**Abstract**

Students of private governance offer contradictory theories and findings about the ways in which regulatory standards change over time. We find this to be, in part, a symptom of inconsistent measures of regulatory stringency that either focus on a few salient policy components or make sweeping generalizations. To remedy this, we offer a framework that disentangles three often-conflated components of regulatory stringency—scope, prescriptiveness, and mandatory performance levels. Doing so allows us to better interrogate explanations for the nature of policy change, including “racing to the bottom”, “ratcheting up”, “converging”, or “diverging.” We also distinguish “Type 1/costly/activist-driven/social problem-focused” issues that impose costs on firms to create social benefit from “Type 2/business-freendly/industry-driven, business problem-focused” issues which benefit firms regardless of external pressure. We then apply this framework to competing U.S. forestry certification programs, clarifying an apparent debate over whether their requirements were converging. We find overall consistency in policy scope but an “upwardly diverging” pattern in prescriptiveness—with the activist-backed program targeting Type 1 issues, while industry-backed competitor emphasized Type 2 utility-enhancing issues. These results show that theory testing is impossible without disaggregating policy components.

**1 Introduction**

In the last 30 years, private governance initiatives including eco-labels and “socially responsible” product certification programs have emerged to address goals such as improving farm and factory working conditions, controlling greenhouse gas emissions, and managing fisheries, mines, and forests (Auld, 2014; Bartley, 2003; Bozzi, Cashore, Levin, & McDermott, 2012; Hudson & Hudson, 2003; van der Ven, 2015; Vince & Haward, 2017; Vogel, 2008). Many of these initiatives are backed by activists who aim to compel large companies to contractually require their suppliers to meet more stringent standards than public regulations require. To do so, activists launch campaigns to generate market demand for certified products and/or use pressure tactics like boycotts (Cashore et al., 2004). Certification programs are thus a form of private regulation, with rulemaking authority deriving from market power rather than the state (Cashore, 2001). In some sectors, such as forestry, activist-backed programs have met strong industry resistance, resulting in industry-backed alternative programs that aim to meet consumer demands for “socially responsible” production at a lower cost to firms. The relative stringency of each program is often hotly contested among supporters of activist-backed private regulations and industry-backed alternatives.

In response to these emerging forms of regulation and ensuing public debates, scholars across political science, public administration, economics, and sociology have given sustained theoretical and empirical attention to the evolution of private regulation (Grabs et al., 2017). A key motivation behind this research is understanding whether the social and market forces behind private regulations lead to similar patterns observed in public regulations, such as a “race to the bottom” as governments attempt to attract capital, a “race to the middle” as shared expectations emerge, or a “race to the top” as companies operating in markets with more stringent regulations lobby to equalize requirements and costs across jurisdictions (e.g. Berger & Dore, 1996; Rodrik, Subramanian, & Trebbi, 2002; Vogel, 1995).

While scholars have made great strides on these questions, significant challenges remain because the field has paid relatively limited attention to how stringency is measured. Studies often rely on broad characterizations of regulatory stringency without precise definitions or, conversely, based on only a small subset of the issues that programs address. This ambiguity, we argue, has led to seemingly contradictory empirical findings, hindering efforts to understand how private regulations compare and why they change over time. The lack of common measures of stringency also fuels public debates over which programs, if any, might advance various social and ecological goals. Measuring policy change is a long-recognized challenge in the study of policy dynamics (Pierson, 2001). As Green-Pedersen (2007) argues “the debate about explanations of variations in [policy] cannot move beyond the stage of hypotheses before the dependent variable problem has been addressed” (Green-Pedersen, 2007, p. 4). While a rich public policy scholarship has emerged to address the challenge of disaggregating policy change as a dependent variable (for a review, see Howlett & Cashore, 2014), concepts of policy change are less well-developed private governance scholarship.

To address this gap in private governance scholarship, we build on public policy concepts to offer a two-part framework for describing and comparing regulations over time. Part one disentangles three research questions that, together, allow for systematic assessment of regulatory stringency for a given policy text: 1) How comprehensive is the ***scope*** of issues addressed? 2) How ***prescriptive*** are the requirements? 3) What are the specific policy settingsin terms of the qualitative and quantitative ***levels of performanc*e** required? Part two offers a method for classifying changes across programs over time, yielding nine possible patterns describing both ***relative difference*** and ***absolute*** ***direction of policy change***. This second part fills a gap in the literature by offering common language to describe how competing regulations may change over time. Such research questions are especially important where multiple programs, backed by different political coalitions, compete to exercise regulatory authority in the same policy space.

Applying this framework resolves puzzling discrepancies in previous studies of private regulation. For example, as we show below, some scholars theorize—and find empirical support for—dynamics where competing regulations “ratchet up” and less stringent regulations converge toward more stringent ones (e.g. Overdevest, 2005, 2010; Overdevest and Zeitlin,2014)**.** Other scholars theorize—and find empirical support for—the opposite dynamic where competition pressures more stringent standards to lower their stringency, converging toward less stringent ones (Abbott & Snidal, 2010; Fransen, 2011; Gulbrandsen, 2004). Still others theorize—and find empirical support for—dynamics where programs maintain different levels of stringency, i.e. not converging to the “top” or “bottom” (Fischer & Lyon, 2014; Li & van ’t Veld, 2015; Poret, 2016; Cashore et al., 2004). We argue that each set of findings is correct given the measurement strategy employed, but adjudicating among these claims will require further refinements in both the measurement of regulatory stringency and theories about why private regulations change.

We proceed in the following steps. The next section highlights the importance of concepts of regulatory stringency for theories of private governance and then reviews conceptual and measurement approaches taken by scholars to date. We show how most studies employ abstract definitions or select evidence, leading to seemingly contradictory conclusions and frustrating efforts to assess theories. In response, section three presents a two-part framework for measuring scope, prescriptiveness, and policy settings and the nine possible patterns of relative change. While this two-part framework can be applied to any regulation, we focus on private governance where, compared to public policy scholarship, policy content has been given relatively less systematic attention.

In section 4, we apply our framework to competing private regulations in the forestry sector. We select the case of forest certification because of its long history of private governance and often highly polarized efforts among competing programs to achieve, or maintain, rulemaking authority. Applying our framework reveals a pattern that no study of which we are aware had predicted: a general pattern of “upwardly diverging” stringency when comparing the two major U.S. national-level forestry certification programs on prescriptiveness. The activist-backed program started at a higher overall level of prescriptiveness and increased on more key issues than the industry-backed program, producing a pattern where both programs “ratchet up” but also diverge in prescriptiveness. Through issue-by-issue qualitative comparison of specific requirements, we also reflect on the substantive nature of change over time. For example, in 2010, each program changed most on issues where it already had the more prescriptive requirements (ecological issues for the activist-backed program and forestry-sector capacity issues for the industry-backed program). But in 2015, the industry-backed program adopted requirements on several ecological issues that were historically emphasized by its competitor. These findings and resulting new empirical puzzles highlight the importance of careful measurement and offer exciting avenues for future research, which we outline in section 5.

**2 Regulatory stringency**

While traditional public policy scholarship has long been concerned with how different kinds of regulatory stringency might have different causes or effects, private governance scholars have paid less attention to these questions. This is a problem because measuring regulatory stringency is necessary to assess theoretical debates about the role of policy content as both a dependent and explanatory variable, i.e. propositions about the way in which activist campaigns, market forces, and competition among alternative programs shape policy content; and, conversely, propositions about how policy content shapes activist support, market adoption, impact, and how other programs respond.

Regulatory stringency is a key explanatory variable for scholars who study how private regulations gain legitimacy, trust, or support from various audiences. For instance, McDermott (2012) argues that stringency may reduce trust by mandating formulaic, top-down approaches. Atkinson and Rosenthal (2014) find that perceived stringency increases market demand for certified products, but Prado (2013) finds that it also reduces adoption by firms. Meidinger (2003) suggests that changes in stringency that disadvantage some firms or groups may catalyze these actors to create alternative private regulatory programs. Alternatively, those disadvantaged by changes to private regulation may then opt to pursue their aims through public policy (Weimer, 2006). Such consequences are consistent with broader findings from literatures on “corporate social responsibility” (CSR) initiatives, such as environmental management systems (EMS), industry codes of conduct, and third-party certification programs, which find that more costly requirements are less likely to be adopted (Delmas & Montiel, 2008; Kollman & Prakash, 2001; Lyon & Maxwell, 2008).

The effects of stringency on trust, legitimacy, compliance cost, and adoption are important because understanding the likely future impact of private regulations “on the ground” requires understanding their evolutionary trajectories (van der Ven and Cashore, 2018). Even activist-backed programs that establish stringent requirements on one issue at one point in time may not do so on other issues and at other times (LeBaron and Burgoon, 2018). Nuanced gaps in otherwise stringent private regulations—“regulatory loopholes”—may also explain their lack of success in addressing problems like deforestation (van der Ven et al., 2018).

Regulatory stringency is also the main variable of interest in studies of the reverse causal relationships: how ideological, economic, political, and social forces shape and constrain the policy content of private regulations (e.g. Bartley, 2003; Cashore, Auld, & Newsom, 2004; Fischer & Lyon, 2014). Here, regulatory stringency is the dependent variable. Unlike governments, which enjoy sovereign authority, private organizations must achieve and maintain legitimacy in the eyes of both those they aim to empower and those they aim to regulate (Bartley, 2007; Bodansky, 1999; Cashore, 2002), and one way they do this through claims about the stringency of their requirements.

