2019. Using a difference-in-difference approach, our results suggest that US-domiciled companies eligible for the S&P indexation were more likely to join and remain in the UNGC after April 2019 compared to non-US-domiciled companies. The results reflect growing interdependencies between UN programs and market actors, where the latter is using the former as a heuristic tool for their private governance procedures. More broadly, our study demonstrates how club good theories can be reconciled with observed dynamics in international affairs.

Keywords: Club goods theory, congestion effect, United Nations Global Compact, S&P 500 ESG Index, difference-in-difference

1. Introduction

To date, international organizations (IOs) have created numerous voluntary platforms to catalyze commitments to specific practices or standards, working indirectly to tackle issues like human rights or climate change where focal institutions are otherwise gridlocked with interstate disagreements. Transnational corporations are a frequent target for these governance initiatives, with sizeable environmental and social impacts and vulnerability to reputational or brand concerns. In these venues, IOs offer private firms the opportunity to differentiate themselves from the pack and stand out in the eyes of key stakeholders, avoiding association with the worst performers in their industry. This differentiation is critical, at least theoretically—if every company on the planet joined, there may be little incentive for companies to participate in those platforms at all. In other words, IOs are offering club goods to firms—non-rivalrous benefits exclusive to their members.

As the economics literature shows, club membership size should equilibrate as the negative drag of congestion from too many members balances against the value that the club offers. Yet, for initiatives like the United Nations Global Compact (UNGC), where companies attempt to demonstrate some alignment to basic tenants of human rights through committing to shared principles, this logic does not seem to apply. Since 2000, its membership has continued to grow, and for much of its history, that growth has been accelerating. We see this pattern elsewhere in IO-led platforms, including in contexts where standards are more demanding than the non-specific commitments and reporting requirements of the UNGC.

Why do these initiatives keep growing when that growth arguably undermines their value proposition to prospective members? The question, which we call the "congestion puzzle," is not only relevant for UN-led platforms for non-state actors. It is important both for the effective design of programs of international organizations and the structure of international institutions more generally. As Davis (2023) notes, the provision of club goods like status, information, and reputation informs the design of *most* IOs. They are also fundamental to informal organizations and governing institutions led by non-state actors, which have rapidly increased in number over the last fifty years (Abbott et al., 2016; Andonova, 2017; Roger, 2020). Moreover, there is a growing consensus that clubs should be advanced as institutional solutions to some of the most significant global collective action problems, including climate change, given the limits to multilateralism with universal membership (Colgan, 2021; Nordhaus, 2020).

In this paper, we evaluate the plausibility of institutional interdependence and what we call "embedded clubs" as a novel explanation for the congestion puzzle. In short, we argue that participation in a club can become enmeshed in access to, evaluation by, or associations with a distinct and independent institution that, in effect, adds a premium to club membership in an exogenous manner. This premium changes the cost-benefit rationale of prospective members, irrespective of internal club procedures or normative contexts. This is not only a novel explanation for the dynamics of IO-led clubs for non-state actors but also extends the important conceptual contributions of scholars situating international organizations in broader dynamic, complex, and interdependent political and economic contexts.

In the case of the UNGC, as we demonstrate, institutional interdependence and embedding emerge through its relationship with corporate ratings and financial markets. Rating agencies like Standard & Poor's (S&P) have played an increasingly central role in assessing companies on their non-financial performance, creating elaborate frameworks and methodologies that are ultimately used to construct ESG (Environment, Social, and Governance) stock indices. Asset managers use these indices en masse to construct financial products for passive investment, catered to individuals who, for instance, want their retirement contributions to steer clear of human rights violations. In 2019, S&P launched an ESG index that, like the S&P 500, focused on highly valued companies with large market capitalizations. In determining inclusion and exclusion criteria, they relied heavily on the content and frameworks of the UNGC.

As a result, we hypothesize that this "embedding" of the UNGC into the S&P 500 ESG index affects the likelihood that firms would join and retain its membership, particularly for large, American companies eligible for being listed on the index. We test this hypothesis using a difference-in-difference (DiD) approach and find support for our argument. This effect stands independently of longer-run normative changes associated with the UNGC, and internal institutional changes that would otherwise affect membership patterns across countries.

In addition to the conceptual and empirical contributions we make, we believe this research has practical implications for international organizations running similar platforms for non-state actors. Namely, where processes of embedding governance increase the instrumental value of clubs, space may be created for ratcheting up the stringency of rules without risking defection in voluntary contexts.

2. Theoretical Background

2.1. The Congestion Puzzle

Theories of club goods are descendent from frameworks developed in public economics. Whereas economists define public goods as those that provide non-excludable, non-rivalrous benefits, club goods encompass a messier category: less rivalrous than private goods but more rivalrous than public goods.[1] As James Buchanan describes it in his seminal 1965 paper, "[f]or any good or service, regardless of its ultimate place along the conceptual public-private spectrum, the utility that an individual receives from its consumption depends upon the number of other persons with whom [they] must share its benefits."[2]

Myriad real-world examples reflect this intuition at the extremes. A community swimming pool gets too crowded to be relaxing and is not worth the entry fee. A state highway has too much traffic to warrant paying the toll, and drivers revert to local roads. Indeed, optimal club membership size was one of the key intellectual concerns for early economists working on the topic. From the perspective of individual actors, economists argued that a membership equilibrium was achieved when the added value of an additional member (i.e., the costs of the good or service being divided among more people) ran aground with the diminished benefits that congestion could create (Buchanan, 1965).

The implication is straightforward. While there can be significant benefits to the collective provision of goods in cost-sharing arrangements that more effectively exclude free-riding, benefits start to decline, costs ramp up due to greater membership, and new would-be members are deterred. While many economists have since built on this framework, this concave relationship between an individual's utility and club size continues to be canonical (Sandler & Tschirchart, 1997; Van'T Veld & Kotchen, 2011).

In international affairs, scholars have insightfully identified the club-like structure of voluntary initiatives and the role of reputational benefits as a positive inducement for participation (Potoski & Prakash, 2005). This explains the emergence of voluntary private regulation and public-private partnerships in the absence of immediate financial self-interest where reputational benefits can be translated more distantly into brand loyalty, competitive advantages, and better relationships with regulators. Because those reputational benefits depend on distinguishing participants from a broader population of companies or other

[1] Though political scientists often assume the distinction is categorical, following from Elinor Ostrom's useful and simplifying description (Ostrom, 2009).
[2] Subsequent economists have re-emphasized that excludability and rivalrousness in club goods are matters of degree (Adams and McCormick, 1987).

actors, however, benefits diminish as the club approaches universal participation (Potoski & Prakash, 2013). A similar view is present in theories of collective action in international relations more generally, where opportunities for coordination—a club good offered by regimes with membership restrictions—become increasingly difficult as the number of members and, therefore, the heterogeneity of views and preferences, increase (Keohane & Ostrom, 1995; Kelly, 2013: 81).

