



## Evaluating the USFS State and Private Forestry Redesign: A first look at policy implications

Authors:

Michael Cox, Sarah Mincey, **Tatyana Ruseva**, Sergio Villamayor-Tomas & Burney Fischer

### Abstract

Recently a shift has occurred in the way in which the United States Forest Service (USFS) distributes funds to states through its State and Private Forestry (S&PF) program. Traditionally S&PF has distributed money to states and territories formulaically. Now, under the 2008 Redesign Initiative, 15% of these funds are allocated through a competitive process. In this paper we analyze this initiative through the lens of institutional economics. Using budget, interview and survey data, we evaluate the new allocation process on the criteria of allocative efficiency, transaction costs, and distributional effects. Additionally, we examine a trade-off the Redesign Initiative faces between short-term innovations and funding programs that meet long-term USFS goals. We conclude that, while there is some positive evidence that the program is achieving some of its stated goals, it is doing so at the expense of higher transaction costs and less certain long term projects. Moreover, we find that the lack of procedures to evaluate competitively funded projects is an important flaw that may prevent the new initiative from helping to create a high performing and adaptive governance system.

# Evaluating the USFS State and Private Forestry Redesign: A first look at policy implications

Michael Cox<sup>a,\*</sup>, Sarah Mincey<sup>b</sup>, Tatyana Ruseva<sup>c</sup>, Sergio Villamayor-Tomas<sup>b,d</sup>, Burney Fischer<sup>b</sup>

<sup>a</sup> *Environmental Studies, Dartmouth College, 6182 Steele Hall, Hanover, NH 03755, United States*

<sup>b</sup> *School of Public and Environmental Affairs, Indiana University, United States*

<sup>c</sup> *Department of Government and Justice Studies, Appalachian State University, United States*

<sup>d</sup> *Department of Political Science, Indiana University, United States*

## a b s t r a c t

### Keywords:

Forest policy

Institutional economics

United States Forest Service

Principal-agent relationship

Transaction costs

Recently a shift has occurred in the way in which the United States Forest Service (USFS) distributes funds to states through its State and Private Forestry (S&PF) program. Traditionally S&PF has distributed money to states and territories formulaically. Now, under the 2008 Redesign Initiative, 15% of these funds are allocated through a competitive process. In this paper we analyze this initiative through the lens of institutional economics.

Using budget, interview and survey data, we evaluate the new allocation process on the criteria of allocative efficiency, transaction costs, and distributional effects. Additionally, we examine a trade-off the Redesign Initiative faces between short-term innovations and funding programs that meet long-term USFS goals. We conclude that, while there is some positive evidence that the program is achieving some of its stated goals, it is doing so at the expense of higher transaction costs and less certain long-term projects. Moreover, we find that the lack of procedures to evaluate competitively funded projects is an important flaw that may prevent the new initiative from helping to create a high performing and adaptive governance system.

## 1. Introduction

Forests provide numerous private as well as public benefits. Direct benefits to users include the provision of timber, fuelwood, charcoal, and habitat for culturally or economically important species. Broader social benefits include soil conservation, environmental recreation, biodiversity preservation, regulation of run-off, and carbon sequestration (see Pearce, 2002). As such, conserving forests is a primary environmental objective for many government agencies in the United States and around the world.

In the United States, 500 million acres of forestland, or roughly two-thirds of the national total, are owned by an entity other than the federal government. The State and Private Forestry (S&PF) programs of the USDA Forest Service (USFS) have historically played an important role in the conservation and management of these lands by providing technical and financial assistance to states and territories. It is primarily through state forestry agencies that federal investment in state and private forests is channeled. Traditionally, S&PF has distributed funds formulaically to states and territories

through a set of program areas including Forest Stewardship, Urban and Community Forestry, Forest Health Management, and State Fire Assistance.<sup>1</sup>

This paper examines recent changes in the delivery of USFS S&PF programs as legislated by the 2008 Farm Bill. These changes, known as "State and Private Forestry Redesign" (<http://www.fs.fed.us/spf/redesign/index.shtml>), were first introduced in federal fiscal year 2008 (FY2008). While there are several structural changes in the S&PF organization as the result of the Redesign Initiative, the focus of this paper is on one component: the introduction of competition into the allocation of federal funding to U.S. states and territories. 15% of the formula funds are now distributed to states and territories through regional competitions. The remaining 85% of the S&PF budget is still dispersed to states and territories by formula. The original intent of the Redesign Initiative was to bring more than 15% of the formula-based funds into the competitive process in the future, although this has not yet occurred.

The Redesign Initiative is being conducted jointly by the USFS, the National Association of State Foresters (NASF), and three regionally-

based state forester associations: (1) the Western Forestry Leadership Coalition (WFLC),<sup>2</sup> (2) the Southern Group of State Foresters (SGSF), and (3) the Northeastern Area Association of State Foresters (NAASF). Every U.S. state and territory is administratively located within one of these three regions, and each region runs its own competitive process. Fig. 1 presents the structure of federal grant allocations for S&PF following the implementation of the Redesign Initiative.

In each region, there is a committee composed of state and federal representatives which annually receives and evaluates proposals submitted by individual states/territories or multi-partner groups from that region. The Redesign Initiative has introduced three national themes as a means of categorizing and prioritizing funded activities. These themes are: (1) conserving working forest landscapes; (2) protect forests from harm; and (3) enhance public benefits associated with trees and forests. Additionally, funding decisions are to be based on the priorities expressed in Statewide Forest Resource Assessments and Strategies, another component of the Redesign Initiative to be produced by the states and territories themselves. The 2008 Farm Bill codified these two goals of the Redesign Initiative into law by amending the Cooperative Forestry Assistance Act. These two components are complemented by a National Assessment designed to mutually inform and be informed by the state-level assessments (USFS, 2007).

To help evaluate these outcomes in a sample of competitively funded projects, the Redesign Initiative provides for the publication of an Annual Report Card. Additionally, in 2009 a web-based data collection tool was added to the USFS S&PF National Information Center (NIC), which allows for states to upload descriptions and summaries of their ongoing projects. While the implementation of the Redesign Initiative is ongoing, currently these are the two components that provide for the measurement and reporting of project outcomes.