Scholars theorize that various forces either promote or hinder stringent regulation. For example, ideas about the political responsibilities of businesses shape both activist demands for private governance and firms’ responses to private governance efforts (Bartley, 2003; Djelic & Etchanchu, 2017). These different ideas are then embodied in more or less stringent policies depending on which coalitions gain rulemaking authority (Botzem & Dobusch, 2012; Hsueh and Prakash, 2012). Bartley (2003) finds private regulations emerging when social movements target companies with tactics that aim to redirect, rather than challenge, neo-liberal ideas. Others find private regulations emerging from collective action by industry to preempt or replace more stringent government regulations (Bartley, 2007; Cashore, 2002; Grabosky, 2013; Green, 2013; Loconto & Fouilleux, 2014; Lyon & Maxwell, 2008; Maxwell, Lyon, & Hackett, 2000; Prakash, 2000). Abbott and Wood (2009) suggest that the content of public and private regulations are a joint result of bargaining between activists and firms. The common thread is that each of these studies aims to explain relative differences or changes in policy. Testing or adjudicating among these theories thus requires consistent measures of policy change.

Others seek to explain regulatory stringency as a result of endogenous interactions among private authorities (DeLeon & Rivera, 2009; Eberlein, Abbott, Black, Meidinger, & Wood, 2014; Green & Auld, 2017; Gulbrandsen, 2014; Howard-Grenville, Nash, & Coglianese, 2008; Li & van ’t Veld, 2015; Mills, 2016). Smith and Fischlein (2010, p. 520) conclude: “The strength of competing private governance networks may precisely be that they are moving targets: while they appear to rally around a common definition of rules and norms over time, they continue to innovate and imitate each other.” Similarly, Eberlein et al. (2014) identify “frequent rule revision” or “differentiation among rule systems” as potential effects of their interaction. Taken together, this literature suggests that some rules will be more stringent, or more stringent on different issues, than others in the same policy space, and that requirements may vary over time. Systematically testing these propositions will require measures of regulatory stringency that can be applied across programs and over time.

A related body of scholarship seeks to explain regulatory stringency as a result of strategic interactions among the coalitions backing different programs. Some focus on how competition may lead to more “weak or lax standards” as firms “shop” for lower-cost programs, potentially causing a “race to the bottom” (Abbott & Snidal, 2010; Fransen, 2011; Gulbrandsen, 2004). In contrast, others find competition causing “weak” regulations to be “revised upwards” as activists invite public comparisons with the requirements of “higher” regulations (Overdevest, 2005, 2010). And still others find both patterns occurring, depending on market and industry structures (Cashore et al., 2004; Hassel, 2008; van der Ven, 2015). Cashore et al. (2004) highlight how market and institutional logics initially work to pressure coalitions to “lower” stringency but then, later, work to maintain differences. While this appears to be an empirical debate, we show below that it is largely the result of different measurement strategies.

Concepts of regulatory stringency are also at the core of formal models of private governance. Models by Youssef and Abderrazak (2009) and Fisher and Lyon (2014) suggest that standards may increase or decrease stringency under different conditions. Game-theoretic models (Fischer & Lyon, 2014; Li & van ’t Veld, 2015; Poret, 2016) and empirical research (Cashore et al., 2004) both suggest that asymmetric incentives lead competing programs to adopt different levels of stringency in equilibrium. Where an activist-backed regulation competes with an industry-backed regulation, these theories predict a stable equilibrium where the activist-backed regulation is more stringent. Testing this proposition requires concepts of stringency that can be operationalized consistently within and across programs.

Different measures may yield different results. For example, in the broadest study to date, van der Ven (2015) does find support for the prediction that activist-backed private regulations are more likely to align with “best practices” but does not find support for the prediction that industry-backed regulations are less likely to do so. While the latter finding seems to contradict findings by Cashore et al. (2004) that industry-backed programs set less stringent requirements, this is due to differences in measurement; Cashore et al. focus on prescriptiveness rather than “best practices.” We elaborate on such differences in measurement strategies in the next section.

Having reviewed why regulatory stringency is a key variable in theories of private regulation, we now interrogate the various concepts of stringency that run through this literature. We then offer a framework to clarify these yet muddled concepts and guide more systematic measurement.

**2.2 Concepts & Measurement of Variation in Private Regulations**

The diversity of private governance scholars’ conceptual and empirical approaches to measuring regulatory stringency makes this literature vibrant but confusing: Some scholars evoke vertical notions of variation, describing standards as high or low or more or less stringent (Fischer & Lyon, 2014; Li & van ’t Veld, 2015). Others evoke horizontal notions of variation, describing the width or breadth of issues covered (Auld, 2014; Heyes & Martin, 2017). Cashore (2007) and McDermott et al. (2008) also call attention to variation in prescriptiveness versus flexibility, i.e. the extent to which regulations use mandatory and substantive performance thresholds. Other scholars combine concepts of breadth and prescriptiveness into one broader notion of stringency (e.g. Fransen, 2011). Furthermore, some measure height in a relative sense, defining the “benchmark” as the higher standard (Overdevest, 2005, 2010). These notions capture important, but potentially orthogonal, dimensions of variation.

Furthermore, conceptual definitions of broad concepts like stringency are often either insufficiently precise to be consistently applied across programs, insufficiently comprehensive to yield consistent empirical results, or completely absent. (Note the variety of approaches in Table 1.) For example, formal models often assign each program a single overall quality or stringency parameter that could be measured multiple ways yielding different empirical results.

[Table 1]

In the absence of consistent measures of regulatory stringency, scholars have used proximate features that are comparable across programs. For example, Darnall et al. (2010)suggest that a program’s sponsor is a signal of its stringency, and van der Van (2015) uses compliance with perceived “best practices,” which are often also considered “benchmarks” for measuring stringency but are based on a variety of different notions of “rigor” and “credibility” (van der Ven, 2015). As noted, many studies also use compliance costs or perceived stringency as proxies. Unfortunately, such measures do not allow one to examine relationships between stringency and these other important features of a regulation.

The handful of scholars who have developed direct and precise measurement strategies tend to focus on a few salient components, rather than attempting to specify a full range of relevant comparisons (the top of Table 1), causing similar concepts to be measured in different ways, leading to different results. To illustrate this point, we elaborate on two studies comparing stringency between competing private forestry regulations. Cashore et al. (2004) examine prescriptiveness on seven issues related to ecological protection (plantations, chemicals, clearcuts, exotics, reserves, streamside riparian zones, and genetically modified organisms) and find large enduring differences between activist-backed and industry-backed regulations. In contrast, Overdevest and Zeitlin(2014), following Fernholz et al. (2010), find that these same private regulations “all moved closer” by assessing whether or not each program addressed six other features—two substantive requirements on firm behavior (public reporting and stakeholder consultation), two on compliance mechanisms (auditing and supply chain tracking), and another two on decision-making and marketing strategy—finding policy convergence on all six. The different sets of issues selected by these two studies illustrate only a few of the many different ways private regulations may vary.

The above example also illustrates two common difficulties in identifying patterns like convergence. First, conclusions may differ if drawn from a different set of known areas of potential variation. McDermott et al. (2008) identify 48 key types of substantive requirements in the forestry sector alone—selecting any limited combination of them may lead to different conclusions. If Overdevest and Zeitlin had chosen Cashore et al.’s set of issues or vice versa, each may have found the opposite pattern. Indeed, as we show in sections 4 and 5, these forestry certification programs *do* have common trajectories on procedural openness, but they *also* have divergent trajectories on ecological protection.

Second, binary indicators such as whether or not a program addresses a given topic—i.e. “is this issue in the program’s scope?”—fail to capture variation in degree—e.g. “how high is the threshold set” (what is the required *frequency* of public reporting or prohibited *amount* of pollution?) and “how prescriptive are they?” (How much is voluntary versus mandatory?). The scope of requirements, degree of prescriptiveness, and levels of thresholds are important but orthogonal dimensions of variation that may exhibit different patterns of change for different reasons. Indeed, as we show in sections 4 and 5, U.S. forest certification standards may have slightly converged in scope but they diverged in overall prescriptiveness and levels of performance required.

Again we see that measuring different dimensions of variation can yield different conclusions. Overdevest and Zeitlin (2014) are correct that the industry-backed program moved in the direction of the activist-backed program *within the scope of issues related to public reporting and consultation*, while Cashore et al. (2004) are also correct that they did not converge *in prescriptiveness on issues related to ecological protection*. This is not to say that the different sets of issues chosen by Cashore et al. or by Overdevest and Zeitlin are not important or that the authors were not clear about the scope of their study. Rather, it is a call for caution among readers and practitioners about overgeneralizing, and for scholars to be extraordinarily clear about concepts and measurement. Such clarity is difficult without a framework to relate different bits of particular evidence to shared broader concepts of stringency. Indeed, generalizing from different evidence—broad in some cases, particular in others—explains the seemingly contradictory results reviewed above.

Studies with broader measurement concepts (see Table 1) tend to have less empirical detail. Two challenges appear to have created this breadth-depth tradeoff. First, to be both comprehensive and precise is costly for researchers. Second, even if researchers conduct a detailed analysis of a comprehensive set of policy issues, we lack consistent methods for aggregating comparisons across different issues to describe general trends. Indeed, specific requirements are often incommensurable between programs and can only be appropriately compared through descriptive narratives.

We partially overcome the second dilemma by, in addition to qualitative issue-by-issue comparison of policy settings, using two measurement concepts that can be applied to all types of requirements. Unlike policy settings, scope and prescriptiveness can be aggregated to assess general trends. This strategy of parsing out three dimensions of regulatory stringency allows many of the hypotheses advanced by the private governance literature to be restated in ways that are more conceptually precise and thus more tractable for empirical testing.

**2.3 Theorizing in terms of scope, prescriptiveness, and policy settings**

Distinguishing types of policy change allows more precise and testable hypotheses about the causes and effects of change. If different dimensions of regulatory stringency vary independently, a vast array of theories that use stringency as an explanatory or dependent variable must be revised to specify the dimension(s) to which they apply. Revisiting theories in terms of scope, prescriptiveness, and policy settings may yield different predictions on each dimension. It is beyond the scope of this paper to revisit all hypotheses in this vast literature in light of our methodological critique, but, for illustrative purposes, we offer examples of such a restatement with respect to hypotheses rooted in compliance cost and differentiation.