And yet, many clubs in international affairs keep growing even when it undermines the very benefits they offer. The UNGC is archetypal: although it was initially designed as a venue for learning and exchange (Kelley, 2004), companies and their stakeholder audiences came to see UNGC membership as a signal of adherence to basic norms of corporate social responsibility. However, a low barrier to entry and a membership that often entails the poorest performers in terms of human rights has arguably weakened the reputational benefits that companies actively seek in this venue (Barrese et al., 2020). What is puzzling is not that institutional designs that prioritize accessibility fail to differentiate performance, but rather that companies continue to value these venues despite a consensus about how little credibility it has in the first place (Berliner & Prakash, 2015). As illustrated in Figure 1, membership in the UNGC continues to

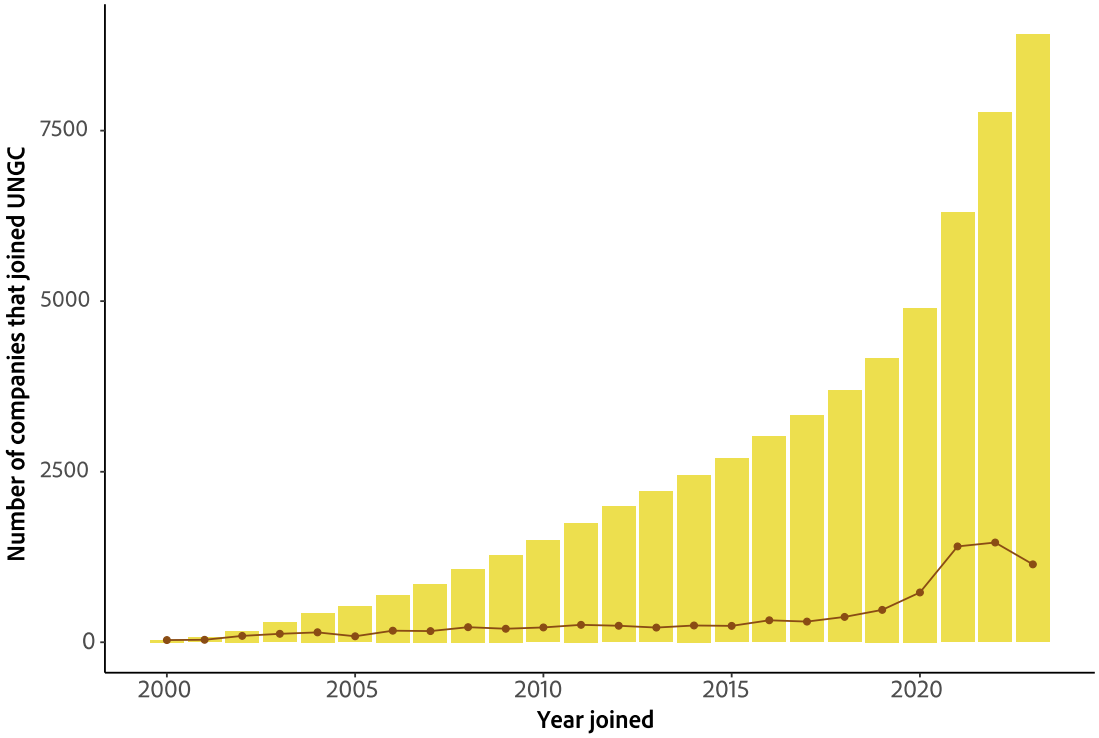


FIGURE 1: Rates of UNGC membership, 2000-Q2 2024

rise dramatically.

2.2. Resolving the Congestion Puzzle: Embedded Clubs

To better understand the causes and solutions to congestion, we consider the original economic models of club goods and explore potential permutations. Formally, the relationship between an individual firm or actor considering club membership and the characteristics of the club can be summarized with four basic variables: the aggregate benefits offered and shared (A), the total cost of offering those benefits (T), the number of members (N), and the rivalrousness of the good—or how much the consumption of the good for one member becomes a lost opportunity for consumption by another member (r) (Ng, 1974). As discussed, club goods are less rivalrous than private goods ($r < 1$) but more rivalrous than public goods ($r > 0$). The individual portion of the shared benefit is calculated by simply taking the aggregate benefit divided by the rivalry for those goods amongst the existing members: $B_i = A/N^r$ (Pecorino, 2015). In parallel, the cost of joining the club is also related to membership size, in that the costs of providing the club goods will also be distributed amongst its members: $C_i = T/N$. We can decompose total costs into fixed costs or startup costs (F_C)—associated with creating an initiative or institution regardless of membership size—and variable costs (V_c)—the kind of additional expenses associated with initiative maintenance or monitoring member performance that scale with membership size ($T = F_C + V_c$).[3] Hence, the individual portion of the shared cost is $C_i = F_c/N + V_c/N$. It follows that the individual utility from joining the club is the individual portion of the shared benefit minus the individual portion of the shared cost:

$$U_i = B_i - C_i = \frac{A}{N^r} - \frac{F_c}{N} - \frac{V_c}{N} \quad (1)$$

In the above equation, the individual utility diminishes as N increases, reflecting congestion. Figure 2 visualizes its implication: A club will achieve an optimal size, N^* when the marginal benefit for its prospective members who consider joining it equals the marginal cost:

[3] Though not highly relevant to the scope of this study, we acknowledge that the fixed and variable costs can vary among members by their roles. For instance, the founders of the club might face higher fixed costs than late-joiners. In such cases, the fixed and variable costs can have an index i (e.g., F_{ci} and V_{ci}) to indicate different cost structures faced by each member i

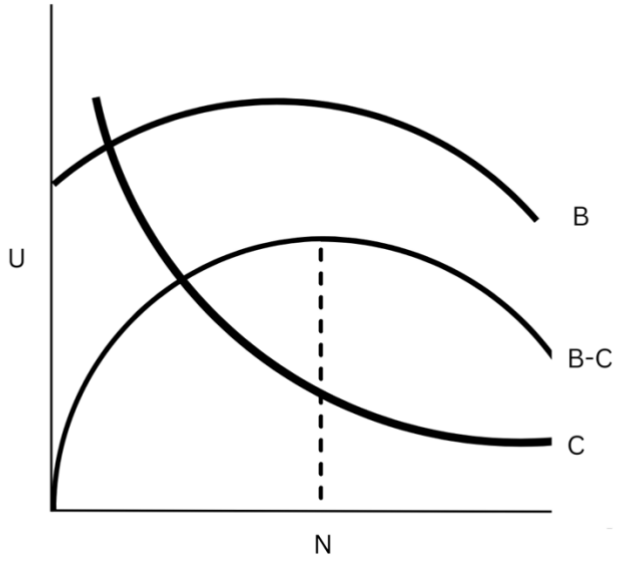


FIGURE 2: Utility Function of Club Goods

But what if the marginal benefit of joining the club increases, irrespective of its size? One potential explanation we examine and ultimately test is exogenous changes in how individual members perceive benefits. In certain circumstances, whether intentional or accidental, the benefits of joining one club can be modified by changes in an external institutional context in which actors also operate. In other words, a club can become *embedded* in the procedures and standards of an external institution, independent of any endogenous changes modifying the value of membership. If a club's membership gains a newfound currency in another context, an additional benefit (O) is introduced for users that is unrelated to the immediate club goods typically constrained by the scale of membership (Eq. 2). As Figure 3 shows, theoretically, the embedding benefit (O) pushes up the equilibrium club size.

