THE ECONOMIC PERFORMANCE AND THE POTENTIAL FOR SELF GOVERNANCE IN THE FISHERY

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The economic performance and the potential for self-governance in a fishery

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Overview

A common pool resource (CPR) can be subject to overuse. It results in degradation and poor economic performance: the CPR problem. However, this problem may reside not only in the unlimited access, but also in an ineffective management (complicated and expensive regulations, very limited budget), to preserve the resource stocks and fail to sustain the economic activity.

A successful community-based management (CBM) is built in a self-governance (SG), a regime where CPR users can achieve common targets at the minimum cost, and deal with the tragedy of the commons. Yet, is not clear how CBM, thus SG, is related with the economic performance of CPR users.

SG allows the CPR users to increase certainty of their decisions. But, if such users are not predisposed toward SG, the efforts to develop a CBM are likely to be lengthy, difficult, and costly and, in the end, unsuccessful. Thus, decision makers would like to know the likelihood for a successful process before promote a CBM.

Objective

This analysis explores the link between technical efficiency (TE) and the potential to adopt self-governance in a CPR. How is the relationship between the support that CPR users give to adopt the SG and their economic performance?

Data

We take two inputs that use a 2010 survey in a Mexican fishery: The Lázaro Cárdenas Reservoir, a small-scale (111 fishers), weak regulated and limited enforced inland fishery. It is an overexploited fishery where commercial activity is not profitable, a CPR problem.

The 1st input assesses the potential for self-governance using the 6 conditions (OC_i) proposed by Ostrom, they show the likelihood to adopt SG if CPR users conclude:

(1) ...be harmed if they don't adopt alternative rules. (2) ...be affected similarly by the alternative rules. (3) ...highly value continuing the activity. (4) ...share norms of reciprocity and trust. (5) ...face low cost of information, transformation and enforcement. (6) Users group is small and stable.

The 2nd input is a measure of TE on the fishery by using a stochastic frontier analysis model.

Model

We hypothesize a positive relationship between fishers' economic performance and their predisposition for self-governance. That is, a high user's TE tends to favor the adoption of SG.

The model uses a six equation system where the dependent variables are the estimated OCi (1st input), predicted by the estimated TE (2nd input), and other control variables, in a reduced (equation 4.1) and extended form (equation 4.2), with a Linear and Semi-Log specification form.

$$\hat{OC_i^j} = f(r_j, \textbf{TE}_j, age_j, coop_j, catv_j, C_{nj}) \qquad (4.1)$$

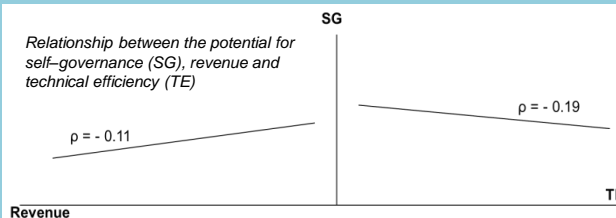$$\hat{OC_i^j} = f(r_j, edu, exp_j, ph_j, incf_j, shr_j, coop_j, catv_j, C_{nj}) \qquad (4.2)$$

Results

Our results do not show a significant relationship between OCs and fisher's economic performance.

But fisher experience, family size and income dependence from fishing have a significant correlation with OCi. Thus, fishers with more entrepreneurial skills may favor the adoption of self-governance. As well, if the age of a fisher increases, his agreement with cooperation and trust also tends to increase, nonetheless the coefficient is close to zero.

Seemingly unrelated estimates for the Ostrom conditions

	OC₁		OC₄		OC₆	
Equation (4.1)	Semi-Log	Linear	Semi-Log	Linear	Semi-Log	Linear
Age fisher	0.000	-0.001	0.004 **	0.012 **	-0.009 ***	-0.025 ***
El Palmito (D)	0.120 *	0.408 *	-0.054	-0.136	-0.434 ***	-1.122 ***
R²	0.08	0.10	0.16	0.16	0.24	0.23

Notes : Signifiance codes: '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

	OC₂		OC₅		OC₆		SGM
Equation (4.2)	Semi-Log	Linear	Semi-Log	Linear	Semi-Log	Linear	Linear
Revenue	-0.025 *	0.000	-0.008	0.000	0.035	0.000	0.000
Fisher experience	0.002 *	0.007 *	0.003 **	0.010 *	-0.011 ***	-0.026 **	0.001
Family size	0.009 *	0.036 *	-0.001	-0.004	-0.005	-0.006	0.003
Income fishing (D)	-0.013	-0.082	0.004	-0.024	-0.309 ***	-0.898 ***	-0.166 *
Work coop? (D)	-0.019	-0.080	-0.021	-0.060	0.181 *	0.399	0.065
El Palmito (D)	0.030	0.130	-0.026	-0.094	-0.231 *	-0.512	-0.050
R²	0.137	0.097	0.165	0.154	0.325	0.306	0.286

Relationship between the potential for self–governance (SG), revenue and technical efficiency (TE)

SG

ρ = - 0.19

ρ = - 0.11

Revenue

TE

Policy implications

This is an step in the understanding if self-governance would be implementable. Knowing the variables that explain, ex-ante, the potential for SG, can be a useful input to define management strategies and deal with the CPR problem.

Our results do not support the hypothesis of a positive relationship between a high efficiency and the potential for self-governance. If this holds in general, it may happen that individuals with a greater efficiency (income) will oppose to the adoption of a CBM.

These findings goes in line with Ostrom beliefs when she describes that independent variables do not help to predict the outcomes derived from a complex interaction between ecological, social, and economic systems.

But also, those may be useful for policy makers if they want to encourage the adoption of a CBM. Thus, by promoting self-governance it would be a good idea to start the process with the more experienced and older CPR users, as it was shown in our study case.

Finally, while the link between potential for self-governance and fisher's TE was no significant, and the potential for SG and fisher experience shows a weak relationship. Thus, replications would be desirable!!! Considering that the main constraint is the lack of a true validity. At least for this study case, we did not observe ex post whether self-governance was successfully adopted.

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