**Compliance costs and competition**: By breaking down stringency into three distinct dimensions, we expand on two related propositions: (1) that compliance costs cause competing programs to set different levels of stringency in equilibrium and (2) that programs change in response to changes by their competitor. () and ( theorize that industry-backed programs set less stringent regulatory requirements than activist-backed programs because industry-backed programs are less willing to impose costs on firms. Yet, these studies do not specify which dimensions of stringency ought to be affected by compliance costs. Do incentives rooted in compliance cost affect each dimension in the same way? Any theory relating stringency and compliance costs requires a precise definition of stringency. Likewise, we can expand upon the proposition that, when private authorities compete for market share, if one changes its requirements, the other will change in a similar direction (Fischer & Lyon, 2014; Smith & Fischlein 2010). Disentangling scope, prescriptiveness, and policy settings suggests more precise hypotheses to assess such theories rooted in compliance cost and competition. For example:

**Revised compliance cost hypotheses:** If broadening scope is low-cost for firms but increasing prescriptiveness and performance levels are high-cost,

**H1.1:** An industry-backed regulation will be more similar to an activist-backed regulation in scope than in prescriptiveness or performance levels.

**H1.2:** An industry-backed regulation will be more likely to respond to changes in an activist backed regulation by converge in scope than in prescriptiveness or performance levels.

**Differentiation:** Another core theoretical claim is that different coalitions will establish qualitatively different policies (Botzem & Dobusch, 2012; Hsueh and Prakash, 2012). Focusing on a comprehensive rather than a limited set of issues suggests new versions of this question: On which types of issues will an activist-backed regulation be more stringent than an industry-backed regulation? On which types of issues will an industry-backed regulation be more stringent than an activist-backed regulation?

We suggest that the relative stringency of an industry-backed program on a given issue depends on whether it results in net costs or net benefits to the industry. Activist-backed programs drive stringency on issues where requirements impose costs on firms in order to achieve social or ecological goals. We call these “costly issues.” On these issues, an industry-backed program must balance achieving legitimacy through perceived stringency with minimizing compliance costs. The result is likely to be a lower level of stringency than that of a activist-backed program, especially where industry-backed programs can more easily create an impression of stringency or where compliance costs are high.

The opposite result is likely on issues where requirements provide net benefits to the industry. Here, activist-backed programs have little incentive to develop stringent requirements because activist pressure is superfluous. We call these “business-friendly issues.” On these issues, industry-backed certification programs may serve a similar function to industry associations—coordinating resources and solving collective action problems related to industry reputation (e.g. through public image campaigns) and capacity (e.g. by developing collective goods like technical knowledge or a skilled workforce). To create perceptions of stringency, industry-backed programs may even add requirements to do things that firms would do anyway. If observers fail to distinguish different among types of stringency on different issues, such requirements may be a costless and effective in creating perceptions of overall stringency.

**Revised differentiation hypotheses:** Where activist-backed and industry-backed private regulations compete,

**H2.1:** Activist-backed private regulations will have more comprehensive regulation, more prescriptive requirements, and higher performance thresholds on costly issues.

**H2.2:** Industry-backed private regulations will have more comprehensive regulation, more prescriptive requirements, and higher performance thresholds on business-friendly issues such as those that solve industry collective action problems.

These hypotheses illustrate how many of the theories reviewed above would need to be revised if our core methodological critique (that different dimensions of stringency may exhibit different patterns for theoretically important reasons) has merit. There are two ways to assess whether our framework is useful: (1) Does restating theories in terms of the predicted direction of change in scope, prescriptiveness, and policy settings improve our understanding of empirical findings? (2) Does applying the framework empirically uncover patterns of change that other methods failed to uncover? We show below in Sections 4 and 5 that this framework meets both tests: its application reveals that the scope, prescriptiveness, and policy settings of forestry certification standards do follow different empirical patterns and that extant theories cannot fully account for these changes. The following sections detail our framework, apply it to forestry certification programs in the U.S. and reflect whether the above hypotheses are consistent with observed stringency on each dimension. First, we present our framework in more detail:

**3 A Framework to classify change in private regulations**

Students of public policy have long recognized the need to better disentangle policies into their component parts, and have found different explanations for change regarding different end goals and means to achieve them (Cashore, 1997; Hall, 1993; Weimer & Vining, 2005)**.** While private regulations may resemble a system of laws (Meidinger, 2003, 2006), private governance scholarship has paid less attention to distinctions between policy means and ends. Similarly, policy change, a core concept in public policy scholarship, remains underdeveloped in research on private regulation. We thus draw on public policy scholarship to address these gaps.

**3.1 Step 1: Measuring scope, prescriptiveness, and policy settings**

To disaggregate regulatory stringency, we focus on three dimensions of variation: (1) the comprehensiveness of a regulation’s scope (i.e. which policy problems are addressed), (2) the extent to which requirements are prescriptive versus flexible (i.e. they use mandatory and substantive thresholds), and (3) the levels of those thresholds or similarly specific policy settings (see Table 2). The first step for scholars who wish to make claims about stringency or direction of change thus involves three tasks: describing policy content according to scope, prescriptiveness, and specific policy settings. Claims about how competing programs change require a second step: measuring programs’ relative positions and change on each dimension (see Table 3). First, we elaborate on step one.

[Table 2]

Defining a comprehensive scope requires inductively deriving a set of distinct “issues” that are addressed by one or more regulatory texts in a defined policy domain. The comprehensiveness of each regulation’s scope can then be measured by asking which, and how many of the full set of key issues it addresses. While this approach reduces the risk of omitting key issues on which regulations may vary, it is costly and scholars may yet choose a limited scope of comparisons. Such studies must clearly describe their scope relative to the potential set of comparisons. A comprehensive approach is necessary, however, to assess arguments about the scope of regulations (for example, hypotheses 1.1 and 1.2 above). Scope can be assessed in an absolute sense (how many issues a regulation addresses), a relative sense (how many more issues it addresses than its competitor), and regarding change over time (on how many issues were requirements added or subtracted).

Second, we measure the extent to which each requirement is prescriptive, i.e. the use of substantive and mandatory features (see Table 3, Cashore 2007, McDermott et al. 2010).. Because prescriptive versus flexible refers to the means by which each issue is addressed, not the ends of the policy, it can be answered for any substantive requirement.[[1]](#endnote-4) Prescriptiveness is a continuum from discretionary guidelines, which allow maximum flexibility, to procedural requirements that define processes that must be followed but do not prescribe outcomes, to mandatory substantive requirements, which prescribe precise actions, such as quantitative performance thresholds. In contrast to mandatory thresholds, even mandatory requirements to follow local best management practices are less prescriptive because these practices may not include substantive requirements. Discretionary practices, processes, or plans are even less prescriptive. On each issue, requirements can be coded in an absolute sense—as “no prescriptive requirements” or “some prescriptive requirements”—and then, if the latter, in a relative sense—whether they are “most prescriptive” (requiring as much as or more than any other program). Coding prescriptiveness across issues creates an additional measure of policy scope—i.e. how many key issues have “some prescriptive standards.” Coding prescriptiveness across programs creates a measure of the relative level of prescriptive requirements. Additionally, any changes can be classified as becoming more prescriptive or less prescriptive on each issue, allowing one to measure the direction of change in prescriptiveness.

[Table 3]

Finally, the third type of stringency, specific performance levels (what policy scholars call “policy settings”) allow us to substantively interpret differences in scope or prescriptiveness. For example, forestry certification programs have different requirements for how close loggers can harvest near streams. In this example, all standards prescribing minimum stream buffer widths would be considered equally prescriptive since all are mandatory requirements, albeit with different thresholds. Yet buffer widths and other specific policy settings are an important type of variation. Unfortunately, most specific policy settings, even prescriptive ones, are not quantifiable and thus difficult to aggregate. Even numeric stream buffers are difficult to compare because they apply in different landscape contexts, for example in mountainous or flat areas, and involve different levels of harvest restrictions based on different criteria, such as the slope of the river bank, presence of fish, etc. (see online appendix E). Measurement strategies that allow program-level aggregation should not replace issue-specific qualitative comparison. It is important to both *quantify* absolute and relative change and *describe* the nature of the most important changes that capture the overall trends. We thus suggest that scholars complement aggregate measures of trends with descriptive comparisons of key requirements, assessing each issue in an absolute sense, in a relative sense (if possible), and by how the required level of performance may have changed.

At its most stylized, step one, comparing two hypothetical programs (A and B) in a policy space with two issues (Hazardous Chemicals and Worker Training) might look like this: A researcher examines regulations in this policy domain and inductively identifies a total of two issues. Both programs have some prescriptive requirements on both issues, so they are equal in scope. Program A bans using chemicals above certain quantitative toxicity thresholds whereas Program B bans “hazardous” levels which may be interpreted in several ways, so Program A is more prescriptive on Chemicals. For policy settings, the two programs ban slightly different lists of chemicals, Program A focusing on ecologically harmful chemicals and program B focusing on those most harmful to humans, so their specific requirements on chemicals can only be compared qualitatively. On the second issue, both programs require mandatory worker training programs and neither specifies how many hours, so they are equally prescriptive on Training. They both have slightly different lists of topics of training that are suggested but not mandated. Program A focuses more on skills needed to avoid ecological harm and Program B focuses more on worker safety, so their policy settings can again only be compared qualitatively, but a pattern emerges: Program A, the overall more prescriptive program, is also more focused on ecological protection, possibly due to a strong influence from environmental activists. In contrast, program B is more focused on worker safety, possibly due to a greater influence of labor groups or businesses seeking to reduce the risk that worker injuries at one firm will impose reputational or regulatory costs for the whole industry.