$$B_i^* = \frac{A}{N^r} + O \tag{2}$$

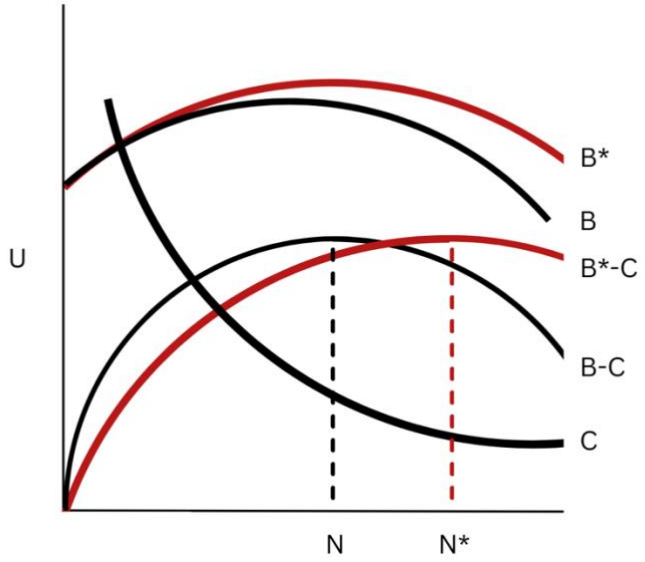


FIGURE 3: Club Size Equilibrium Ex Post Club Embedding

Existing research on this kind of institutional coupling modifying the value proposition of club goods is rare, to our knowledge (see, however, Ko & Prakash, 2022). This partly motivates us to explore this explanation for the congestion puzzle and the case of the UNGC. What we identify in an abductive manner, and what we discuss in more detail in Section 3, is that this is, in fact, a candidate explanation for recent growth in the UNGC. Specifically, rating agencies use participation in global governance venues as proxy indicators for good corporate social responsibility, lower risk of scandals, and, therefore, better risk-adjusted returns. These ESG ratings become the basis for dedicated financial products, namely exchange-traded funds (ETFs). What we hypothesize then is the embedding of UNGC membership into assessment frameworks can generate an exogenous benefit for eligible companies (namely, large, publicly traded American corporations), where participation translates into an opportunity to receive a boost to one's share price via index inclusion. The observable implication is that, independent of endogenous changes to the UNGC, the likelihood that companies join after this embedding process is higher.

Thinking about strategic interdependence is far from new in international relations. The novelty of the explanation instead lies in its application to voluntary clubs and its implication for club goods theory. Cognate frameworks have similar foundations (i.e., rational institutionalism) but are out of scope for addressing the congestion puzzle. Issue linkage frameworks largely explain the content of state interests under varying conditions of jointly determined negotiations but have no ontological space for IO programs. New

interdependence theory is resonant but more ambitious; it "provides a systemic account of world politics" (Farrell & Newman, 2016: 716) that assumes high degrees of institutional overlap ex ante, where variation in how those overlaps produce opportunity structures and asymmetric power explain broader political trends (2016: 721-725).

Recent work on regime complexity might be a closer fit: whether or not a club is the pivotal institution in an issue area or competes in a fragmented landscape of parallel initiatives weighs on an actor's ability to forum shop, ultimately modifying the cost-benefit of a club membership relative to its competitors (e.g., Hofmann, 2019; Zürn & Faudek, 2013). Cases like ours are ambiguous in a governance complexity analysis, however, because there is no obvious functional redundancy or complementarity between UNGC and the S&P that would create opportunity costs for prospective members.

One might also interpret embedding as a kind of signaling mechanism in that actors appear to join crowded clubs for broader strategic purposes. However, embedding, as a mechanism of institutional change, does not necessarily require a shift in the way external audiences appreciate clubs. Instead, we would argue that embedding is a kind of precondition for signaling to occur: some interdependence must be established such that actors recognize that their behaviors have additional benefits or costs for achieving their aims based on how exogenous actors or institutions interpret their choices.

We also wish to be careful to specify that our use of embedding here proceeds with a lower-case "e," given that interpretations of the term, stemming from Karl Polanyi's book *The Great Transformation*, have played such an important role in understanding the connections and disconnections between market systems and social relations, social purpose, and institutions (Best, 2003; Ruggie, 1982). Our use is more general, indicating degrees of institutional coupling and interdependence inspired by the brilliant conceptual vocabulary of Polanyi, but without following the details of his argument around the relationship between self-regulating market systems and prevailing institutional orders necessarily (Polanyi, 2001: 60-62).

2.3. Alternative Explanations

While we would argue that "embedded clubs" is a novel explanation for the congestion puzzle and is doing different conceptual work than extant frameworks on institutional interdependence, we can identify two families of *alternative* explanations that warrant consideration, even if they have not been explicitly interpreted as such: conformity and institutional adaptation. We

discuss these explanations, focusing on the way in which our embedded club hypothesis relates to each, and where predictions might differ.

2.3.1. Conformity

The first family of alternative explanations entails normalizing participation and patterns of conformity among a group of actors. The clearest articulation of this idea in international relations is the "norm cascade." New norms require entrepreneurial efforts and careful articulation to forge ties with extant systems of meaning in a given issue area, often in contested and challenging circumstances (Finnemore & Sikkink, 1997: 897). However, after some threshold of successful persuasion is reached, a critical mass begins to fuel continued normative uptake independently of pressure from norm entrepreneurs (1997: 902). The norm in question becomes entangled with the identity of a group and enmeshed with what actions are deemed appropriate and inappropriate (Axelrod, 1986: 1105; Davis, 2023: 17). In other words, as scholars have identified in the context of voluntary environmental commitments among firms, a strategic logic of consequences can yield to a normative logic of appropriateness as a norm sees increased and prolonged uptake (Bernstein & Cashore, 2007; Van Der Ven, 2014).

Two important and related clarifications are worth making here. First, conformity as a means of overcoming congestion externalities should not be understood as network effects only, since the latter only specifies the behavioral dependence of Actor A on the choices of Actor B. The baseline economic model of clubs already stipulates that the benefits and costs of the marginal member are dependent on the size of the club and, therefore, the past actions of peers. What conforming implies instead is a transformation of the kind of benefits that new members get: not just the club good of reputation or cooperation, but a new benefit of in-group membership, normative alignment, or identity coherence in addition to any strategic benefits.

Building on this insight, the second clarification is that participation in a club can become a norm in and of itself. Typically, the normative work of international institutions is conceptualized as an output of membership—actors join and are socialized (Checkel, 2005), or norms are co-constituted through members commitments (Tallberg et al., 2014). But membership in a club can be a norm. For example, the United States not being a member of NATO would be a constitutive norm violation, even if broader norms of collective security were still adhered to by the US foreign policy establishment.

Empirically, the norm cascade pattern that Finnemore and Sikkink (1998) describe entails a logistic growth model or S-curve. But we can also think about

an S-curve as a description of the value of adopting a norm for a given actor conditional on the number of other actors that already are compliant. In the early stages, actors are largely insensitive to group size. But as concerns over legitimacy and reputation kick in and a tipping point has been reached, actors become increasingly responsive to the compliance of others. That added value, scaled by group size, levels off as the norm reaches a saturation point in the population. If, as discussed, membership itself can be a norm, then we recognize that endogenous normative change can modify the value proposition for club membership.

Here, we can conceptualize this implication formally. Let the benefit of a club achieving the norm cascade be $S/(1 + e^{-s(N-N_0)})$, which is the function of (1) a tipping point (N_0), (2) the total potential benefit of compliance under norm saturation (S), and (3) the intensity of conformity which shapes the acceleration of the norm cascade (s). Finally, let n be a dichotomous "switch" for when membership is itself determined to be a norm or not, which, if determined, "turns on" the additional benefit ($n \in \{0, 1\}$). To the extent that participation becomes a norm, the individual benefit (B_i) is modified to:

$$B_i^* = \frac{A}{N^r} + n \times \frac{S}{1 + e^{-s(N-N_0)}} \quad (3)$$

The second term in the above equation, like embedding benefit (O), represents an additional benefit of joining a club that does not strictly decline as the membership size grows. As a result of a benefit curve shifting from a concave function to a logarithmic function, benefits cease to decline as a function of club size (Figure 4).