Together these components are designed to spur innovation in the construction of new types of projects geared towards regional demands that are not being addressed by the current formula-funded programs. Additionally, projects should represent an increase in collaboration both between states and between states and other organizations, such as non-profits or Native American tribes.

The goal of this research is to use the perspective of institutional economics to better understand the impacts thus far of the competitive resource allocation on the delivery of S&PF programs across the United States. We begin with a review of the relevant theory and empirical work. This is then followed by a description of our methods and results, and a brief conclusion.

## 2. Background

### 2.1. Theoretical Justification and Background

The Redesign Initiative represents a partial devolution of authority from the national level to the state and regional levels. As such it reflects increasingly popular notions of competition, innovation, accountability and transparency in government, which have become a strong and standard part of political rhetoric and policy dialog in the U.S. For example, the 2001 President's Management Agenda, which emphasized competition in funding allocations, motivated this by stating a need for a government that is "Market-based, actively promoting rather than stifling innovation through competition." In our experience, these concepts, at least with respect to the motivation for the Redesign program, have also become persuasive within the United States Congress, to which the USFS ultimately has to justify its expenditures.

In this section we present a potential theoretical motivation for the introduction of competition into the S&PF funding process. We

are not claiming that the change was implemented with these specific arguments in mind, and our impression, based on our interviews and a reading of the Redesign primary literature, is that the motivation for the process had not been as thoroughly spelled out. Nevertheless, here we present some previous work with which the new funding approach is consonant, in large part to illustrate the motivation for our own research.

There are several theoretical motivations for the devolution embodied by Redesign. To begin, the traditional formula-based system partially represents a common potential weakness of centralized governments: an inability to recognize local heterogeneity, which leads to the application of a common policy to a diversity of contexts for which it is poorly suited (Scott, 1998). The problem that Scott (1998) discusses results in large part because centralized governments often have too little information to govern effectively. This is an established source of government failure which is discussed frequently in the literature on public choice (Tullock, 2002).

This situation for centralized governments is commonly contrasted with that of a market, where, among other things, it is presumed that consumers have perfect information that enables them to purchase goods from producers that maximize their welfare. Moreover, market competition gives incentive producers to provide the goods that consumers desire. This has led to the popular notion that under certain conditions, using market-based competition to provide for and distribute economic goods can maximize allocative efficiency. While allocative efficiency has a rather precise definition in microeconomics, here we use the more general meaning, which is the allocation of scarce resources to their most valuable use. In the private goods markets of standard theory, this value is determined by the consumers who purchase the goods.

The literature on fiscal federalism has made a similar argument, this being that, in the absence of spatial externalities and economies of scale, states may have a comparative advantage over a national government in matching the provision of public goods to local demands, thereby increasing the efficiency of public expenditures. "By tailoring outputs of such goods and services to the particular preferences and circumstances of their constituencies, decentralized provision increases economic welfare above that which results from the more uniform levels of such services that are likely under national provision" (Oates, 1999, 1121-1122). In both cases the argument for decentralization rests on the notion of increased allocative efficiency by a better reflection of localized preferences.

Much of the motivation for the Redesign Initiative is, at least implicitly, based on these arguments. The proposal writing process acts to solicit the preferences of the states, which should be best able to reflect their own needs because of their low-cost access to local information. Then, the proposal review process in some ways mimics a market competition, where the states act as producers and the review committees act as consumers. With enough information, the review committees may be able to increase efficiency in the same way that perfectly informed consumers do so in a private goods market. This information could come from two sources: firstly, from the reviewers own knowledge and experience of the states whose proposals they are reviewing; secondly, from the Statewide Forest Resource Assessments and Strategies mentioned earlier, which are produced by the states and territories themselves. Finally, as long as there is enough competition, the states will be incentivized to produce the public goods that perform well in the selection process.

This narrative becomes more complicated if we understand the relationship between a grantor and a grantee as a principal-agent relationship (Eisenhardt, 1989). In a principal-agent relationship (PAR), an agent acts on behalf of a principal. This relationship focuses on the challenges of motivating the agent to act on behalf of the principal when interests of both parties are not perfectly aligned and the principal has imperfect information on the actions of the agent. A common example of a PAR would be the relationship between an employer (principal) and an employee (agent).

<sup>2</sup> Unique among the regional state forester organizations, the WFLC is composed of both State Forester and federal (USFS Regional Foresters and USFS Research Station Directors) members.