Our combination ofprecise *and* comprehensive measurement thus reveals potential problems in using any one approach alone. Measuring **scope** alone risks overlooking variation in prescriptiveness and levels of performance required. Measuring **prescriptiveness** alone risks capturing a kind of stringency that is void of content. And comparing a few **specific** **performance levels** alone risks missing the broader picture, or worse, making overly broad generalizations where a different set of issues would yield different overall conclusions.

**3.2 Step 2: Classifying Patterns of Change**

Drawing on Baumgartner and Jones (2002) and Howlett and Cashore (2007), we also note the importance of the direction of change, not only “in terms of the ‘size’ of moves away from the status quo, but whether these changes are cumulative, i.e., leading away from an existing equilibrium toward another, or whether they represent a fluctuation consistent with an existing policy equilibrium” (p. 537). Assessing punctuation or equilibrium requires characterizing change on each dimension. That is, there may be equilibrium in one dimension, but punctuation another. In absolute terms, requirements may be increasing, decreasing, or neither, and, in relative terms, competing regulations may be converging, in equilibrium, or diverging on each dimension over any given period (Table 3). Thus, in aggregate, nine relationships fully capture the possible dynamics for each dimension of change.[[2]](#endnote-6) All of the diverse concepts of regulatory stringency from Table 1 should be able to be expressed in terms of the dimension(s) to which a theory applies and the absolute directions and relative relationships they predict.

[TABLE 3]

**4 Application: Competing US Forest Certification Programs**

We illustrate our methodological approach through an analysis of the case of forestry in the United States, one of the most advanced cases of private regulation. Like many substantive domains, forestry scholars have carefully dissected components of forestry regulations, both public and private, but, as shown above, the unit of analysis in political science scholarship still tends to be broad characterizations of entire policies or only a few of their many constituent parts. By drawing on domain-specific scholarship, we are able to conduct a more systematic and detailed analysis.[[3]](#endnote-7) The results of this analysis offer the most comprehensive and detailed description of changes in forestry certification standards to date.

As an example of non-state market-driven governance, forest certification illustrates how market-based authority can involve decision-making modeled on government rulemaking processes, legalistic requirements, and powerful enforcement mechanisms. When product certification programs gain market-based authority, contracts may depend on an auditor’s assessment of compliance with hundreds of requirements and noncompliance may be costly. For example, in court filings, Resolute Forest Products claimed damages of $100 million CND related to auditor findings of non-conformance with ecological and indigenous rights requirements. While this scale of impact makes forest certification an important case, and the level of institutionalization enables detailed study of this type of private regulation, the associated complexity makes it especially challenging to capture its many moving parts.

For over 20 years the Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI), have been developing written Forest Management Standards (standards) that promote different conceptions of “sustainable” forest management. The SFI and FSC play a major role in regulating the forest products industry in the United States, covering a third of commercially-harvested timberland, and regulating a large share of corporate-owned timberland (see Figure 2).[[4]](#endnote-8) Many states support certification as a complement or alternative to public regulation. For example, in some states, regulators forgo inspections of FSC-certified forests as they are already being audited for legal compliance and more (Judge-Lord, 2013).

[FIGURE 2]

**Origin of the FSC:** The FSC was established as an international non-profit organization in 1993 by a group of environmental and social NGOs, academics, indigenous groups, and companies. FSC rulemaking has been designed as a “democratic” process where members vote on decision-making procedures as well as substantive requirements (Meidinger, 2003), but the auditing of firms to those requirements is conducted by third-party contractors. The FSC standards are organized around a set of international “Principles and Criteria” (FSC–P&C) that are operationalized by national-level organizations that develop more specific indicators.[[5]](#endnote-9) Our analysis of the FSC in the U.S. thus focuses on both the international P&C and the FSC-US national standard.

**Origin of the SFI & PEFC:** In 1995, the U.S.-based industry association, the American Forest & Paper Association (AF&PA), established a forest management standard and required its members (most of the U.S. forest products industry) to support it. Optional third-party auditing was added in 1998, which became mandatory in 2002, the same year that the AF&PA made the SFI a legally distinct entity with independent rulemaking authority. The SFI has since been endorsed by the global Program for the Endorsement of Forest Certification (PEFC). The PEFC maintains a set of Sustainable Forest Management Benchmarks intended to guide participating national programs, many of which are industry-backed alternatives to the FSC. Unlike the FSC–P&C, the PEFC does not require the SFI and other national-level programs to adopt its benchmarks verbatim. Rather, they are expected to demonstrate the “equivalence” of their standards with PEFC benchmarks.

**“Sustainable” Forestry:** Forest management and the appropriate role of public and private regulation are contested. As in many sectors, “sustainable” forestry has many meanings (McDermott, 2012). For example, some programs use “natural” conditions or functions as a benchmark for sustainability, involving complex choices about what is “natural” and what degree of naturalness is appropriate. In other conceptions, “sustainable” is less associated with naturalistic management and more about long-term efficiency. Such differences manifest in different goals and means to achieve them. A regulation focused on efficiency may require high levels of utilization of trees and tree-parts, whereas naturalistic management may include requirements to leave economically valuable timber behind for animal habitat. Disagreements become concrete in the details of such requirements. Thus, a meaningful assessment of similarities and differences between certification systems requires attention to detail.

**4.1 Scope, prescriptiveness, and policy settings of forest certification programs**

To measure comprehensiveness of scope, we reviewed all FSC, PEFC and SFI standards in effect between 2008 and 2016 to assess their coverage across 48 distinct “key issues” covering a broad scope of forestry requirements, from employee wages and resource utilization to protections for endangered species and indigenous peoples’ rights. These issues were selected in 2008 using an iterative process (see McDermott et al., 2010), disaggregating forest policy to cover all of the major issues raised by the FSC, PEFC, and SFI in their guiding documents (online appendix).

To measure prescriptiveness, we assess the precise wording of the text on each issue.[[6]](#endnote-10) Where both discretionary and non-discretionary options were present, it was evaluated based on the discretionary requirements. Similarly, if firms have discretion among performance levels, only the least demanding levels are prescriptive. For example, if a standard requires managers to “maintain or enhance” water quality, we read it as “maintain”—there is no mandatory requirement to “enhance” water quality because firms have discretion not to do so.

To measure policy settings, we offer detailed issue-by-issue comparisons of performance requirements on most key issues in the text below and all 48 in the online appendix, similar to how previous scholars have descriptively compared the SFI and FSC standards on a select set of issues. Doing so allows us to classify each specific change, the types of issues on which these changes were made, and difference on issues that may be important but not (yet) salient in the public debates.

**4.2 Results**

In this section, we compare each standard to its previous version and to the contemporary version from its competitor. We assess revisions in the FSC- International’s 2012 Revised Principles and Criteria 01-001 Version 5-0 (FSC–P&C), and we compare them to the PEFC’s Sustainable Forest Management Standards (1003:2010). Similarly, we compare the 2010 FSC-U.S. Forest Management Standard Version 1.0 to the FSC-US National Indicators and regional standards it replaced, and we compare these to the 2005-2009, 2010–2014, and 2015-2019 SFI standards. Unless otherwise specified, “FSC-US” and “SFI” refer to the version of each standard in effect in 2016. We do not fully capture subnational variation. The FSC-US standard recognizes nine different sub-national regions, and some have extra indicators, meaning that in some states, FSC standards were more prescriptive than our findings reflect (see online appendix).

**4.2.1 Comparing FSC’s and PEFC’s international requirements**

**Scope and prescriptiveness:** At the international level, the industry-backed PEFC started at a lower level but increased prescriptiveness on more key issues, leading to “upward convergence” with the activist-backed FSC P&C. Overall, we find that FSC maintains more prescriptive requirements in its Principles & Criteria than the PEFC benchmarks but that the PEFC has moved closer to the FSC-P&C in some key areas. These include additional requirements on issues such as indigenous rights, community benefits, and public reporting and consultation (see online appendix for specific language). Yet significant differences remain. The FSC-P&C contain more prescriptive language on most ecological criteria, including protected areas and restrictions on conversion to plantations. Both programs reference the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). On the whole, both programs have more procedural requirements than substantive requirements (i.e. they are more focused on process than outcomes). Despite convergence in the PEFC’s revised requirements, the FSC-P&C remained more prescriptive than PEFC requirements on 17 of the 48 key issues whereas PEFC requirements are more prescriptive on 9 of the key issues, with both programs being equally prescriptive on 19 key issues (see Figure 3).

[FIGURE 3]

**Policy settings:** One particularly controversial issue is the conversion of natural forests to timber plantations. Both systems only allow conversion of natural forest to plantation under “justifiable circumstances,” which each program defines differently. For the FSC this means that conversion has “clear, substantial, additional, secure, long-term conservation benefits.” For the PEFC it means that conversion must have “long-term conservation, economic, and social benefits.” They also differ regarding the extent of forest conversion allowed. The FSC-P&C allow “limited areas” to be converted while the PEFC allows “small proportions of forest types.” In other ways, the PEFC goes beyond the FSC-P&C, requiring that the benefits of conversion must also include economic and social benefits (in addition to long-term conservation benefits). Both standards specify that conversion must not damage culturally or socially significant areas. However, PEFC suggests that forests should be certified only if conversion occurred before 2011, while FSC-P&C require that conversion occurred before 1994.

Both FSC-P&C and PEFC incorporated new language on socio-economic issues, land tenure rights, and stakeholder consultations. Besides explicitly recognizing UNDRIP, both include criteria that require free, prior and informed consent of indigenous peoples and local communities. The previous FSC-P&C made reference to “free and informed consent” with regard to control over forest operations and compensation for use of traditional knowledge. Both standards also recognize legal, traditional, and customary rights. However, the FSC-P&C are more prescriptive, defining the topics that require consultation with indigenous peoples, while the PEFC standards are more procedural, requiring only that engagement takes place. The FSC’s criteria regarding public consultation include special obligations to “affected stakeholders” compared to “interested stakeholders” while PEFC requirements for “local people and other stakeholders” are the same.