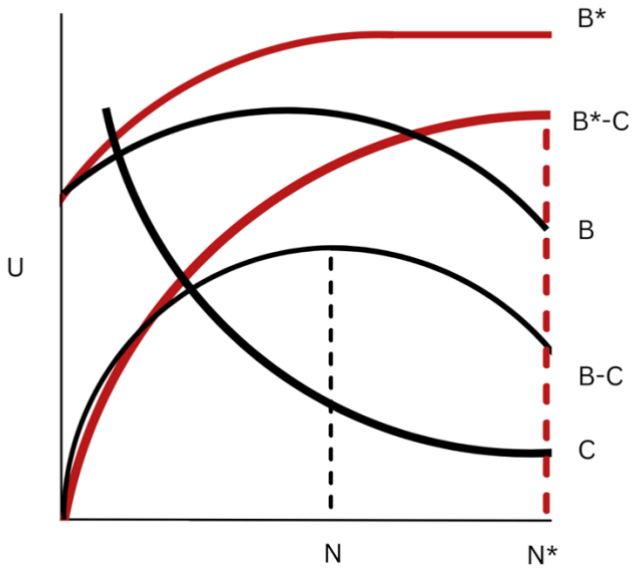


FIGURE 4: Club Size Ex Post Norm Cascades

Empirically, we would expect to see a non-linear growth trajectory in membership. However, as we show in Figure 1, cumulative membership of UNGC does follow such a pattern. Additionally, if the norm in question is not geographically specific but global, as membership in a UN platform would be among multinational corporations, we should observe relatively parallel—but not entirely homogenous—patterns of membership growth across jurisdictions. As such, disjunctive growth for a specific country would cut against an explanation based on the salience of international norms.

2.3.2. Institutional Adaptation

The second family of alternative explanations can largely be construed as institutional adaptation. Two essential approaches in this vein relate to membership equilibria: (1) membership management or (2) cost-benefit redistribution.

In the former case, the essential congestion problem is monitoring and penalizing "shirking." As membership grows, governors must expend more resources to ensure that participants continue to meet the membership criteria. As policing resources are strained, clubs may need to start considering mechanisms for ending or limiting memberships, which can be difficult if participants have more power and authority than their governors, as with states and IOs—or if clubs are embedded in a broader array of important social relations (Davis, 2023: 8). Regional organizations and membership rules

illustrate how this conundrum is addressed: the Association of Southeast Asian Nations (ASEAN) or the European Union (EU) bring on members provisionally, have testing periods for compliance, and introduce conditionality and membership procedures that mitigate the risk of adverse effects from larger group sizes (Kelley, 2004). Clubs can also adjust variable costs to ensure that membership dues cover scaling expenses or set limits for new entrants as their capacities are stretched (Van't Veld & Kotchen, 2011).

Institutional adaptation can also redistribute benefits and costs among members. Many economists have noted that if we acknowledge the heterogeneous nature of demand and cost sensitivity of club members, re-allocation can help justify membership for a broader set of actors (Jacobsen et al., 2017), pushing optimal group size higher through subsidization by the willing. "Pay what you can" models reflect this basic intuition in the non-profit world. Wealthier patrons who enjoy the intrinsic values of a cooperatively owned coffee shop or a public museum can pay more than the minimum, knowing that by doing so, they are extending access to others or resourcing greater benefit provision for members. The particular form that redistribution takes depends on the good being provided. For reputational club goods, organizations can create tiers to generate within-club distinctions, maintaining differentiation and broad accessibility, as with LEED building certifications for environmental sustainability (Potoski & Prakash, 2013) or the grading of compliance quality in the case of climate disclosure (Elliott et al., 2024). For clubs whose main benefit is cooperation, a certain amount of delegation (i.e., a redistribution of the labor of cooperation to a subset of members) has been shown to facilitate the production of the good and the softening of the burdens that come with large group sizes (Kahler, 1992)—again, depending on the intensity of demand by a capable group.

It follows that the optimal club size (N^*) increases as the aggregate benefits (A) increase and decreases as the fixed costs (F_c) and variable costs (V_c) increase.[4] Now, with membership management, there is either an upper limit imposed on club size at the social optimum, or the cost curve steepens by reducing risks of buck-passing and free-riding that affect variable costs (V_c) and, therefore, total costs.

[4] Rivalrousness (r) is trickier, but less rivalrousness contributes to a larger optimal club size so long as the second derivative of the equation (3) with respect to it is positive, which varies by three other factors. In short, when $A \geq T$, N^* strictly decreases as r increases, but when $A < T$, N^* decreases until r reaches a certain value, which becomes lower as $A << T$, then increases after that value. Given that the presence of a club with $A < T$ is unlikely, however, we assume that well-functioning clubs face smaller optimal sizes as the rivalrousness of their club goods increases.

With cost-benefit redistribution, the fixed costs (F_c) are lower for those with less capacity to pay and higher for those who desire the benefits more intensely. Those who pay higher may compensate for their expense by differentiating themselves from those who pay less, i.e., enjoying lower rivalrousness (r) in club goods by avoiding competition in lower strata. Hence, the optimal club size (N^*) increases (Figure 5).

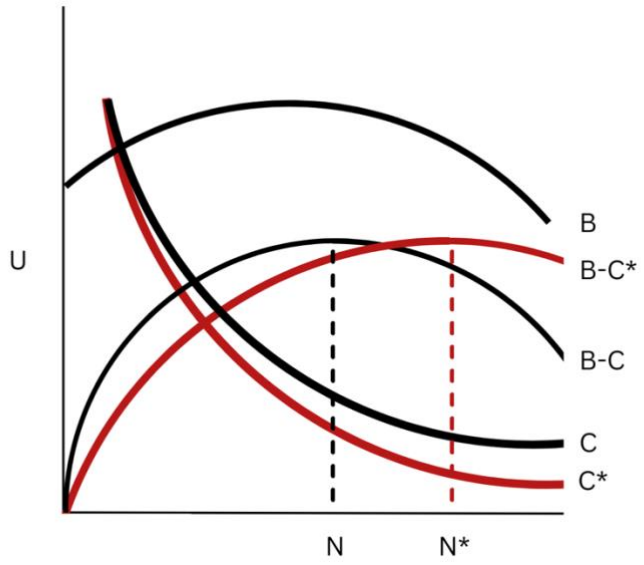


FIGURE 5: Club Size Ex Post Institutional Adaptation

2.3.3 Empirical Implications

Together, these alternative explanations imply that clubs may continue growing in membership even after they become overcrowded. However, the empirical implications of each mechanism warrant emphasis when considering the conditions under which we can exclude certain explanations from consideration—though we do not necessarily expect embedding, adaptation, and normalization to be mutually exclusive in many cases. We think those implications are straightforward, at least in the case of the UNGC, and we discuss them here.

Should we observe institutional changes in a club corresponding to intensive membership management, growth rates should slow. The socially optimal size grows due to more front-loaded vetting in the long run, but we should expect membership to decelerate after reforms are introduced. In cases where we observe institutional reforms that stratify membership, conversely, we

should expect increased participation across contexts, especially for actors at the cost-benefit tipping point. These forms of institutional adaptation are not particularly relevant for the UNGC, where prospective members are not vetted upfront or entail tiered membership categories. The primary cost of compliance is required reporting in the form of "Communications on Progress" or COPs, which is standardized in requirements across signatories. Nonetheless, this discussion is relevant to consider embedding as a more general explanation in other cases. In future applications, the key question is timing and eligibility. As long as these do not exactly overlap, effects can be parsed through standard difference-in-difference and time series approaches.