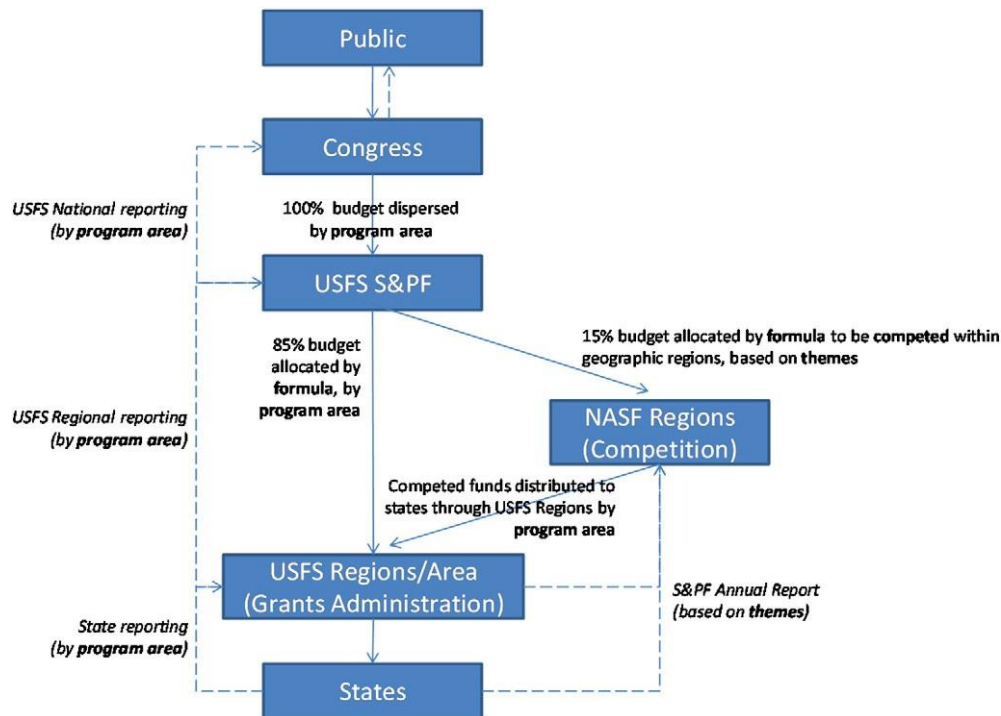


Fig. 1. The current structure of federal grant allocations under the redesigned S&PF program.

The main PAR that we will focus on is the relationship between the regional evaluation committees as the funders (principals) and the funded states and territories (agents). The states are acting on behalf of those who are paying them to provide an important public service. PARs existed in the formula-based process prior to the Redesign Initiative, primarily between the states and the USFS Washington D.C. office. There is anecdotal evidence that the formula-based system itself has not addressed the PAR issues it faces. However, because a major motivation for the competitive mechanism is to increase agent accountability in comparison to the formula system, we believe that there is more of an onus on the new process to address these issues.

Institutional arrangements can ameliorate problems associated with PARs by providing incentives and/or information. Unfortunately, doing so incurs transaction costs. Transaction costs have been defined as "the costs of measuring and enforcing agreements" (North, 1990, 362), although here we also include the initial formation of agreements. High transaction costs can inhibit the formation of such agreements, and thus pose challenges for environmental governance (Paavola and Adger, 2005). Transaction costs are difficult to measure empirically. Nevertheless, they can be usefully applied on a comparative basis in order to analyze the implications of various governance and contractual arrangements (Williamson, 1985, 22).

In an environmental governance and policymaking context, we can identify types of transaction costs that are likely to be incurred at various stages of governance. These include costs of: (1) research; (2) enactment; (3) design and implementation; (4) support and administration; (5) contracting; (6) monitoring; and (7) enforcement (Coggan et al., 2010; McCann et al., 2005). Much of these costs are incurred during the initial development of a policy, while others are ongoing. In this analysis we will focus on the ongoing transaction costs of the competitive process.

## 2.2. Previous Empirical and Theoretical Work

This section describes some relevant theoretical (model-based) and empirical work that has applied these concepts to the evaluation of competitive funding mechanisms. Most of the literature that has

examined competitive funding mechanisms in comparison to formula-funding mechanisms has done so in the agricultural research and development sector. Within the United States, this sector has already gone through a transition from a formula-based funding regime to one that also includes competition-based funding mechanisms. This shift reflects an international trend (Vera-Cruz et al., 2008). In this section we discuss findings from the U.S. experience as well as from the international literature.

There are five primary findings from the applied literature that we reviewed regarding competitive programs. First, they can increase transaction costs, primarily because of proposal preparation and peer review processes (Huffmann and Just, 1994, 1999, 2000; Janssen, 1998).

Second, there is mixed evidence regarding their effects on allocative efficiency. In a review of Latin American funding regimes, Echeverria (1998, 1108) gives a brief evaluation of competitive funding programs: "To date, they have proven to be efficient mechanisms for funding research by providing greater accountability to the funding source." Additionally, Janssen (1998, 143) states that under competitive allocation processes, "financiers themselves come under increasing pressure of accountability. Although they may believe in the relevance of the research programs, the need to demonstrate concrete results may lead them to fund specific activities and to share explicitly in the credit for the outputs." However, Huffmann and Just (2000) argue that competitive mechanisms can in fact be less efficient than a formula system given the limited information grant proposal reviewers may have about the value of the projects that would ultimately be funded. Without this information, proposal reviewers cannot maximize social value by selecting the best proposals.

Third, competitive programs tend to foster projects with short time horizons (Huffmann and Just, 1994, 1999; Janssen, 1998). Fourth, partly because of this, they may be inappropriate for long-term projects with uncertain outcomes (Byerlee, 1998; Huffmann and Evenson, 2006; Vera-Cruz et al., 2008). Huffmann and Evenson (2006, 785), for example, point out that the properties of basic research as a public good favor a formulaic funding mechanism: "Many important scientific discoveries take more than a decade to achieve. Hence, if scientists must pursue extramural funding, they face a large amount of uncertainty" which is moderated by a consistent source of formula-based funding.



This situation is suboptimal from the perspective of the grantor as well: long-term and uncertain outcomes, such as those sought for by R&D activities, exacerbate the information asymmetry associated with the PAR because reviewers cannot easily connect outcomes to the efforts of the funded agencies, their principals. This indicates that, as the production of the outcome by the grantee becomes increasingly uncertain, formula-based funding and associated long-term relationships between grantors and grantees may be more effective at securing these outcomes.

Finally, in their analysis of the agricultural R&D competitive grants program of the USDA, Rubenstein et al. (2003) find that competitive grants tend to fund more basic biological and technological research, and that competitive grant funds are more highly concentrated among fewer states. Competitive grants may thus have implications for equity, which is a general concern with market-based competition. However, because competitive programs to that point comprised only 15% of USDA funding to states for agricultural R&D, Rubenstein et al. (2003) conclude that these trends did not translate into large distributional effects.

### 3. Methods

#### 3.1. Hypotheses

Based on this previous empirical and theoretical work, we can derive several questions to ask of the Redesign Initiative. We will explore these questions through the following hypotheses:

1. The competitive process will require an increased degree of accountability on the part of states, and therefore be allocatively efficient compared to the formula-based system.
2. The competitive process will incur more transaction costs than the formula-based system.
3. The competitive process will produce a change in the distribution of funds across states.
4. The competitive process will face a trade-off between producing innovative projects and assuring the accomplishment of long-term goals.