Both programs cover similar ecological issues, with a few nuanced differences. Both FSC–P&C and PEFC requirements prohibit the use of GMOs in the area being certified, with some potential flexibility should scientific evidence affirm the safety of GMO trees. FSC–P&C allow documented and monitored use of biological control methods but prohibit a specific list of “Highly Hazardous Chemicals.” The PEFC added prohibitions on pesticides that remain biologically active and highly toxic pesticides where viable alternatives are available. The PEFC explicitly states that chemicals should be avoided where they threaten water quality, while FSC–P&C water protection criteria are less explicit. The FSC–P&C and PEFC requirements are similar on sustainable production of timber and non-timber forest products (NTFPs), but less similar on protecting habitat. While the FSC–P&C require protection of rare and threatened species and their habitats, the PEFC only requires that protected and endangered species not be exploited for commercial purposes and that measures for their protection are taken “where necessary,” without defining these conditions.

**Summary:** Overall, while the PEFC added more requirements with respect to indigenous rights and labor standards and covers a similar scope of issues to the FSC P&C, the FSC-P&C remain more prescriptive on social issues and significantly more prescriptive on ecological issues. The PEFC added new requirements for 8 key issues it previously did not address and became at least as prescriptive as the FSC–P&C on over half of key issues. In absolute terms, the PEFC increased prescriptiveness on 19 key issues and decreased on none, whereas the FSC–P&C increased on 13 and decreased on 4. Compared to the prescriptiveness of the FSC-US and SFI described below, the FSC–P&C and PEFC requirements exhibit more convergence on both scope and prescriptiveness though many differences in policy settings remain (see Figure 3).

**4.2.2 Comparing the FSC-US and SFI**

**Scope and prescriptiveness:** Consistent with the international level, a national-level analysis reveals the activist-backed FSC-US standard as more prescriptive than the industry-backed standard (SFI) on most key issues. Comparing changes made to the FSC-US and SFI standards in 2010, and again to SFI in 2015, reveals an “upward diverging” pattern, where the FSC-US became more prescriptive than did the SFI. Of our 48 key issues, the FSC-US became more prescriptive in 20, whereas SFI became more prescriptive in 8 in 2010, 1 more in 2013, and 3 more in 2015 (See Figure 4). In 2008 the FSC-US was most prescriptive on 36 key issues, and the SFI was most prescriptive on 5. In 2016 the FSC-US was most prescriptive on 37 key issues, and the SFI was most prescriptive on the same 5, with both standards being equally prescriptive on 5 issues (the top pane of Figure 4).

While fairly stable, there have been some changes in each program’s scope. Both programs added requirements on greenhouse gasses in 2010. SFI allows for the conversion of natural forests to plantations if ecological impacts are not significant and the converted forest type is not rare, but in 2015, SFI added a prescriptive requirement to conduct an assessment of these impacts. Yet, the FSC-US maintains more prescriptive requirements, only allowing certification of plantation forests if they were converted from natural forest prior to 1994, and it requires a portion of these plantations to be maintained as, or restored to, natural conditions.

[FIGURE 4]

Both the FSC-US and SFI standards have generally become more prescriptive, although to different degrees and in different areas. The SFI’s changes in 2010 emphasized issues related to industry capacity (e.g. worker training requirements) and reputation (e.g. managing the aesthetics of harvesting, communicating with stakeholders about logging, and public education about forestry), while changes made the same year by the FSC-US emphasized conservation-oriented forestry while removing a training requirement. For example, in 2010, the SFI added new requirements to collect data on “Forests of Exceptional Conservation Value” (FECV), which we compare to the FSC’s requirements for “High Conservation Value Forests” (HCVF). Also, in 2010, the FSC-US added language regarding monitoring and adaptive management of HCVFs. While the acronyms and even the additional language appear similar, the FSC-US added a number of more prescriptive requirements requiring certain areas to be designated HCVFs and specific types of accountability in HCFV management. SFI allows more flexibility in FECV management. HCVFs under the FSC-US require significantly more than baseline practices (Newsom et al., 2006), while SFI’s FECV requirements have been criticized as not significantly exceeding legal baselines which already protect threatened and endangered species. In these different contexts, a requirement for monitoring or collecting data can have significantly different implications for what is actually required of forest managers. This dynamic exemplifies the overall dynamic of “upward divergence,” with the FSC-US maintaining significantly more prescriptive requirements.

**Policy Settings:** Enduring differences between the SFI and the FSC-US can be illustrated by issues such as harvest area and clearcuts size and harvesting near streams where, unlike most issues, policy settings are sufficiently analogous to allow comparison. SFI limits clearcuts for all forest types to an average of 120 acres with no maximum and has no average limit for harvesting with 20 percent tree retention (i.e. nonclearcuts). In contrast, the FSC-US requires that cutting resemble natural disturbance and limits clearcuts to a 40-acre average and 80-acre maximum, with additional restrictions based on region and forest type, and has a 100-acre average limit with 20 percent tree retention. For harvesting near streams, the FSC-US lists specific requirements for water quality, habitat, and other objectives with a focus on restoration. Additionally, two-thirds of FSC-US regions have numerical minimum riparian buffer zones. In 2015, SFI expanded its definitions of riparian areas but continues to allow more discretion regarding what is included in plans to protect water resources. SFI provides no numerical minimums beyond those in state laws and best management practices.

Divergence occurred mostly in ecological requirements like protecting habitat, where the FSC-US became more prescriptive while the SFI stayed constant or, in the case of protecting Old-growth forests, decreased in prescriptiveness. Regarding protected areas, the FSC-US continues to require that representative samples of habitats be protected, but, since 2010, also requires an assessment of the adequacy of permanent protections. SFI’s requirements for protected areas continue to be largely encompassed by its requirements to protect imperiled species. SFI continues to require plans to identify and protect moderately to highly valuable known populations of imperiled or critically imperiled species (designations G1-G2). In contrast, the FSC-US expanded the scope of species requiring protection in 2010 to include natural heritage species and candidate species (designations G1-G3, S1-S3, N1-N3). The FSC-US added requirements to conduct surveys for any at-risk species potentially present or presume that listed or candidate species are present if the forest is in a species’ range. For old-growth forests, in 2010, the FSC-US added prescriptive requirements to restore a portion of old-growth forests where they would naturally occur, and it continues to demand protection measures that prohibit harvesting in most cases. In 2010, SFI removed a requirement to maintain sufficient old-growth acreage to maintain biodiversity, but in 2015 added a requirement to participate in conservation planning.

**Summary:** Overall, we find that each standard continues to have a different overarching focus reflected in the distinct areas in which each standard is most prescriptive. The FSC’s requirements tend to demand that forest operations “resemble natural processes” and “maintain ecosystem function,” reflecting the interests of the environmental groups that founded the FSC. This language appears more frequently and forcefully in the 2010 standard concerning issues including clearcutting, riparian management, HCVFs, protected areas, old-growth forests, snags and downed wood, residual trees, genetic diversity, plantations, restoration, natural disturbance, non-timber forest products, soil protection, road building, and management planning.

In contrast, the SFI is most prescriptive on issues such as material utilization, research, training, education, and public reporting and consultation.[[7]](#endnote-11) The eight key issues on which the SFI increased prescriptiveness in 2010 reflect the SFI’s focus on industry capacity and reputation. These included aesthetics, public reporting, education, training, and utilization. One possible explanation for SFI’s leadership on these issues is that they most directly affect the capacity and reputation of the forestry industry. For example, while the FSC-US increasingly restricts the size and shape of clearcuts to reflect natural disturbance and maintain ecological functions regardless of how it looks, the SFI puts more emphasis on rapid site “green-up.” Green-up implies active planting to get tree crops growing quickly and to “manage the visual impact” of clearcuts, i.e. potentially reputation-threatening visuals.

The 2015 changes to the SFI standard reflect a different tack. In contrast to the previous focus on industry capacity and reputation, the three issues on which the SFI increased prescriptiveness in 2015 reflect more social and ecological goals. These include prohibiting the use of certain toxic chemicals, restricting the circumstances under which natural forest can be converted to plantation, and requiring a written policy to recognize and respect indigenous rights. The SFI also added language clarifying and expanding the definitions of wetlands and riparian areas and requiring participation in conservation planning initiatives. We now discuss the implications of this turn and our other findings for theories of change in scholarship on private governance.

**5 Discussion**

**5.1 Overall comparison**

Our framework improves upon extant blunt claims of “high” or “low” stringency, by disaggregating policy substance to allow more nuanced empirical results. These issue-specific results can then be aggregated to make more general observations: First, on both scope and prescriptiveness dimensions, in 2016 the FSC-US standard was clearly more stringent than the SFI standard on ecological goals. On social goals, results are more mixed. On scope, the FSC-US standard protects land tenure and requires that local communities benefit from harvesting in ways that are unmatched by SFI’s standard, but the SFI requires contributions for forestry research, which the FSC does not. Numerically, one could say that FSC-US had a slightly broader scope of social benefits (depending on what issues one considers “social”), but the programs do present tradeoffs between conceptions of the public good. On prescriptiveness, the contrast is again clearer, with the FSC-US standard having significantly more prescriptive requirements on most social issues. On policy settings, the two standards have significant differences. Regarding labor standards and indigenous rights, the FSC-US standard requires higher wages and had more requirements on rights than the SFI standard does. In short, by common definitions of what counts as a social issue, by most qualitative comparisons, and certainly in terms of prescriptiveness, the FSC-US standard is more stringent than the SFI standard on social issues. On more business-oriented goals such as those promoting efficiency (e.g. levels of cut tree utilization), industry capacity (e.g. workforce training and research), and industry reputation (e.g. education and aesthetics), the conclusions are largely reversed. SFI is slightly broader in scope, requiring contributions to research where FSC does not, is more prescriptive, and requires increasingly difficult to achieve performance levels.