Normalization, despite distinct micro-foundations, also has a discernable empirical pattern. We would expect to see undifferentiated or convergent uptake, across geographies, accelerating in a non-linear and uninterrupted fashion over time. Because embedding is a disjunctive change in utility for a subset of actors, it should be detectable over and above any long-run trends in the data that apply to the preponderance of a population. This can be verified in a number of ways, including by analyzing the parallel trends assumption in a difference-in-difference analysis. We integrate this consideration in the subsequent analysis.

3. Empirical Strategy

In this section, we outline our empirical strategy in two steps. First, we provide qualitative detail about the relationship between S&P's ESG ratings and the UNGC. This is essential for demonstrating our hypothesis's plausibility, but it is also methodologically relevant information for operationalizing the timing and treatment effects of the "embedded club" mechanism. In the second step, we translate those considerations directly into methodological choices and describe the difference-in-difference analysis in detail.

3.1. Background and Hypothesis

To understand why the embedded club argument would apply in the case of the UNGC, we need to start by elaborating on the function of ESG ratings, and corporate ratings more generally, in financial markets. In isolation, ratings for companies entail assessments of financial soundness that affect the potential risks and opportunities facing investors considering a particular equity or security. In the aggregate, and perhaps more importantly, rating agencies like S&P make use of company assessments to construct market indices that group together a particular universe of companies, like the S&P 500. These indices do

not merely provide information about the performance of a broad category of firms, but they become the basis for creating financial products like exchange-traded funds (ETFs) for asset managers such as Blackrock, State Street, and Amundi. These asset managers purchase the rights to indices and use the name recognition and credibility of S&P or peer assessors to market ETFs to investors. Since financial markets are increasingly dominated by ETF-driven products and passive investment, being included on an index that underpins ETFs can have a major positive impact on one's stock price (but see Kasch & Sarkar, 2012). In turn, this gives rating agencies significant market power in making decisions about indices exclusions (Petry, Fichtner & Heemskerk, 2019; Braun, 2022).

The same logic applies to ESG-based indices. Individual company ESG ratings track environmental performance, corporate governance, or susceptibility to ethical scandals. ESG indices aggregate a group of companies that meet certain ESG thresholds, which, for asset managers like Blackrock, can then underpin financial products like the "iShares ESG Screened S&P 500 ETF."

In April 2019, S&P launched the S&P 500 ESG Index, which offered "broad market exposure and industry diversification," bringing the narrower universe of ESG investing to the mainstream. Like other ESG indices, S&P's new index excluded certain sectors (e.g., tobacco and controversial weapons) and determined inclusions based on an ESG performance evaluation within industry classifications and amongst companies indexed by the S&P 500 (Steadman and Perrone 2019, p. 8-10). By the end of 2022, over 8.5 Billion USD of ETFs benchmarking the S&P 500 ESG Index were in circulation (Dorn et al., 2022).

To evaluate companies on their ESG credentials, S&P started by acquiring the rights to the annual "Corporate Sustainability Assessment" (CSA) business survey in 2019, previously operated by Robeco, the Dutch Asset Management company (S&P Global, 2024). The CSA distributes a questionnaire to companies across various industries and uses that information to produce ESG scores that rank companies on a relative basis. Scores also rely on publicly available information, especially where companies do not respond to the CSA but are relevant to index construction.

From the beginning, the S&P 500 ESG Index made the UNGC central to its evaluative approach. In addition to general ESG scores from CSA and public data sources, S&P sourced external ratings on "UNGC Alignment" from the data provider, Arabesque, and later, Sustainalytics. Initially, when companies scored in the bottom 5% of all companies on alignment with UNGC principles, they were rendered ineligible to be included in the index (Steadman & Perrone, 2019: 2). In subsequent methodology revisions and with Sustainalytics data, companies labeled "non-compliant" with UNGC principles are also excluded (S&P Global, 2024: 8). In addition, the CSA has also increasingly referenced the UNGC in its

questionnaire. In 2020, when asking about the presence or absence of a human rights policy for a given firm, documentation referred to the UNGC's guide to developing a human rights policy and discusses the UN Guiding Principles on Business and Human Rights, which anchors the UNGC (SAM, 2020).

Though the CSA guidance initially emphasizes that UNGC membership alone is insufficient to demonstrate a firm has a human rights policy, membership became a direct and independent indicator in the CSA questionnaire starting in 2022 as part of their "Business Ethics" assessment. As stated, "The UNGC is a reference point for investors to apprehend which companies are truly committed to sustainable growth" (Sustainable1, 2022). The 2022 CSA started distribution between April and August of 2022, initially reported results in September, and published aggregate scores in the Sustainability Yearbook 2023, for use in the 2023 index (S&P Global, 2022).

In sum, this review leads to our hypothesis. We conceptualize the creation of the S&P 500 ESG Index in April 2019 as a structural change in markets that embedded information about and participation in the UNGC as a means of maintaining an ESG score. As such, we hypothesize that this would increase the chances of index inclusion and the benefits of ETF benchmarks—exogenous strategic changes shaping the utility of joining the UNGC. Put differently, despite the downward pressures of membership congestion on the likelihood that a given firm will join a club, the embedding of the club generates new aggregate benefits that modify the utility of joining for individual firms and push up the equilibrium membership for the club in question.

3.2. Data and Methods

We use a difference-in-difference (DiD) approach to examine whether firms were more likely to join the UNGC and retain membership after April 2019, when the UNGC became embedded in the S&P 500 ESG Index. If ETF inclusion or exclusion is the relevant mechanism for boosting the value of joining the UNGC, not all firms would have perceived the benefits of this embeddedness: only firms broadly eligible for inclusion in the S&P 500 ESG Index.

What determines eligibility? First, because the S&P 500 ESG Index draws on candidates (after sectoral exclusions) from the original S&P 500, the latter circumscribes the former, i.e., US-domiciled companies listed on US stock exchanges with market capitalizations above the $85th$ percentile (approximately) of all publicly traded companies (S&P, 2024). Other factors affect who stays and goes, including stock liquidity, S&P's commitment to sector balance, the financial health of companies, and the relative importance of new companies going public. To complicate things further, eligibility criteria like

market capitalization change as the general population of top companies shifts. However, the revision of boundaries does not necessarily cause existing S&P 500 members to be kicked out. At the beginning of our study period, a market cap of USD 5.3 Billion would have been sufficient to be eligible. At its end: USD 14.5 billion. As such, a USD 6 billion-dollar firm could be in the S&P 500 in 2023 if it ascended in 2016. In total, the index membership is in a fair amount of flux, averaging around twenty deletions and twenty additions per year (Preston & Soe, 2021).

As a result of this complexity, we cast a relatively wide net for eligibility over the study period. We define *firms that could benefit from the embedding of UNGC into the S&P 500 ESG Index* as (1) being US-domiciled, (2) listed on a US exchange, (3) not being excluded from an ESG index on the basis of their industry, and (4) having a market capitalization of over USD 5.3 Billion—the eligibility cutoff as of 2016.

We note that there are other S&P ESG indices for small and mid-cap-sized US companies (as of 2021) and parallel ESG indices for non-US companies (as of 2019), which could problematize our distinction between treated and controlled groups during the study period. After some investigation, this is not a threat to our analysis: the S&P 500 ESG is the only instance where global asset managers have created a plethora of index-linked funds (39 instances). The next most linked index is the S&P 1500 ESG Composite Index (5 funds), which, in addition to including the S&P 500, is exclusively sold by Investco to Canadians looking for broad-based exposure to American equities. To conclude, the S&P 500 ESG index is a singular case where there is a substantial and global ETF-linked incentive structure associated with the firm's ESG criteria and the UNGC's role therein for the period of time we are interested in.