The first hypothesis derives primarily from the traditional economic justification for market-based competition. A well functioning competitive process ought to be able to increase the accountability of those providing the goods to the "consumers," in this case the funding committees, which should in turn facilitate an increase in allocative efficiency as highly performing projects are funded. The second hypothesis reflects the finding that in providing the information needed to achieve such allocative efficiency, additional transaction costs will be incurred. The third hypothesis reflects empirical work that has found, not surprisingly, that competitive funding mechanisms distribute resources differently than do formula-based mechanisms.

The fourth hypothesis again draws from the empirical literature (Huffmann and Evenson, 2006) that has emphasized the comparatively poor performance of competitive funding mechanisms in securing funds for projects with uncertain outcomes and long time horizons. Given that the objective of the Redesign Initiative is to increase levels of innovation and satisfy the three rather broad themes mentioned earlier, it seems likely that many of the competitively funded projects belong in this category. Therefore, we hypothesize that the innovation obtained through the competitive process will come at the cost of achieving long-term and uncertain objectives.

#### 3.2. Data Collection and Analysis

We collected three types of data to address our hypotheses: (1) regional budget and grant proposal data; (2) data from interviews with state, regional and national informants; and (3) responses to an

online survey we sent to each state and territory forestry agency regarding their experiences with the competitive funding process.

The goal of the budget data analysis was to examine the distributional effects of the competitive funding mechanism across states and territories. Budget data were obtained from each regional USFS office. The budget data included records of 2005–2008 *core* funding (funding distributed by formula) by program area for each state/territory, and *competitive* funding budget data for the years 2008–2010 for all states and territories. Core data for the period 2009–2010 involved reconciling data sources that proved too incompatible for use in this analysis.

Within each geographic region, competitive funding was directly compared to core funding at the state level for 2008, the only year for which core and competitive budget data were made available for all three regions. For each state and territory, we computed a ratio of the amount of funds received in competition vs. the amount of funds received in core, each as a percentage of the total amounts allocated to that state or territory's region.

This was calculated as:

$$\text{StateRatio} = \frac{[\text{State Competitive Money} / \text{Regional Competitive Money}]}{[\text{State Core Money} / \text{Regional Core Money}]}$$

In the numerator and the denominator we divide by the amount allocated to a state or territory's region to correct for slight differences across the three regions in the ratio of the amounts available for core vs. competitive funding. This produces a variable that has some intuitive properties. A ratio of one indicates that a state received the same shares of its region's competitive funds and the region's core funds, and is essentially breaking even with the program change. States with ratios higher than one are obtaining a higher share of regionally available competitive funds than they had of the core funds, and are thus benefiting from the competitive process.

In addition to collecting budget data, we conducted a total of 12 semi-structured phone interviews, which included interviews with top officials from each USFS region, the regional state forester organizations, and the NASF. These interviewees served as "key informants", and as such were selected based on their professional involvement with, and therefore presumed knowledge of, the Redesign Initiative (Love, 2004). In addition, several interviewees were selected through a process of snowball sampling.

To complement and validate the interview data, we conducted an online survey that was distributed to the forestry agency office of every U.S. State and territory. We obtained a total of 42 responses to the online survey, which accounted for two-thirds of the total number of U.S. state and territory forestry agencies to which it was sent. In distributing the survey, we asked the head of each forestry agency to either respond to the survey personally, or to delegate it to someone whom they felt had the necessary experience to accurately represent the experiences of their state or territory in the competitive process. Both the interviews and the survey focused on the experiences that relevant actors had had with the competitive process, particularly along the dimensions that were most relevant to our hypotheses.

To analyze the survey data, we first coded and classified responses to the open-ended questions so that we could characterize them quantitatively (see Neuendorf, 2002). Following this, we calculated basic descriptive statistics for each of the questions from the survey, obtaining quantitative summaries of the experiences of the respondents. With this we were able to characterize the broad patterns of experiences among the respondents, and search for experiences

more specific to subgroups of respondents. We evaluated the interview data qualitatively, primarily using it as a way to validate the survey data (see Yin, 1994).

## 4. Results

### 4.1. Allocative Efficiency

To most thoroughly address the question of allocative efficiency, we would need to include a discussion of whether the stated goals of the Redesign projects are in fact directed at the best use of scarce resources. In this analysis, we take the value of these goals for granted, and ask whether or not they are effectively being reached. To remind the reader, the goals of the Redesign Initiative are: (1) increase collaboration, (2) increase innovation, (3) address the three national themes, and (4) address the goals stated in the State Assessments and Strategies. Addressing the goals in turn requires that the PAR is addressed in the proposal review process.

To begin, the Redesign Initiative is making steps towards increasing collaboration. Two-thirds of survey respondents reported increased collaboration, 12% reported a decrease, and 21% reported no change. In an open-ended question where survey respondents were asked to discuss the main advantages of the competitive process, collaboration (40%) was the most frequently identified response. Respondents reported that the majority of this collaboration occurred between states (as opposed to collaboration with non-governmental entities).

While this is a positive result, several respondents commented that much of this collaboration occurred during proposal preparation rather than during project implementation, which is the goal of the Redesign Initiative. Additionally, budget data and proposal document analysis revealed that for 2008 and 2009, most successful competitive projects were undertaken by only a single state.

Finally, there may be a built in tension between the competitive process and the goal of facilitating collaboration. If the states collaborate too much this could undermine the competitive process. At the extreme this would be referred to as collusion rather than collaboration. This is one of several built-in tensions between the competitive process and the goals it is designed to achieve.

Moving on, the Redesign Initiative seems to be meeting its goal of encouraging the innovation of new kinds of projects. When asked about the effects of the process on the innovation of new and important projects, two thirds of the survey respondents reported an increase in innovation, while 14% reported a decrease. Additionally, when asked an open-ended question about the advantages of the process, innovation was the second most common response (29%) after collaboration.