**5.2 Patterns of change**

The dominant patterns were equilibrium and upward divergence. In most years, neither program changed on any issue (the center cell in Figure 1, “equilibrium”). Most changes for both programs occurred in 2010 where the overall pattern was divergence (also called differentiation), rather than convergence or stability. The vast majority of changes (twenty-one of twenty-seven issues changed) fit a pattern where one program increased prescriptiveness while the other did not (or in one case, did so to a lesser degree) and the program increasing stringency *already had the more prescriptive requirements.* On eighteen issues, the other program stayed the same, leading to upward divergence. On three issues, the less prescriptive program decreased prescriptiveness, leading to opposing divergence (see Table 4). For all sixteen issues on which only the FSC-US added requirements, it already had the more prescriptive requirements, and almost all of these additions address ecological problems. Similarly, for three out of the four issues on which only the SFI added requirements, the SFI already had the more prescriptive requirements. Qualitatively, these three issues—maximizing the utilization of cut trees, public education, and worker training—reflect concerns for the efficiency, reputation, and capacity of the forest products industry. Educating the public about forestry practices and products and training workers are not privately excludable investments. Because of the wide adoption of SFI standards, such requirements may provide collective benefits for the sector, in the form of a positive public image and skilled workforce.

[Figure 1]

Convergence and parallel change were uncommon patterns. Upward parallel change occurred on only three issues in 2010: forest management planning, controlling carbon emissions, and reporting and consultation, where both programs added requirements. We classify the addition of protections for riparian zones by both SFI and FSC-US as another case of upward divergence rather than upward parallel change because the requirements for riparian protection added by the FSC-US are more prescriptive. Upward convergence only occurred where FSC-US added requirements on the issue of “continual improvement” of harvesting operations, an issue usually associated more with the SFI. This is interesting because scholars often assume that private regulations that are less stringent overall will converge toward “benchmark” standards like FSC’s (Overdevest 2005, 2010). Instead, in 2010, we find FSC ratcheting up on an issue where its competitor had more stringent requirements. Indeed, most studies overlook the fact that industry-backed standards like the SFI are more stringent on some issues. We see downward convergence only on Community Benefits and Tenure Rights where the more prescriptive FSC-US removed requirements, thus moving closer to SFI. No issues exhibited downward parallel or downward diverging trajectories.

Since the major revisions of both programs in 2010, only SFI has updated its national-level requirements, mostly in 2015. In contrast to the 2010 changes, the pattern in 2015 is upward *convergence*. SFI increased prescriptiveness on three issues where it did *not* already have the most prescriptive requirements. While a smaller scale of change than 2010, this upward convergence is notable because it focuses on regulating Toxic Chemicals, Plantations, and harvesting on Tribal Lands, which may have collective economic costs rather than benefits for the industry.

Overall, the dominant pattern of change is upward divergence on prescriptiveness and no change on scope. Qualitatively, the upward diverging pattern results from the activist-backed FSC increasing prescriptiveness on ecological protection and the industry-backed SFI on issues that provide collective benefits to the sector. These results in hand, we can compare them to the hypotheses presented in section 2.3.

**5.3 Implications for theory testing**

Applying our framework to the case of forestry certification reveals how one could reach different conclusions by looking at different dimensions of change. If focusing only on program scope, one would find little support for any theory predicting change—either convergence or divergence. If focusing only on prescriptiveness on ecological issues, one would find divergence, with the activist-backed FSC-US becoming more prescriptive at a faster rate than the industry-backed SFI. But if focusing only on prescriptiveness of issues of industry capacity and reputation, one would find the opposite, with the SFI becoming more prescriptive at a faster rate than the FSC-US.

Anticipating such possibilities (indeed the literature is rife with such seemingly contradictory results), in section 2.3 we restated several leading hypotheses in ways that distinguish scope and prescriptiveness (Example Hypotheses 1.1 and 1.2) and distinguish issues with different qualitative substance (e.g. activist-driven and industry-driven issues—Example Hypotheses 2.1 and 2.2). While fully testing any causal explanations of policy change is beyond the scope of this paper (our focus is measuring the dependent variable), we can reflect on whether our measurements are consistent with these restated hypotheses.

Assuming that changes in scope are less costly than changes in prescriptiveness, our findings are somewhat consistent with Example Hypothesis 1.1. Across social, ecological, and business issues, the industry-driven standard and competing activist-driven standard very slightly converged on scope and, overall, clearly did not converge on prescriptiveness. If “talk is cheap” but prescriptive requirements are costly, it is intuitive that an industry-driven program would add language similar to that of an activist-driven standard, without fully adopting costly mandatory performance thresholds. We found such a pattern on many issues. Thus, scholars aiming to test theories rooted in the cost of compliance must distinguish measurements of their dependent variable based on the dimensions of scope or prescriptiveness.

Overall our findings are also somewhat consistent with Hypothesis 1.2, again more clearly with respect to prescriptiveness than scope. We observe overall divergence on prescriptiveness, most clearly on ecological issues. As neither program changed significantly on overall scope, we do not observe whether changes in scope are more likely to be matched by competing programs. Both programs did add requirements regulating carbon emissions in 2010, but it is unclear if this change in scope is one program reacting to the other, or both programs reacting to a third causal factor.

Our findings offer the clearest support for hypotheses 2.1 and 2.2. The activist-backed FSC-US has a slightly more comprehensive scope and much more prescriptive requirements on activist-driven issues, while the industry-backed SFI standard has more comprehensive scopes and more prescriptive requirements on issues more related to industry collective action problems. Additional research should further test these and other hypotheses, using similarly precise and comprehensive measures of regulatory stringency.

**5.4 Industry-backed certification programs as a form of collective action.**

Industry-backed alternatives to activist-backed product certification programs serve the industry in two ways. First, they provide individual firms with a service—market signals of social responsibility that require a credible third party but would be more expensive to send by complying with an activist-back program. Second, they provide a mechanism for the industry to improve its collective reputation and capacity by requiring contributions to collective goods, a common function of industry associations. Change in industry-backed standards on activist-driven issues depends on competition among standards, but on industry-driven issues, it does not. Indeed, firms often collaborate on the latter type of issues (e.g. industry standards, reputation, and capacity) through trade associations without pressure from activists.

As Cashore et al. (2004) point out, industry-backed alternatives aim to save firms money by offering a label that sends a “green” or “socially responsible” signal in the market without some of the more costly demands of activist-backed programs. Labels like SFI are not necessarily meaningless or pure “green washing”—indeed a certain level of stringency is often required to maintain legitimacy—but exceeding this “floor” imposes costs on firms. On may issues, industry-backed programs may succeed in creating the necessary impression of equivalence to the stringency of activist-backed standards with substantially less prescriptive requirements. For example, the SFI requirements for “Forests of Exceptional Conservation Value” (FECV) are much less prescriptive than the FSC-US requirements for “High Conservation Value Forests” (HCVF), despite the similar name. By supporting alternative programs, firms collectively create institutions that help them maximize the impression of stringency while minimizing costs of doing so. This dynamic describes most key issues in our study.

By disaggregating requirements, we identify several areas in which the SFI was more prescriptive than the FSC-US and further increased prescriptiveness. This seems to contradict all prior theories about competition among industry-backed and activist-backed standards. However, the substance of these issues suggests that this may be driven by collective action problems—like building a skilled workforce and positive sector-level reputation—that are unrelated to competition with the FSC. This finding supports hypothesis 2.2. Many of the issues where the SFI meets or exceeds the FSC-US requirements have collective benefits for the industry. These include managing harvest-area aesthetics, public education, worker training, and contributing to forestry research. Requiring firms to educate the public about timber harvesting may help the firm gain local public support, but it also helps the industry improve the public’s broader image of the industry, a collective good that may protect the sector from regulation. Similarly, requiring contributions to forestry research advances useful knowledge, another collective good. Worker training programs also have dual benefits to individual firms and collectively to the sector by building a well-trained workforce.

In sum, where the SFI has more prescriptive requirements than the FSC, it requires things that most firms might do anyway (e.g. train workers or educate the public), but have added collective benefits the more widely they are adopted. While unforeseen by existing theories, the fact that the SFI is more prescriptive on some issues is not surprising when we understand these issues as fundamentally industry-driven and providing net benefits to firms regardless of activist pressures or consumer demands.

**6 Conclusion**

Scholars have made substantial progress in developing theories of how economic and political forces shape the substance of private regulations, and how these different requirements then affect levels of adoption and compliance. We have argued that testing these theories requires more precise statements of the types of policy substance to which they apply, as well as empirical work that measures change across programs and over time. Our framework for measuring policy substance, and for using longitudinal data to classify patterns of change, offers a foundation for further research about how competing private regulations compare, how they evolve over time, and why. There is no perfect way to compare incommensurate policies. We have nonetheless made our best effort to offer a method to do so. By applying this method, we have quantified differences that can be quantified and described as richly as possible those comparisons that can only be made qualitatively.

Through the case of forestry standards in the U.S., we show what can be gained by careful measurement of policy change across a comprehensive scope of issues in a specific domain. Our results show different patterns depending on whether one looks at policy scope, prescriptiveness or specific policy settings. Careful measurement uncovered patterns that previous scholarship has missed and which contradict the predictions of several dominant theories. It also reveals that apparent empirical debates in the literature can be attributed to research design choices. Some scholars chose a few key issues and found convergence. Others looked broadly and did not find it. We have looked both precisely and broadly and found both conclusions are correct. Activist-backed and industry-backed programs converged in policy scope on a few issues, but broadly speaking their scopes have seen little change. Furthermore, we found these programs to have diverged overall on prescriptiveness, because, while both standards “ratcheted up,” they did so at different rates and on different policy issues. Our hope is that this deep dive into defining policy change in one domain not only enables scholarship on the causes of public and private regulation in forestry but that it also offers a model for similar research in other policy domains.