We obtained quarterly corporate-level data on the UNGC membership and firm size and performance from two sources: the UNGC official website and the Orbis global database. The latter is the largest firm-level database with the widest country coverage that incorporates both companies' financial statements and business portfolios, such as revenue and profit margins. Our time frame is from the first quarter of 2016 to the second quarter of 2023, which gives us 30 observation time points across 29,492 companies.

As a related precaution, but also to deal with the very poor quality of data on smaller companies globally, we use the USD 5.3 Billion eligibility cutoff as a floor for sample inclusion. That leaves us with a treatment group ("eligible" firms) and a control group that is composed of non-US companies with large market capitalizations that we compare after the launch of the S&P 500 ESG Index in April 2019 relative to before April 2019. Adding size cut-offs as an additional difference across which to compare would improve the validity of

conclusions, but because the missingness of data is so high for smaller public and private companies in most databases, this would introduce substantial concerns around selection bias. After reducing our sample to those with a market capitalization of USD5.3 billion or higher as of 2016, it leaves 1,304 companies for analysis.

The main outcome variable is the UNGC membership, a binary indicator where a value of 1 indicates the firm holds the UNGC membership in a given quarter-year and 0 otherwise. We traced when each firm in our sample joined the UNGC based on the UNGC official website. As the UNGC membership is not permanent, our dependent variable does not imply a risk set: Companies are not taken out of the sample after they join the UNGC. Therefore, we use a Probit regression to estimate the DiD estimator.

We set up two additional variables for DiD estimation. *PrePost* is a binary indicator that assigns a value of 1 to all observations in and after April 2019 and 0 otherwise. *US* is a binary indicator that assigns a value of 1 if a firm is listed in the US stock exchange market and is US-domiciled and 0 otherwise. The DiD estimator is particularly relevant for embedding governance because as long as firms pass the threshold of a certain market capitalization, they are eligible for the new aggregate benefits of joining the UNGC if they are US-domiciled. Therefore, we outline our statistical model (Model 1) as follows:

$$\mathrm{UNGC}_{it} \sim Bernoulli(y_{it}|\pi_{it})$$
$$\pi_{it} = \Phi(\beta_{0i} + \beta_1 \cdot \mathrm{PrePost}_{\mathrm{it}} + \beta_2 \cdot \mathrm{US}_{\mathrm{it}} + \beta_3 \cdot (\mathrm{Prepost}_{\mathrm{it}} \cdot \mathrm{US}_{\mathrm{it}}))$$

Where $\beta 3$ is an estimate of the DiD estimator.

We draw on the UNGC literature to extract additional variables that might motivate companies to obtain and keep UNGC membership. It is important to note that while the UNGC has been criticized for lowering entry barriers and lacking compliance enforcement (Barrese et al., 2020), scholars note that companies find its membership attractive to expand business opportunities (particularly in foreign markets), increase revenue, productivity, and stock price (Orzes et al., 2018; Erro & Calvo Sánchez, 2012; Arevalo et al., 2013). Therefore, we include variables that capture the size of the firm, namely total assets, market capitalization, total income (i.e., EBIT, earnings before interests and taxes), and the number of employees (Janney et al., 2009; Berliner & Prakash, 2015). We also include profit margins and current liabilities that capture the companies' current performance. All of these variables are standardized to address non-linearity. Since these factors might affect the potential outcome of both US-domiciled and non-US-domiciled companies, we include them in the baseline

model to adjust any potential biases in the estimated DiD estimator, which leads us to Model 2:

$$\text{UNGC}_{it} \sim Bernoulli(y_{it}|\pi_{it})$$
$$\pi_{it} = \Phi(\beta_{0i} + \beta_1 \cdot \text{PrePost}_{\text{it}} + \beta_2 \cdot \text{US}_{\text{it}} + \beta_3 \cdot (\text{Prepost}_{\text{it}} \cdot \text{US}_{\text{it}}) + Z \cdot \Gamma)$$

Where Z is an $N \times 6$ matrix of additional (control) variables while N is the total number of observations, and Γ is a vector of their coefficient estimates. Despite the comprehensiveness, the Orbis database suffers a massive missing observation problem—even after targeting larger, public companies. A list-wise deletion approach could bias coefficient estimates by systematically removing observations with smaller sizes from the analysis, where the problem appears to be worse. Therefore, we take the following steps.

First, we draw on Honake et al. (2011) approach to multiple imputation which allows smooth time trends in a computationally efficient algorithm. Since most of the missing observations in our sample are financial and economic data, the flexibility in their time trend assumption (e.g., up to cubic terms instead of a linear term only) may better reflect relevant fluctuations (Sadorsky, 2003). Through this, we create 10 datasets with all missing variables imputed. We include additional variables not used in the analysis to guide the algorithm for the multiple imputation, namely, revenue, stock prices, cash flow, and shareholder funds. We also set all variables in the multiple imputation to be lagged and led by one quarter so that each imputation of a missing variable contains more information.

Second, for each imputed dataset, we calculate all coefficient estimates using Model 2 and create 1000 simulated coefficients based on these coefficient estimates and their variance-covariance matrix. The idea behind this approach is that for the large sample size, the sampling distribution of maximum likelihood estimators (MLEs, coefficient estimates in this case) is normal (i.e., asymptotic normality). Given that we have 1,000 simulated coefficient estimates in each imputed dataset, we obtain 10,000 simulated coefficient estimates in total and their distributions, which we use to report their mean and standard error (Model 3). Figure 6 summarizes this approach.

