# Discussion

## Overall comparison

By distinguishing different types of stringency on a comprehensive set of issues, our framework improves upon blunt measures of “high” or “low” based on generalizations or on only a few issues.

Overall our results are consistent with the expectation that activist based programs have higher levels of more costly types of stringency**.** On ecological goals, the FSC-US standard was significantly more stringent than the SFI standard on both scope and prescriptiveness dimensions. 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 were unmatched by SFI’s standard. Numerically, FSC-US had a broader scope of social benefits, but the programs do present tradeoffs between conceptions of the public good. On prescriptiveness, the contrast is more stark, with the FSC-US standard having significantly more prescriptive requirements on most social issues. On policy settings, the two programs have significant differences. On labor standards and indigenous rights, the FSC-US required higher wages and more attention to rights than the SFI did. In short, by conventional 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 efficiency (e.g. levels of cut tree utilization), industry capacity (e.g. workforce training and research), and industry reputation (e.g., public 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 demanding performance levels on many business-friendly issues.

## Patterns of change

In most years between 2008 and 2016, neither program changed on any issue (the center cell in Table \ref{patterns}, “equilibrium”).

Where they did change, upwardly diverging prescriptiveness was the dominant pattern. Most changes for both programs occurred in 2010 where the overall pattern was divergence (also called differentiation), rather than convergence or stability. 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 more prescriptive requirements.

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, increased to a lesser degree) and the program that increased stringency already had the more prescriptive requirements. On eighteen issues, the less prescriptive program stayed the same, leading to upward divergence. On three issues, the less prescriptive program decreased prescriptiveness, leading to opposing divergence (see Table \ref{patterns-2010-2015}).

\input{tables/patterns-2010-2015}

Convergence was rare. In 2010, 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 outcome is interesting because scholars generally predict that less stringent private regulations will converge toward “benchmark” standards like FSC’s [@Overdevest2005; @Overdevest2010]. Instead, we find the FSC-US ratcheting up prescriptiveness on an issue where its industry-backed competitor had more stringent requirements. Indeed, most studies overlook the possibility that industry-backed standards like the SFI may be more stringent on some issues and thus fail to theorize about dynamics that could cause this. We see downward convergence only on the issues of "community benefits" and "tenure rights," where the more prescriptive FSC-US removed requirements, thus moving closer to SFI.

Parallel change was also rare. An 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 than those added by the SFI. No issues exhibited downward parallel change, as “race to the bottom” theory anticipates.

After the significant revisions of both programs in 2010, only the SFI updated its requirements, mostly in 2015. In contrast to the 2010 changes, the pattern in 2015 was a moderate upward convergence. SFI increased prescriptiveness on three issues where it did **not** already have the most prescriptive requirements. While a much 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 likely have net costs rather than benefits for the industry.

## Implications for theory

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 on industry capacity and reputation issues, one would find the opposite, with the SFI becoming more prescriptive at a faster rate than the FSC-US. While certainly inconsistent with “race-to-the-bottom” theories, the upward by diverging trajectories of the SFI and FSC-US do not exactly fit a “race to the top” either.

Our results do support, with some caveats, hypotheses 1.1, 2.1 , and 2.2 outlined in Section 2.3. We ended up with no evidence either way on hypothesis 1.2.

Regarding H1.1, the industry-backed program often had language similar to that of an activist-driven standard (i.e., had a similar scope), but often lacked mandatory performance thresholds (i.e., did not have similar prescriptiveness). If “talk is cheap,” but prescriptive requirements are costly, it makes sense that an industry-backed program would cover similar issues as its competitor without adopting costly performance thresholds. This result suggests that any test of theories about the cost of compliance must distinguish between measures of stringency based on policy scope or prescriptiveness. Regarding H1.2, we cannot tell whether changes in scope are more likely to be matched by competing programs because neither program changed significantly in the scope of issues addressed. Both programs did begin regulating carbon emissions in 2010, but it is unclear if this change in scope is one program reacting to the other or both programs responding to a third causal factor.

Regarding H2.1, we find differentiation between the FSC-US and the SFI; the activist-backed program was more comprehensive in scope and more prescriptive on issues that cost firms’, while the industry-backed program was more comprehensive in scope and more prescriptive on issues that create net utility for the industry. Hypothesis 2.2 posits that the same kind of differentiation will drive change. This aligns with changes to the FSC-US and SFI in 2010, but less so in 2015. More research is needed to further test these and other hypotheses, using similarly precise and comprehensive measures of regulatory stringency. Specifically, while “race to the top” theories anticipate the general upward direction we observe, more attention is needed to programs may increase prescriptiveness on different issues.

## Industry-backed certification programs as a form of collective action

Our finding that the SFI and FSC-US were each more prescriptive and continued to become more prescriptive on different issues highlights how industry-backed certification programs can serve their industry in two ways. First, they provide individual firms with a service—a market signal of "social responsibility" that requires a credible third party. These signals would be more expensive to send by complying with an activist-backed regulation. Second, they provide a mechanism for the industry to improve its collective reputation and capacity by coordinating contributions to collective goods, a common function of industry associations.

Regarding the first, industry-backed alternative programs were created to save firms money by offering a label that sends “green” or “socially responsible” signals in the market without some of the more costly demands of activist-backed programs. Such signals are often based on perceived stringency, which may vary from actual stringency. ^[While our framework clarifies differences in actual stringency between activist- and industry- backed programs, which program one prefers will still depend on one’s problem definitions and values. What we do know is that, on many issues, industry-backed programs address the same issues as activist-backed programs with language that might give the impression of equivalence in stringency but contain substantially fewer prescriptive requirements. We show that seemingly similar looking language requires very different levels of performance. 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 their similar language (also see (e.g. Figures \ref{riparian} and \ref{clearcuts} and Table \ref{issues}). The extent to which this helps firms coordinate to maximize the impression of stringency while minimizing the costs of doing so is a question for future research.] Nevertheless, maintaining credibility may require some prescriptive requirements on costly issues. On these issues levels of prescriptiveness and change are likely driven by competition with activist-backed standards.

Regarding the second, the fact that SFI developed more prescriptive standards than the FSC-US on several issues is inconsistent with the predictions that competition between industry-backed and activist-backed competition will lead to a “race to the bottom” on all issues. It is also inconsistent with the prediction that activist-backed standards will be more prescriptive on all issues. However, the substance of these issues suggests that these requirements are unrelated to competition with the FSC. Instead, SFI had the most prescriptive requirements for actions that firms may take anyway—like training and maximizing efficiency—or that may be driven by their own collective action problems—like managing the visual impact of harvesting and sector-level reputation. Likewise, the three issues on which only the SFI changed—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 and training workers may not exclusively benefit individual firms, but given the broad adoption of SFI standards, such requirements may provide collective benefits for the sector in the form of a positive public image and skilled workforce.

In sum, where the SFI developed more prescriptive requirements than the FSC, it required things that firms may do anyway (e.g., train workers or educate the public), but have additional 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 less surprising if these requirements provide net benefits to the sector regardless of activist pressures or consumer demands.