This approach also has practical value. First, the power dynamics among groups that promote programs like the FSC or the SFI have created an environment in which competing claims about policy substance and how it has changed confuse buyers. Because the politics of private regulation involve contested legitimacy, they “create demands by the respective ‘legitimacy communities’ for more ‘objective’ public comparisons that would resolve the debate about whose standards were higher” (Overdevest, 2010). We offer concepts to clarify what “higher” standards may mean. Second, it is simply impossible to measure the impact of a set of regulatory requirements without disentangling the component parts.

Most importantly, our framework and analysis offer a model for careful measurement of policy change as a variable. It is tempting to take shortcuts by making broad generalizations or by selecting what is easy to measure or what others have highlighted. However, if private governance scholars are to advance empirical evidence that can be used to test general theories, or develop empirically testable theories, our study highlights the benefits of defining and measuring policy change. Doing so will not only improve the quality of empirical research and theory, it may also uncover entirely new puzzles and insights.

**References**

Abbott, K. W., & Snidal, D. (2009). The Governance Triangle: Regulatory Standards Institutions and The Shadow of the State. In W. Mattli & N. Woods (Eds.), *The Politics of Global Regulation*. Princeton, N.J.: Princeton University Press.

Abbott, K. W., & Snidal, D. (2010). International regulation without international government: Improving IO performance through orchestration. *The Review of International Organizations*, *5*(3), 315–344. https://doi.org/10.1007/s11558-010-9092-3

Abderrazak, C., & Youssef, A. Ben. (2009). Multiplicity of eco-labels, competition, and the environment. *Journal of Agricultural and Food Industrial Organization*, *7*(2), 1–22. https://doi.org/10.2202/1542-0485.1271>

Atkinson, L., & Rosenthal, S. (2014). Signaling the Green Sell: The Influence of Eco-Label Source, Argument Specificity, and Product Involvement on Consumer Trust. *Journal of Advertising*, *43*(1), 33–45. https://doi.org/10.1080/00913367.2013.834803

Auld, G. (2014). *Constructing Private Governance: The Rise and Evolution of Forest, Coffee, and Fisheries Certification*. New Haven, CT: Yale University Press.

Baron, D. P., & Lyon, T. P. (2011). *Environmental Governance*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199584451.003.0007

Bartley, T. (2003). Certifying Forests and Factories: States, Social Movements, and the Rise of Private Regulation in the Apparel and Forest Products Fields. *Politics & Society*, *31*(3), 433–464. https://doi.org/10.1177/0032329203254863

Bartley, T. (2007). Institutional Emergence in an Era of Globalization: The Rise of Transnational Private Regulation of Labor and Environmental Conditions. *American Journal of Sociology*, *113*(2), 297–351. https://doi.org/10.1086/518871

Baumgartner, F. R., & Jones, B. D. (2002). Policy Dynamics. Chicago: University of Chicago Press.

Berger, S., & Dore, R. (1996). *National diversity and global capitalism*. Cornell University Press.

Bernstein, S., & Cashore, B. (2007). Can non-state global governance be legitimate? An analytical framework. *Regulation and Governance*, *1*(August), 347–371. https://doi.org/10.1111/j.1748-5991.2007.00021.x

Bodansky, D. (1999). The Legitimacy of International Governance: A Coming Challenge for International Environmental Law? *The American Journal of International Law*, *93*(3), 596. https://doi.org/10.2307/2555262

Botzem, S., & Dobusch, L. (2012). Standardization Cycles: A Process Perspective on the Formation and Diffusion of Transnational Standards. *Organization Studies*, *33*(5–6), 737–762. https://doi.org/10.1177/0170840612443626

Bozzi, L., Cashore, B., Levin, K., & McDermott, C. (2012). The Role of Private Voluntary Climate Programs Affecting Forests: Assessing their Direct and Intersecting Effects. In K. Ronit (Ed.), *Business and Climate Policy: The Potentials and Pitfalls of Private Voluntary Programs*. United Nations University Press.

Bradshaw Schulz, K. (2012). New Governance and Industry Culture. *Notre Dame Law Review*, *88*.

Cashore, B. (1997). *Governing Forestry: Environmental Group Influence in British Columbia and the US Pacific Northwest*. University of Toronto.

Cashore, B. (2002). Legitimacy and the Privatization of Environmental Governance: How Non-State Market-Driven (NSMD) Governance Systems Gain Rule-Making Authority. *Governance*, *15*(4), 503–529. https://doi.org/10.1111/1468-0491.00199

Cashore, B., Auld, G., & Newsom, D. (2004). *Governing Through Markets: Forest Certification and the Emergence of Non-state Authority*. Yale University Press.

Cashore, B., & Howlett, M. (2007). Punctuating Which Equilibrium? Understanding Thermostatic Policy Dynamics In Pacific Northwest Forestry. *American Journal of Political Science*, *51*(3), 532–551.

Cashore, B., & Stone, M. W. (2014). Does California need Delaware? Explaining Indonesian, Chinese, and United States support for legality compliance of internationally traded products. *Regulation & Governance*, *8*(1), 49–73. https://doi.org/10.1111/rego.12053

Darnall, N., Potoski, M., & Prakash, A. (2010). Sponsorship Matters: Assessing Business Participation in Government- and Industry-Sponsored Voluntary Environmental Programs. *Journal of Public Administration Research and Theory*, *20*(2), 283–307. https://doi.org/10.1093/jopart/mup014

DeLeon, P., & Rivera, J. E. (2009). *Voluntary Environmental Programs : a Policy Perspective.* Lanham: Lexington Books.

Delmas, M., & Montiel, I. (2008). The Diffusion of Voluntary International Management Standards: Responsible Care, ISO 9000, and ISO 14001 in the Chemical Industry. *Policy Studies Journal*, *36*(1), 65–93. https://doi.org/10.1111/j.1541-0072.2007.00254.x

Dingwerth, K., & Pattberg, P. (2009). World Politics and Organizational Fields: The Case of Transnational Sustainability Governance. *European Journal of International Relations*, *15*(4), 707–743. https://doi.org/10.1177/1354066109345056

Djelic, M.-L., & Etchanchu, H. (2017). Contextualizing Corporate Political Responsibilities: Neoliberal CSR in Historical Perspective. *Journal of Business Ethics*, *142*(4), 641–661. https://doi.org/10.1007/s10551-015-2879-7

Djelic, M.-L., & Quack, S. (2012). Transnational governance through standard setting. In G. Morgan & R. Whitley (Eds.), *Capitalisms and Capitalism in the Twenty-First Century* (pp. 166–189). Oxford University Press.

Domask, J. (2003). From Boycotts to Global Partnerships: NGO’s, the Private Sector and the Struggle to Protect the World’s Forests. In J. Doh & H. Teegen (Eds.), *Globalization and NGOs: Transforming Business, Government, and Society*. Westport, CT: Praeger Press.

Eberlein, B., Abbott, K. W., Black, J., Meidinger, E., & Wood, S. (2014). Transnational business governance interactions: Conceptualization and framework for analysis. *Regulation & Governance*, *8*(1), 1–21. https://doi.org/10.1111/rego.12030

Fernholz, K., Howe, J., Bratkovich, S., & Bowyer, J. (2010). *Forest Certification: A Status Report*.

Fischer, C., & Lyon, T. P. (2014). Competing Environmental Labels. *Journal of Economics & Management Strategy*, *23*(3), 692–716. https://doi.org/10.1111/jems.12061

Fischer, C., Lyon, T. P., & Ross, S. M. (2018). A Theory of Multi-Tier Ecolabel Competition. *Journal of the Association of Environmental and Resource Economists*, *forthcoming*.

Fransen, L. (2011). Why Do Private Governance Organizations Not Converge? A Political-Institutional Analysis of Transnational Labor Standards Regulation. *Governance*, *24*(2), 359–387. https://doi.org/10.1111/j.1468-0491.2011.01519.x

Grabosky, P. (2013). Beyond *Responsive Regulation* : The expanding role of non-state actors in the regulatory process. *Regulation & Governance*, *7*(1), 114–123. https://doi.org/10.1111/j.1748-5991.2012.01147.x

Green-Pedersen, C. (2007). The Dependent Variable Problem within the Study of Welfare State Retrenchment: Defining the Problem and Looking for Solutions. https://doi.org/10.1080/1387698042000222763

Green, J. F. (2013). *Rethinking private authority: Agents and entrepreneurs in global environmental governance*. Princeton, NJ: Princeton University Press.