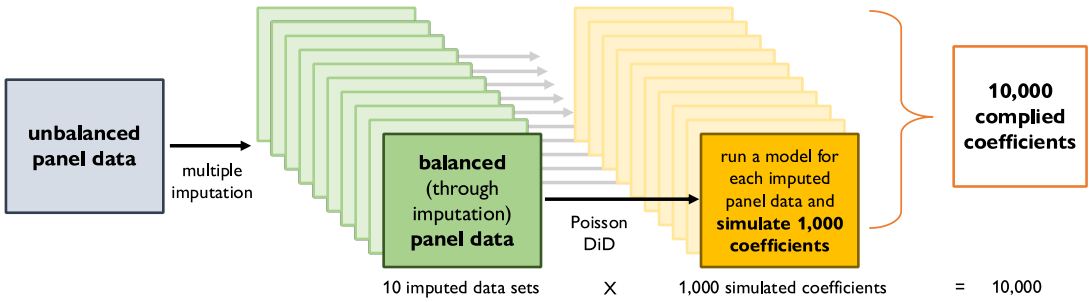


FIGURE 6: Multiple Imputation

4. Results

4.1. Main Results

Table 1. Probit Difference-in-Difference Results

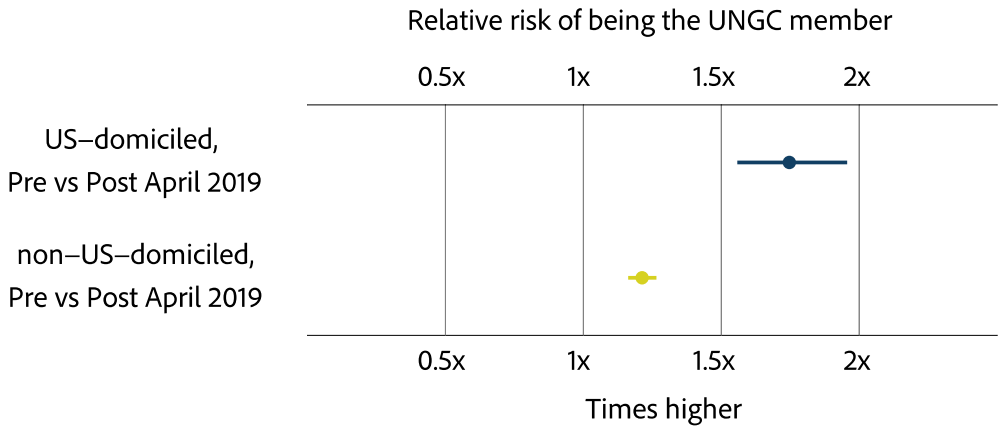
Variables	Model 1	Model 2	Model 3
Pre-post	0.199**	0.190**	0.190**
	(0.018)	(0.030)	(0.018)
US-domiciled	-1.116**	-1.125**	-1.155**
	(0.028)	(0.035)	(0.029)
DiD	0.126**	0.103*	0.107**
	(0.034)	(0.043)	(0.034)
Total assets		0.398**	0.169**
		(0.039)	(0.046)
Market capitalization		0.065**	0.098**
		(0.008)	(0.014)
EBIT		-0.162**	-0.061*
		(0.018)	(0.038)
Employment		0.003	-0.028**
		(0.009)	(0.009)
Profit margins		-0.019	-0.134**
		(0.011)	(0.032)
Current liabilities		-0.090**	-0.134**
		(0.016)	(0.032)
Constant	-0.409**	-0.305**	-0.387**
	(0.015)	(0.023)	(0.015)
Multiple imputation	No	No	Yes

Note: Standard errors are reported in parentheses. **- p<0.01; *-p<0.05.

Table 1 summarizes all model results. Given that we use a Probit regression rather than an event history analysis, these results show factors that motivate companies to obtain the UNGC membership (i.e., join the UNGC) and retain it, as opposed to abandoning it. This way, although our empirical analysis focuses on a firm level, our interpretation of coefficients leads to an empirical implication to the overall size of the UNGC.

Our main quantity of interest, DiD, indicating an estimate of the DiD estimator, is positive and statistically significant at a 95 % confidence level in all models, therefore contributing to the growing size of the UNGC from US-domiciled companies. While it suggests that US-domiciled companies face fewer incentives to obtain and keep the UNGC membership than non-US-domiciled companies (Barrese et al., 2020), they were more likely to do so after the inclusion of the UNGC membership in the S&P 500 ESG Index. Specifically, the expected probability of a single US-domiciled firm with all other variables at their group mean before April 2019 was about 6.15 % (95 % confidence interval: [5.58 %, 6.74 %]). But after April 2019, this figure increased to about 10.63 % ([10.04 %, 11.23 %]), and its confidence interval is significantly different from that of the probability of US-domiciled firms being the UNGC member before April 2019 at a 95 % confidence level.

This result is consistent with the embedding hypothesis. The incorporation into the S&P 500 ESG Index, exogenous to the UNGC with implications for strategic motivations, has increased the chance of US-domiciled firms joining. This is not to say that this is the only relevant mechanism for overcoming the congestion puzzle, as we discussed in previous sections. Indeed, the uniform uptick between US and non-US firms, as estimated by the pre-post



indicator, could be attributable to mechanisms like conforming, which other

researchers have found evidence for (Barrese et al., 2020). Rather, embedding is the dominant explanation, and our analysis is capable of parsing this mechanism. Indeed, while the expected probability of joining the UNGC for non-US firms increased after April 2019, all else equal, US-domiciled firms faced a higher relative risk of joining the UNGC (1.74 times higher) after April 2019 than non-US-domiciled firms (1.21 times higher). As visualized in Figure 7, this difference is statistically distinguishable. Therefore, the inclusion of the UNGC membership into the S&P 500 ESG Index had a larger impact on the US-domiciled firms than on the non-US-domiciled firms.

FIGURE 7: Relative Risk of Being a UNGC Member

4.2. Industry Fixed Effects

We further interrogate our main results by including industrial fixed effects in the earlier models. Scholars have pointed out that firms face different levels of incentives to invest in corporate social responsibility (CSR) depending on the industry to which they are identified and varying levels of stakeholder pressures (Melo & Garrido-Morgado, 2012). Additionally, if a more disaggregated form of normalization is occurring at the industry level, including these fixed effects may challenge the embedding hypothesis. For industrial classification, we used the Statistical Classification of Economic Activities in the European Community, or NACE Revision 2.1. Orbis provide data on each firm's NACE

Table 2. Probit Difference-in-Difference Results with Industry Fixed Effects

Variables	Model 1a	Model 2a	Model 3a
Pre-post	0.203**	0.198**	0.194**
	(0.018)	(0.030)	(0.018)
US-domiciled	-1.111**	-1.104**	-1.140**
	(0.029)	(0.036)	(0.029)
DiD	0.126**	0.101*	0.107**
	(0.034)	(0.044)	(0.034)
Total assets		0.497**	0.201**
		(0.042)	(0.051)
Market capitalization		0.062**	0.077**
		(0.008)	(0.013)
EBIT		-0.189**	-0.072*
		(0.019)	(0.033)
Employment		-0.004	0.034**
		(0.010)	(0.008)

Profit margins		-0.006	-0.014
		(0.012)	(0.009)
Current liabilities		-0.139**	-0.137**
		(0.018)	(0.036)
Constant	4.911	5.020	4.974**
	(42.686)	(52.251)	(0.042)
Multiple imputation	No	No	Yes
Industry fixed effects	Yes	Yes	Yes

Note: Standard errors are reported in parentheses. **- p<0.01; *-p<0.05.

classification at varying levels of specificity. For the sake of degrees of freedom, we use the most general classification, or "sections," which entails 22 categories. Table 4 summarizes the model results with industrial fixed effects (Models 1a - 3a). In all models, our main quantity of interest, DiD, is positive and statistically significant, providing a consistent result with our earlier models.

4.3. Parallel Trends

Finally, a critical assumption for any DiD models is the parallel trend, or that the difference between the treatment and control groups remains the same over time in the absence of treatment, i.e., the embedding of the UNGC into the S&P 500 ESG Index. Given that we cannot observe the post-treatment potential outcomes for both groups, we take the two following steps to provide evidence that the parallel trend holds.

First, we examine the pre-treatment trend ("pre-trend") of the observed outcomes between the two groups. If their trends converge over time leading up to the treatment period, i.e., April 2019, it is difficult to argue that the parallel trend holds after it. Figure 8 compares the percentage of firms with the UNGC membership over time. It shows that the pre-trends of both the US-domiciled and non-US-domiciled firms, while both moving upwards, do not converge before the treatment period.