Regarding the three national themes, there was a general view among the survey respondents from the West (81% of western states) and Northeast (69%) regions that they were being favored in the process. In particular, in one of the open-ended questions, respondents highlighted the importance of the process in accomplishing a sub-objective of one of the themes – “identify and conserve high priority forest ecosystems and landscapes.” However, in the South, only 3 out of the 10 respondents felt that the three themes were being achieved, and an interviewee from the southern region of the Forest Service claimed the themes were too broad in nature to be meaningfully utilized in evaluation.

The extent to which State Assessments and Strategies have been addressed in the competitive resource allocation is unclear given that states and territories did not complete these documents until June 2010. Therefore substantive proposal evaluation using these documents was unlikely to occur until the 2011 funding cycle. For this reason, evaluation of this goal is difficult for the years addressed in this study. That being said, one regional administrator interviewed explained that little guidance had been offered from the federal level

as to *how* State Assessments and Strategies should be utilized for evaluation of competitive proposals at the regional level.

The results for of allocative efficiency remain unclear when we ask whether or not the PAR between the regional evaluation committees and the states is effectively being addressed. As discussed earlier, the states are agents of the regions, which provide them funds in order to produce important public goals. The most important way in which the Redesign Initiative is addressing this relationship and the potential problems that may arise from it is through the competitive proposal review process run by each region.

However, there are four problems that this process faces in ensuring accountability of the agents. First, given the breadth and diversity of the review criteria, as seen in the national themes, it is reasonable to ask how much room there may be for the dynamics and personalities of the review committees to affect funding decisions. Interpersonal dynamics, as well as a potential quality of being highly risk-averse, could make it difficult for the review committees to act in favor of the goals of the Redesign Initiative and as a disciplining force on the states as agents. During our interviews with regional officials we found that, while there are formalized processes for evaluating the proposals in each region, there is also room for interpersonal interactions to affect evaluations and outcomes.

Secondly, there is a problem of a potential conflict of interest if a reviewer has a close relationship with the team that submitted a proposal. This is more likely to occur if a reviewer reviews a proposal from their own state or territory. As a result of this, it is generally a matter of policy for all three regions that reviewers are not allowed to review proposals submitted from their state or territory. While this seems to be a reasonable approach to this issue, it may exacerbate the third problem by directing reviewers to evaluate proposal for states with which they are relatively unfamiliar.

This third problem is that without some information about the needs of a particular state or group of states, the reviewers cannot effectively evaluate state proposals. As stated earlier, this information can come from either (1) personal experience, or (2) State Assessments. As just discussed, the State Assessments were not produced by all states before 2010, and a primary purpose of these is to provide some of the information reviewers would need in order to establish a baseline for the evaluation of state needs. As an information provision device, however, this is imperfect. It is essentially depending on the agent in a PAR to tell the principal how the principal should evaluate the agent's performance. From a PAR perspective, at least, it may be desirable to have a third party involved in the production of the State Assessments.

The fourth and, in our view, largest problem with this process is that it does not itself require that the states follow through with what they state they will do in their proposals. The review process is judging based on promises, not outputs. As such, the ability of this process to ensure accountability is relatively weak compared to a process that monitors the outputs of states with funded projects (Eisenhardt, 1989).

With respect to this, the Redesign Initiative does provide for basic reporting of project activities from states to their federal funders, and most state survey respondents across the three regions indicated annual reporting of budget expenditures and project outcomes. The states generally make project progress reports available through the National Information Center (<http://spfnic.fs.fed.us/redesign/index.cfm?fuseaction=public.default>). These reports are qualitative summaries of projects, and contain a standard set of sections, including one entitled “Deliverables accomplished to date.” This section generally contains a relatively short summary of what has been done to accomplish the objectives of a project. It is fair to say that these reports represent some degree of self-reporting, but are non-quantitative and non-evaluative, emphasizing brief descriptions of what had been done, as opposed to how well it may have been done or with what outcomes. Additionally, this problem is similar to the issue just discussed, of relying

on the states to provide information that will be used in evaluating state proposals through State Assessments: relying on agent self-reporting to resolve a PAR is inherently tricky and relies on high levels of trust, being analogous to having “the foxes guard the henhouse.”

The other formal way that the Redesign Initiative provides for reviews of the competitively funded projects is through the annual Redesign Report Cards. Unfortunately, these do not seem to be providing detailed feedback regarding the performance of funded projects, and regional interviewees did not necessarily consider this the goal of the Report Cards. Just over half (55%) of the survey respondents reported that the Report Cards were not useful for any purpose, while only 12% reported that they were useful. When asked what the most important uses of the Report Cards were, only 19% indicated that they helped provide a measure of accountability to the competitive process, which is the service they would need to provide to address the PAR problem between funders and states.

Interviews with regional administrators did reveal that competitively-funded projects are monitored in the same manner as core funding by program areas: by USFS regional program managers engaged with project- or program-specific and consolidated grants to the state agencies. However, these key informants also indicated that no formal evaluation of competitively-funded projects is undertaken by USFS program managers, or feeds into future competitive funding decisions. Given this context, the following quote from a survey respondent is worrisome:

“Evaluator feedback is limited and weak. The feedback from the grant review has been limited and of limited help in improving future proposals. Follow-up lacking. No review or evaluation has been offered for grants that have been awarded. Useful follow-up could include: verifying that offers and claims made in proposals actually occur; evaluating if competitive grant accomplishments meet national or regional needs; and assessing impact of re-directing funding from on-going programs to competitive grants.”

The lack of a formal project evaluation mechanism that would feed into future funding decisions reveals that the Redesign Initiative is suffering from the traditional government failure of insufficient information described earlier. This is critical for several reasons. First, it makes it difficult to know whether the competition is achieving its goals, and this lack of evaluative procedure is often mentioned as its own type of government failure. Secondly and more importantly, it gives us a reason to doubt that it is reaching these goals. Referring back to the discussion of market-based competition, the provision of allocative efficiency in a private goods market is entirely dependant on consumers having enough information about the good or service they are purchasing. In this case, the “consumer” is the granting committee and the good or service is the outcome produced by each funded project. However, the committees cannot know the performance of a project before they decide to fund it. They only have access to the grant proposal, which does not necessarily correlate in quality to the eventual project and its outcomes. Competitive arrangements in such information – poor environments cannot guarantee positive results. The worst case scenario could then be, as one survey respondent put it, that the primary accomplishment of the program would be to satisfy the potentially ideological need of the U.S. Congress for a competitive funding outlet. Or in the words of another respondent, the competitive mechanism might simply be selecting based on which states have the most talented grant-writers.