Green, J. F., & Auld, G. (2017). Unbundling the Regime Complex: The Effects of Private Authority. *Transnational Environmental Law*, *6*(2), 259–284. https://doi.org/10.1017/S2047102516000121

Gulbrandsen, L. H. (2004). Overlapping Public and Private Governance: Can Forest Certification Fill the Gaps in the Global Forest Regime? *Global Environmental Politics*, *4*(2), 75–99. https://doi.org/10.1162/152638004323074200

Gulbrandsen, L. H. (2014). Dynamic governance interactions: Evolutionary effects of state responses to non-state certification programs. *Regulation & Governance*, *8*(1), 74–92. https://doi.org/10.1111/rego.12005

Hall, P. A. (1993). Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain. *Comparative Politics*, *25*(3), 275. https://doi.org/10.2307/422246

Hassel, A. (2008). The Evolution of a Global Labor Governance Regime. *Governance*, *21*(2), 231–251. https://doi.org/10.1111/j.1468-0491.2008.00397.x

Heyes, A., & Martin, S. (2017). Social Labeling by Competing NGOs: A Model with Multiple Issues and Entry. *Management Science*, *63*(6), 1800–1813. https://doi.org/10.1287/mnsc.2015.2419

Howard-Grenville, J. (2006). Inside the “Black Box”: How Organizational Culture and Subcultures Inform Interpretations and Actions on Environmental Issues. *Organization & Environment*, *19*(1), 46–73. https://doi.org/10.1177/1086026605285739

Howard-Grenville, J., Nash, J., & Coglianese, C. (2008). Constructing the License to Operate: Internal Factors and Their Influence on Corporate Environmental Decisions. *Law & Policy*, *30*(1), 73–107. https://doi.org/10.1111/j.1467-9930.2008.00270.x

Howlett, M., & Cashore, B. (2014). Conceptualizing Public Policy. *Comparative Policy Studies : Conceptual and Methodological Challenges*, 17–33. https://doi.org/10.1057/9781137314154.0006

Hudson, I., & Hudson, M. (2003). Removing the Veil?: Commodity Fetishism, Fair Trade, and the Environment. *Organization & Environment*, *16*(4), 413–430. https://doi.org/10.1177/1086026603258926

Judge-Lord, D. (2013). Mechanisms of Policy Feedback: Interactions among Regulations and Public Investments in US Farm and Forest Politics. Masters Thesis: Yale School of Forestry and Environmental Studies

Kollman, K., & Prakash, A. (2001). Green by Choice? Cross-National Variations in Firms’ Responses to EMS-Based Environmental Regimes. *World Politics*, *53*, 399–430.

LeBaron, G. and B. Burgoon (2018). "Explaining Patterns of Labor Protection and Exploitation in the Global Tea Supply Chain: Evidence from India." SPERI-PETGOV workshop paper.

Li, Y., & van ’t Veld, K. (2015). Green, greener, greenest: Eco-label gradation and competition. *Journal of Environmental Economics and Management*, *72*(C), 164–176. https://doi.org/10.1016/j.jeem.2015.05.003

Loconto, A., & Fouilleux, E. (2014). Politics of private regulation: ISEAL and the shaping of transnational sustainability governance. *Regulation & Governance*, *8*(2), 166–185. https://doi.org/10.1111/rego.12028

Lyon, T. P., & Maxwell, J. W. (2008). Corporate Social Responsibility and the Environment: A Theoretical Perspective. *Review of Environmental Economics and Policy*, *2*(2), 240–260. https://doi.org/10.1093/reep/ren004

Maxwell, J. W., Lyon, T. P., & Hackett, S. C. (2000). Self‐Regulation and Social Welfare: The Political Economy of Corporate Environmentalism. *The Journal of Law and Economics*, *43*(2), 583–618. https://doi.org/10.1086/467466

McDermott, C. (2012). Trust, Legitimacy and Power in Forest Certification: A case study of the FSC in British Columbia. *Geoforum*, *43*, 643–644. https://doi.org/10.1016/j.geoforum.2011.11.002

McDermott, C., Cashore, B., & Kanowski, P. (2010). *Global Environmental Forest Policies: An International Comparison*. London: Earthscan.

McDermott, C., Noah, E., & Cashore, B. (2008). Differences That “Matter”? Identifying Analytical Challenges in the Comparison of Forest Certification Standards. *Journal of Environmental Policy and Planning*, *10*(1), 47–70.

Meidinger, E. (2003). Forest Certification as Environmental Law Making by Global Civil Society. In E. Meidinger, C. Elliot, & O. G (Eds.), *Social and Political Dimensions of Forest Certification* (pp. 293–329). Forstbuch: Remegen-Oberwinter.

Meidinger, E. (2006). The Administrative Law of Global Private-Public Regulation: the Case of Forestry. *The European Journal of International Law*, *17*(1), 47–87. https://doi.org/10.1093/ejil/chi168

Mills, R. W. (2016). The interaction of private and public regulatory governance: The case of association-led voluntary aviation safety programs. *Policy and Society*, *35*(1), 43–55. https://doi.org/10.1016/j.polsoc.2015.12.002

Newsom, D., Bahn, V., Cashore, B., Newsom, D., Bahn, V., & Cashore, B. (2006). Does Forest Certification Matter? An Analysis of Operation-level changes required during the SmartWood Certification Process in the United States. *Forest Policy and Economics*, *9*(3), 197–208.

Overdevest, C. (2005). Treadmill Politics, Information Politics, and Public Policy. *Organization & Environment*, *18*(1), 72–90. https://doi.org/10.1177/1086026604270460

Overdevest, C. (2010). Comparing forest certification schemes: the case of ratcheting standards in the forest sector. *Socio-Economic Review*, *8*(1), 47–76. https://doi.org/10.1093/ser/mwp028

Overdevest, C., & Zeitlin, J. (2014). Assembling an experimentalist regime: Transnational governance interactions in the forest sector. *Regulation & Governance*, *8*(1), 22–48. https://doi.org/10.1111/j.1748-5991.2012.01133.x

Pierson, P. (2001). Coping With Permanent Austerity Welfare State Restructuring in Affluent Democracies. In *The New Politics of the Welfare State* (pp. 410–456). https://doi.org/10.1093/0198297564.003.0014

Poret, S. (2016). *Label Battles: Competition among NGOs as Standard Setters* (ALISS No. 2016–01).

Prado, A. M. (2013). Competition Among Self-Regulatory Institutions. *Business & Society*, *52*(4), 686–707. https://doi.org/10.1177/0007650313493990

Prakash, A. (2000). *Greening of the Firm: The Politics of Corporate Environmentalism*. Cambridge: Cambridge University Press.

Prakash, A., & Potoski, M. (2007). Collective Action through Voluntary Environmental Programs: A Club Theory Perspective. *Policy Studies Journal*, *35*(4), 773–792. https://doi.org/10.1111/j.1541-0072.2007.00247.x

Rodrik, D., Subramanian, A., & Trebbi, F. (2002). *Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development*. Cambridge, MA. https://doi.org/10.3386/w9305

Smith, T. M., & Fischlein, M. (2010). Rival private governance networks: Competing to define the rules of sustainability performance. *Global Environmental Change*, *20*(3), 511–522. https://doi.org/10.1016/J.GLOENVCHA.2010.03.006

Spinazze, M. C., & Kant, S. (1999). Market Potential for Certified Forest (Wood) Products in Ontario, Canada. *The Forestry Chronicle*, *75*(1), 39–48. https://doi.org/10.5558/tfc75039-1

Tigar, J. S. Resolute Forest Products, Inc. et al. v. Greenpeace International et al. (2017).

van der Ven, H. (2015). Correlates of rigorous and credible transnational governance: A cross-sectoral analysis of best practice compliance in eco-labeling. *Regulation & Governance*, *9*(3), 276–293. https://doi.org/10.1111/rego.12092

Vince, J., & Haward, M. (2017). Hybrid governance of aquaculture: Opportunities and challenges. *Journal of Environmental Management*, *201*, 138–144. https://doi.org/10.1016/j.jenvman.2017.06.039

Vogel, D. (1995). *Trading up : consumer and environmental regulation in a global economy*. Cambridge, MA: Harvard University Press.

Vogel, D. (2008). Private Global Business Regulation. *Annual Review of Political Science*, *11*, 261–282. https://doi.org/10.1146/annurev.polisci.11.053106.141706

Weimer, D. L. (2006). The Puzzle of Private Rulemaking: Expertise, Flexibility, and Blame Avoidance in U.S. Regulation. *Public Administration Review*, *66*(4), 569–582. https://doi.org/10.1111/j.1540-6210.2006.00617.x

Weimer, D. L., & Vining, A. R. (2005). *Policy Analysis: Concepts and Practice* (Vol. 9). https://doi.org/10.2307/3325122

**Notes**

1. In theory, measuring prescriptiveness, absent issue-specific qualitative comparisons risks over-emphasizing policy means at the expense of policy ends. For example, a mandatory two-inch harvest buffer along streams would be prescriptive but meaningless. Fortunately, such differences do not appear common in practice. Indeed, competition makes emerging standards mimic substance, even where they vary significantly on prescriptiveness. [↑](#endnote-ref-4)
2. As noted, it is often impossible to aggregate incommensurable policy settings. In this case, one would assess which of the nine possible patterns of change describe policy settings on each issue. [↑](#endnote-ref-6)
3. This paper represents the synthesis of scholarly expertise in forestry and political science. The research process also included significant engagement with the standard-writers themselves to accurately characterize nuanced difference between standards and changes over time. [↑](#endnote-ref-7)
4. FSC and SFI apply to all forestry operations and are thus more closely related to each other than to the American Tree Farm System (ATFS) which is also endorsed by PEFC but focuses on small-scale producers. [↑](#endnote-ref-8)
5. FSC-US initially had nine regional working groups, which each produced regional indicators. These sub-national documents have since been merged into a single national standard, retaining a smaller number of region-specific indicators. Substantive differences between regions in the FSC-US standards complicated national analysis. In such cases, we coded based on the text that bound at least a majority of regions. [↑](#endnote-ref-9)
6. One limitation of this study is that we focus on written forest management requirements, only part of the complex casual chain from institutional emergence, market uptake, auditing practices, compliance and “on the ground” behavior. Just as with public policy, some written rules may take on more importance than others. Legal traditions of all kinds include obligations and understandings independent of the text of the law. Yet managers and auditors use these documents to make decisions and understanding them is a necessary first step. Another limitation is that we do not address public policies even though both programs require adherence to domestic law. In some cases, U.S. law is important for interpreting our results. For example, while the SFI does not have buffer zone standards, states like Oregon, California, and Washington have highly prescriptive laws on buffer zones to which any SFI or FSC certified operation operating in these states may be audited for compliance. [↑](#endnote-ref-10)
7. Note that this analysis combines public disclosure and reporting requirements with consultation requirements under a key issue called “public reporting and consultation.” Public information is a first and necessary step for meaningful consultation of all forms, including informal and legal processes beyond certification processes. SFI added requirements for public audit summaries and annual reporting in 2010. [↑](#endnote-ref-11)