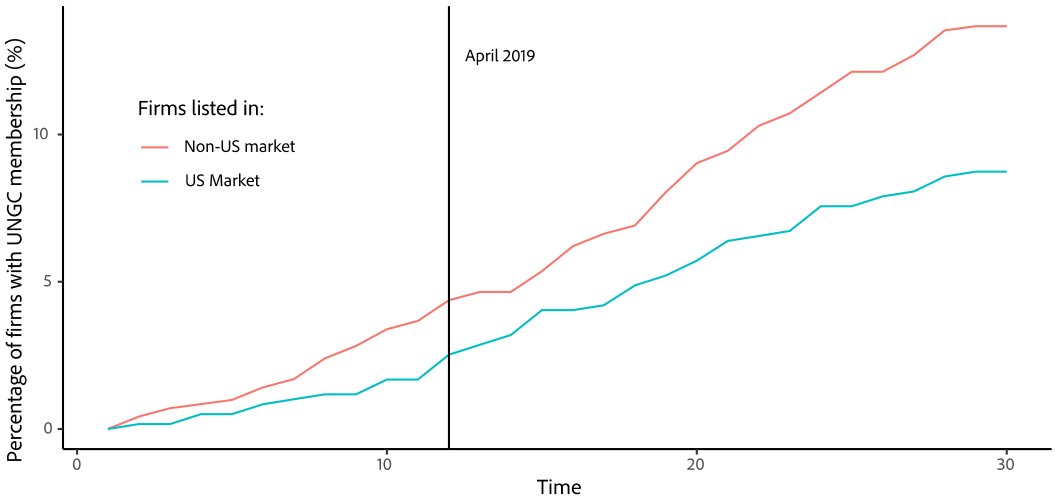


FIGURE 8: Parallel Trends

Second, we use a statistical approach to see if the pre-trends are different using data before the treatment period:

$$\text{UNGC}_{it} \sim Bernoulli(y_{it}|\pi_{it})$$
$$\pi_{it} = \Phi(\beta_{0i} + \beta_1 \cdot \text{Time} + \beta_2 \cdot (\text{Time} \cdot \text{US}_{\text{it}}))$$

Where *Time* is a time indicator. Here, our main quantity of interest is $\beta 2$, which allows for the pre-trend to be different for each group. We examine if $\beta 2$ is equal to zero such that we find no evidence that the pre-trends are different. Using the original dataset before April 2019, our estimate of $\beta 2$ is 0.004 with a standard error of 0.009 (P-value = 0.645), suggesting that the pre-trend is not different between the treatment and control groups.

5. Discussion

Our results support the embedded club hypothesis. However, it is important to contextualize our findings in light of the alternative explanations that we discussed in Section 2. First, conformity and normalization may be operative at some low level, or in a slower, longer time trend. Still, we do not observe a norm cascade and its non-linear empirical signature in the data. As shown in Figure 1, after the second quarter of 2019, its growth rate accelerated for about a year, but that momentum was not sustained. This does not preclude the possibility of a norm cascade in the future, but there is no clear evidence that normalization

patterns over time are the dominant or overriding explanation for what we otherwise detect with S&P and American companies.

Second, if institutional adaptation were the case, we would expect to see some internal changes in the UNGC membership policies or its modalities that might have changed either the total cost or rivalrousness of its club goods. We do not observe these changes in the time frame of our analysis. Based on the UNGC itself, there is no change in the fact that prospective UNGC members are not vetted upfront or enjoy tiered membership categories in our period of study. The primary cost of joining the UNGC remains to primarily come from reporting in the form of "Communications on Progress," or COPs, which is standardized across signatories regardless of geography, and was introduced before our study period.

We also discussed institutional embedding as a precondition for possible signaling mechanisms to be taking place; external stakeholders might find their private firms (as investees) joining the club (i.e., UNGC in our case) valuable because endorsements by other institutions (i.e., S&P) might bring additional benefits to its membership beyond index inclusion. Yet, we point out that this embedding effect accrued mainly to a small subset of potential members (i.e., US-domiciled firms), and not companies assessed by S&P (most are) but ineligible for index inclusion that matter for ETFs. Nor is it clear that the S&P 500 ESG Index membership becomes a heuristic for environmental stewardship or human rights protection in corporate America. While embedding might lead to signaling benefits in the long term, our finding suggests that it can also lead to immediate benefits through institutional dependence, which incentivizes potential members eligible to capture market premia to join those embedded clubs.

Finally, we acknowledge that embedding, conformity, and adaptation might not always be mutually exclusive in the long term. Club membership, for instance, may better achieve a "norm-like" status if embedded in an institution that already has such a reputation. Or, embedding might motivate clubs to modify their membership rules and adapt to new interdependencies, changing the cost-benefit for prospective members. Nonetheless, our findings and our discussion illustrate that embedding is both theoretically and empirically distinguishable from such mechanisms.

6. Conclusion

Why do voluntary platforms hosted by the UN and other international organizations *just keep growing*, even when that growth is inimical to the value

propositions that these platforms supposedly provide? As international or transnational clubs that provide non-rivalrous benefits to their members, economic theory suggests that membership should equilibrate and growth should decline as a result, but reality paints a different picture. In this paper, and in the case of the UNGC, we explore the plausibility of institutional interdependence and "embedded clubs" as an explanation. In short, we argue that clubs can become embedded in the functioning of external market operators or institutions in ways that exogenously change the benefits of membership, expanding the "carrying capacity" of clubs. We test this theory with the case of the UNGC and its use as a central organizing device for the S&P 500 ESG Index. We find that US-domiciled companies, who are broadly eligible for S&P indexation, were more likely to join and remain in the UNGC after the Index's construction and launch, compared to non-US-domiciled companies and controlling for other factors. This effect is empirically evident above and beyond broader trends in the data.

Understanding the congestion puzzle and the role of institutional interdependence is, we believe, critical to understanding how to conceptualize and understand clubs in international affairs. Davis's (2023) recent book has contributed significantly to this discussion by identifying how states use geopolitical motivations to shape international organization membership and, conversely, how IO membership signals certain types of belonging. While she shows how issue interdependence can implicate endogenous changes in clubs and sociotropic motivations for state memberships, we emphasize that interdependence across institutions as distant as voluntary human rights platforms and stock exchanges can also cause exogenous changes in strategic motivations for non-state actors. We see these contributions as complementary in advancing our knowledge of how clubs can operate in highly complex global environments, joining a growing attention in International Relations to this topic (Colgan, 2021; Bruneau, 2023; Rowan, 2024; Hovi et al., 2019; Hagen & Schneider, 2021).

Additionally, our discussion has implications for the more substantive question of the "depth-participation" or "stringency-accessibility" trade-off in international agreements and voluntary transnational organizations. Typically, governors without enforcement capacities face a dilemma: if they increase the stringency of rules, cost-sensitive members defect and fail to comply. If a certain critical mass of compliance is necessary to sustain governance, increasing stringency can appear risky. Our broader discussion suggests that, under certain conditions, governors without coercive authority may have more room to maneuver than they think. For example, if members are joining both because of some advertised benefit, but also because they are conforming to the

expectations of their community, then there may be more space to increase participation costs without a resulting decline in membership. That slack could mean either greater scrutiny and monitoring (variable costs) or more demanding standards (fixed costs).

Finally, our analysis speaks to broader trends in international political economy. For one, this enmeshing of UN initiatives into the infrastructure of financial ratings is a new and perhaps subtle face of the financialization of global governance (Hiss, 2013). Information about adherence to non-financial norms has become subordinated to the unending interest of financial market operators to clarify and manage risks, positioning index providers as powerful intermediaries who ultimately determine which global standards should apply to companies (Christophers, 2015). The role of rating agencies as actors that shape corporate compliance to voluntary standards adds new dimensions to understanding how these non-state actors exert power in the global economy, whether shaping the debt costs of countries (Barta & Johnston, 2020), or through index construction, defining which companies are most entitled to investment (Petry et al., 2019; Fichtner et al., 2023). Of course, the rising importance of indices is a direct result of the overwhelming dominance of passive asset management strategies in the financial system, and the extent to which this transition has led us into a world of "asset manager capitalism" (Braun, 2022) where the locus of financial power has shifted to the Vanguard's and Blackrock's of the world—at least in Western countries.

Ethics declarations

Conflict of interest/competing interest

The authors have no conflict of interests or competing interests to declare.

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