#### 4.2. Transaction Costs

The results with respect to transaction costs are clear: the competitive process has increased them. Some of this is an inevitable result of the planning and initial implementation of a new policy. Because this is unavoidable for the implementation of any new policy, we do not

count it against the Redesign Initiative. However, it is clear that ongoing costs have also increased.

To begin to measure the changes in transaction costs, we start with data on the numbers of submitted and funded grants. Over the years 2008 and 2009, the percentage of submitted projects that received funding was 40% in the West, 35% in the Northeast, and 60% in the South. The South's percentage is slightly inflated because this region approved more projects in 2008 than it could fund for that year, committing itself to these projects for subsequent years. The overall funding percentage for 2008 and 2009 was 43%. There are two interpretations of these numbers. First, that the selection process has increased the average value of the funded projects. Second, that the unfunded projects represent an inefficiency in the form of transaction costs borne with no direct benefit.

Turning to the survey data, 81% of survey respondents stated that the process had increased their administrative costs, while only 2% indicated a decrease. The remainder reported no effect. The primary reason reported for the change was the increase in costs associated with the professional and support staff needed to write grant proposals. This result was confirmed in an open-ended survey question that asked respondents to describe the greatest disadvantages of the process. The most frequent response (60%) described the rise in administrative costs incurred in proposal preparation. As one survey respondent stated: “At some point we will need to look at our priorities and use of our time. We spend 80% of our time applying/managing/reporting for 10% of our agency funds.” Transaction costs have also increased at the regional level, in the form of proposal reviews and grant management.

Transaction costs seem not to have increased much as a result of monitoring and enforcement activities. However, the reason for this is that there is currently no rigorous project evaluation mechanism. This is certainly needed to make the initiative work, but it would further increase ongoing transaction costs.

This confirms findings from previous work: the competitive process incurs more transaction costs than the formula-based process. In this paper we have kept the concept of allocative efficiency separate from our analysis of transaction costs. However, it is worth noting that an increase in transaction costs, in this case in the form of increased administrative costs, in some sense represents a decrease in allocative efficiency to many of the survey respondents: they do not see the resources of their agencies being directed towards their best use by the new competitive process.

#### 4.3. Equity and Distributional Effects

Examining the distributional impacts of the Redesign Initiative with the ratio of competitive funds to core funds each state or territory received in 2008 revealed mixed results. Again, a ratio of one indicates that a state/territory essentially broke even in the competitive process, while higher values indicate greater competitive success. Fig. 2 shows that the distribution of this ratio with all states and territories included is positively skewed. Much of this skew results from the fact that the distribution has a lower bound at 0, leading more states to cluster near this value. There are a fair number of states with a ratio of 0, indicating a complete lack of competitive funds, although a number of these states did not compete in the first place. The number of states with ratios over 1 (24) is reasonably close to the number with ratios lower than 1 (30). Fig. 3 shows the distribution for each region. None of these distributions diverge much from the aggregate distribution. The West does have the most positive skew, and it is interesting that the southern distribution is somewhat bimodal, with no state breaking even. This indicates that the difference between the winners and losers may be more identifiable in the South.

Turning to the survey, 69% of all states responded that they felt they had successfully competed for Redesign funds, although this percentage decreased to only 50% in the south. Overall, there did not seem to be a strong sense among the respondents that the new

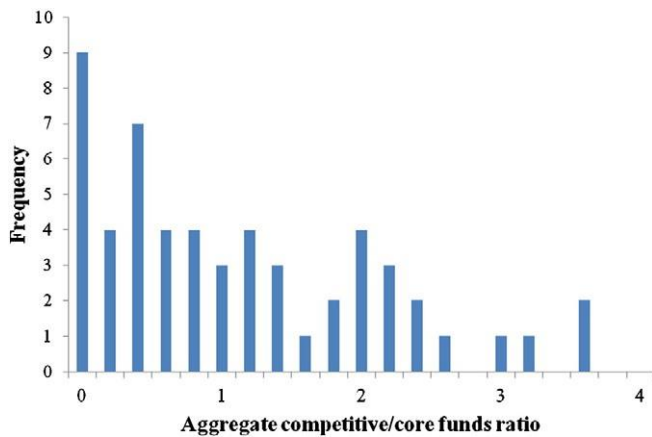


Fig. 2. Distribution of S&PF competitive/core fund ratios aggregated across all three regions.

process was producing inequitable outcomes. Only 10% of respondents identified inequity as a disadvantage of the competition. In part, this may be because of the existence of caps on both the number of projects and the amount of money that states could receive in one year through the competitive process. These caps, applied somewhat differently among regions, were generally viewed favorably by the respondents, who felt that they encouraged equitable outcomes without sacrificing the competitive nature of the process.

Overall, while the competitive process has produced a different distribution of funds across the states, this was expected, and it is not the case that there are relatively few winners who are making large gains at the expense of many losers. However, we believe that this is partly a result of the fact that currently only 15% of the S&PF funds are distributed competitively. If this were to reach, for example, half of the total available funds, the outcomes of the competition would probably produce much greater concerns over equity.

#### 4.4. Innovation vs. Core Programs

As mentioned earlier, the survey respondents were reasonably consistent in reporting an increase in innovation as a result of the Redesign Initiative. However, many respondents also expressed a concern over losing core program funds and the ability to maintain the provision of core programs in the face of the loss of core funding. Many states in each region are also concerned with the inability of the new process to fund long-term projects, which is really the staple of core program funding. One survey respondent summarized the problem:

"Funding is less consistent or certain. The grant selection process appears to lend itself to funding unique innovative short term programs that have a maximum three year lifespan, with some assumption that the capacity building within the program will carry it on if needed. Uncertainty exists whether a continuation of a good program would ever be selected for a future grant."

The Redesign Initiative funds competitively funded projects for up to three years. Long-term projects (more than three years) are difficult to run, because of the uncertainty of obtaining the needed funds year after year through a competitive process. Core funds likely cannot be used, as these are still devoted to core programs. It may be difficult to balance the two goals of innovation and long-term viability, although one survey respondent indicated that they may be complementary:

"Formula funds allow us to implement traditional programs and maintain capacity; competitive funds allow us to address emerging issues that do not fall into the traditional stovepipes of formula funding, and allow us to increase capacity (albeit short term/soft money supported). Both are important."

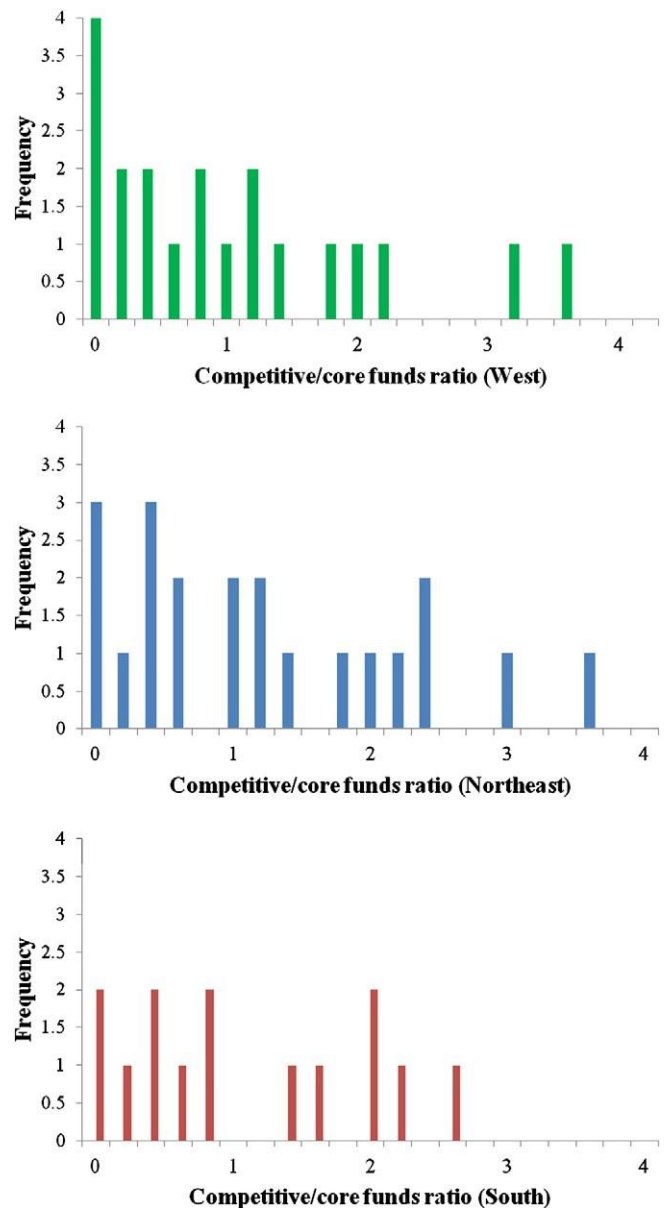


Fig. 3. Distribution of S&PF competitive/core fund ratios by region.

Related to this trade-off, there is an inherent tension in funding projects with uncertain outcomes through competitive processes. As has also been noted in the funding of agricultural R&D, such uncertainty would favor a more formulaic funding mechanism to ensure a continuous stream of funds to breach the gap between the initiation of a project and the eventual production of a public good. Given that the competitively funded projects are supposed to be innovative, and that with such experimentation comes much uncertainty, we believe that the same problem presents itself in the implementation Redesign Initiative. This problem has not yet been addressed.

One survey respondent made the following suggestion that innovation could be produced by a formula-based system, which could remove this tension, and potentially lower transaction costs:

"Bring funding back to the formula driven process. Utilize the existing formula driven process with the caveat that each state provides project information on use of the 15% of program funds. These projects must be innovations based on defined state forest assessment strategies. This can greatly reduce the additional administrative and staff



costs that are inherent in the current competitive process and still maintain the innovative and state to state efforts."

This comment highlights a degree of independence between the competitive resource allocation mechanism and the stated goals of the Redesign Initiative. It is possible that the goals could have been reached as well or better by making changes within a formula-based system, although this would face some of the same problems. Using a process of competition for funds is certainly one way to address the goals of the Redesign Initiative and to tackle the problem of government failure through insufficient information as discussed earlier, but it is not the only way.

Meanwhile, within the U.S. agricultural R&D sector, the potential problems for long-term viability (and equity) associated with a competitive allocation mechanism have been mitigated because the competitively allocated funds only account for 15% of the total funds provided. The same is currently the case for the Redesign funds. As such, the question becomes, what level of competitively allocated funds strikes the right balance? When asked what the impact of an increase from the current 15% allocated competitively, the survey respondents were overwhelmingly negative, and indicated that it should not increase further. There was more consensus on this point than on any other issue addressed by the survey respondents.

## 5. Conclusions

The results of the Redesign Initiative so far are as follows: (1) improvements in allocative efficiency are possible but questionable; (2) transaction costs have increased; (3) equity is currently not a large issue, but would likely become one if more funds were distributed competitively; and (4) there is an important trade-off between the innovation produced by the competition and the provision of long-term public goods. We now conclude our analysis with three recommendations and a brief discussion of future research.

First, we recommend that the performance of each competitively funded project should be monitored and recorded by a party other than the state or territory conducting the project, so that these evaluations can become an important part of future funding decisions. If poor performance on a past project has no consequences for the ability to obtain money on future proposals, then there is no incentive for the states to be accountable by producing high quality projects. In this case the Redesign Initiative becomes primarily about a new emphasis on the three national themes and the talents of states' grant writers.

This recommendation comes with two caveats. First, we need to recognize that further implementation of the Redesign Initiative, and the formal or informal reputation-building that can come along with this, may begin to address this issue. At the same time, [Huffmann and Just \(2000\)](#), in their analysis of the principal-agent problem associated with the USDA's competitive grants program for agricultural research, give an indication that this is not a very easy problem to solve, even with more time for implementation. The second caveat is that a stronger evaluative process would further increase the transaction costs involved in the Redesign Initiative.

Secondly, there is currently no mechanism to incorporate successful competitively funded projects into a long-term view of the goals the state forest agencies. Without this, the Redesign Initiative is facilitating experimentation without long-term learning and adaptation. We would recommend that such a mechanism be implemented so that the projects that are deemed to be highly successful can be incorporated into long-term activities of forestry agencies.

Finally, many survey respondents expressed concern that the new projects would come at the cost of their agencies' capacities to maintain core programs. If much more than 15% of the funds are eventually distributed through competitive means, the trade-off between innovation and stability will be exacerbated, and there may be a severe trade-off between allocative efficiency and equity. Greater competition also

raises transaction costs. As such, while we do see some positive results in our analysis, we would recommend that there be little or no short-term increase in the percentage of funds that are distributed through the Redesign Initiative's competition.

In future research we plan to develop a more longitudinal approach to this analysis, which will be increasingly possible as the Redesign Initiative continues to be implemented. A second survey of state Forestry agencies is planned in the next few years. In addition to this, we plan to conduct several case studies of states that have been particularly successful (and unsuccessful) in the competitive process. Using the data gained from these future activities, we will be able to re-evaluate the performance of the new program based on the criteria that we have discussed in this paper.

## Acknowledgments

We gratefully acknowledge support from the U.S. Forest Service through USDA Forest Service grant #09DGI1132544076-010 – "Evaluating the USFSS&PF Redesign Program." We want to thank the following individuals for their feedback on previous versions of the manuscript: Ken Arney, Dana Coelho, Macario Herrera, Mike Huneke, Laura Kalifeh, Ian McFarland, Kathryn Maloney, and Mike Zupko.

## References

- Byerlee, D., 1998. The search for a new paradigm for the development of national agricultural research systems. *World Development* 26, 1049–1055.
- Coggan, A., Whitten, S.M., Bennett, J., 2010. Influences of transaction costs in environmental policy. *Ecological Economics* 69, 1777–1784.
- Echeverria, R.G., 1998. Agricultural research policy issues in Latin America: An overview. *World Development* 26, 1103–1111.
- Eisenhardt, K.M., 1989. Agency theory: an assessment and review. *The Academy of Management Review* 14, 57–74.
- Huffmann, W.E., Evenson, R.E., 2006. Do formula or competitive grant funds have greater impacts on state agricultural productivity? *American Journal of Agricultural Economics* 88, 738–798.
- Huffmann, W.E., Just, R.E., 1994. Funding, structure, and management of public agricultural research in the United States. *American Journal of Agricultural Economics* 76, 744–759.
- Huffmann, W.E., Just, R.E., 1999. Agricultural research: benefits and beneficiaries of alternative funding mechanisms. *Review of Agricultural Economics* 21, 2–18.
- Huffmann, W.E., Just, R.E., 2000. Setting efficient incentives for agricultural research: lessons from principal-agent theory. *American Journal of Agricultural Economics* 82, 828–841.
- Janssen, W., 1998. Alternative funding mechanisms: how changes in the public sector affect agricultural research. In: Taylor, S.R., Janssen, W., Bruneau, H. (Eds.), *Financing Agriculture Research: A Sourcebook*. International Service for National Agricultural Research, The Hague.
- Love, A., 2004. Implementation evaluation. In: Wholey, J.C., Hatry, H.P., Newcomer, K.E. (Eds.), *Handbook of Practical Program Evaluation*. John Wiley & Sons, San Francisco, CA, pp. 63–98.
- McCann, L., Colby, B., Easter, K.W., Kasterine, A., Kuperan, K.V., 2005. Transaction cost measurement for evaluating environmental policies. *Ecological Applications* 52, 527–542.
- Neuendorf, K.A., 2002. *The Content Analysis Guidebook*. Sage Publications, Thousand Oaks, CA.
- North, D., 1990. A transaction cost theory of politics. *Journal of Theoretical Politics* 2, 355–367.
- Oates, W.E., 1999. An essay on fiscal federalism. *Journal of Economic Literature* 37, 1120–1149.
- Paavola, J., Adger, W.N., 2005. Institutional ecological economics. *Ecological Economics* 53, 353–368.
- Pearce, D.W., 2002. The economic value of forest ecosystems. *Ecosystem Health* 7, 284–296.
- Rubenstein, K.D., Heisey, P.W., Klotz-Ingram, C., Frisvold, G.B., 2003. Competitive grants and funding of agricultural research in the United States. *Review of Agricultural Economics* 22, 352–368.
- Scott, J.C., 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University Press, New Haven, CT.
- Tullock, G., 2002. People are people: the elements of public choice. In: Tullock, G., Seldon, A., Brady, G.L. (Eds.), *Government Failure, a Primer in Public Choice*. Cato Institute, Washington, D.C.
- USFS, 2007. Redesign Components: National Assessment. <http://www.fs.fed.us/spff/redesign/redesign-assessment.pdf> (Accessed July 31, 2011).
- Vera-Cruz, A.O., Dutrenit, G., Ekboir, J., Martinez, G., Torres-Vargas, A., 2008. Virtues and limits of competitive funds to finance research and innovation: the case of Mexican agriculture. *Science and Public Policy* 35, 501–513.
- Williamson, O.E., 1985. *The Economic Institutions of Capitalism*. The Free Press, New York, NY.
- Yin, R., 1994. *Case Study Research: Design and Methods*, 3rd edition. Sage Publications, London, UK.