

[The following is the text accompanying the slide presentation “Institutions, Collective Choice and Outcomes: The Allocation of Decisionmaking Control in Mexican Agrarian Forestry” by C. Antinori and G. Rausser]

Today I'd like to talk about the forest natural resource base represented by Mexican communities and how this relates to exclusionary and inclusionary approaches to development.

### **Forests and Native Peoples**

- Globally, forests are locus of trend to restore rights to local communities and indigenous peoples
- 80% of Mexican forest is common property in the agrarian sector: *ejidos* and *comunidades*
- How does common property resource management fit into the economy as a whole?
- Role of forests in meeting multiple objectives: economic, social, political and environmental
- “Community forestry” responds to separate mandates: internal social relationships and external forces
- “Needs”: build capacity in managerial, organizational and technical skills – accountability

Globally, forests are the locus of a trend to restore rights to local communities and indigenous peoples (Sunderlin 2008, 2009). Mexico is a part of this trend in a unique way. 80% of forests are held as common property in the agrarian sector, the *ejidos* and *comunidades*. Much of our research echoes Biolsi's question earlier: how do these communities “sit in capitalism”, that is, what is their relationship to the broader market and to the state? Studies on common property forests repeatedly report (with or without data) that forests meet the multiple objectives of economic, social, political and environmental concerns. This is easy to see in our work, as we have realized that Mexican “community forestry” responds to the separate

mandates of maintaining internal social relationships (e.g. logic of the community) and managing external forces (e.g. logic of the market). In trying to bridge these objectives, development practitioners, researchers and policy makers looking at these systems frequently state a need to build capacity in managerial, organizational and technical skills, often pointing to the need for accountable leadership, especially where local elites and top-down bureaucrats monopolize decisionmaking.

### **Focus of talk**

- What does accountability mean in the context of forestry management in local agrarian communities in Mexico? *Led to institutional changes within the community system*
- What is link between allocation of authority and benefits generated from local natural resource management? *Mixed mapping from decisionmaking loci to outcomes.*

My talk focuses on two questions:

1) What does accountability mean in the context of local agrarian communities in Mexico? To answer this, we look at features of governance. The ones presented in this talk focus on the decisionmaking forums. We find evidence to suggest that search for accountability led to innovative institutional changes within the community system.

2) What is the link between allocation of authority and benefits generated from forest management? We test the argument from the democracy and growth literature that more open processes should lead to "better" outcomes but apply it to the local level instead of the country level. We find mixed mapping from decisionmaking loci to outcomes.

## **1 Background**

### **Data sources**

Table 1: Survey Sample by State

VI Level	State				
	Durango		Michoacan		
	Total	Sample	Total	Sample	Sample
No sale	136	4	143	3	7
Stumpage	140	10	120	6	16
Roundwood	68	9	15	3	12
Lumber	42	5	12	1	6
<b>Total</b>	290	28	147	13	41

*Source:* Survey data

- Phase 1 forest permit database compiled from 10 states in Mexico
- Phase 2 community level surveys
  - Main survey administered to community authorities
  - Subject specific modules: work groups, parcelized systems, diversification activities, association networks.
  - 41 observations in 2 states: Durango and Michoacan
  - Triangulation: officials, PSTs, case-study follow-up

The study came out of effort to compile baseline data and analyze natural resource institutions in the common property forestry sector in Mexico.

### Sample Statistics

We stratified on forest size and the level of production capacity in each community.

## 2 Internal governance choices

We knew that a number of different type of internal arrangements existed beyond the often-used vertical integration typology. But we did not the

Table 2: Internal Organization Types

	Community N=26	Work Group N=5	Parcels N=10
Durango	21	4	3
Michoacan	5	1	7
Formation dates	1962-2001	1992-2000	1929-1998
No sale	4	0	2
Stumpage	11	1	5
Roundwood	6	3	3
Lumber	5	1	0
Past “ <i>maldesempeño</i> ”	8	4	7

Source: Survey data

extent or any further institutional details. In our sample of 41 we found that most community forestry activities do take place at the communal level, which means that any buy/sell, extraction, or milling activities are coordinated at the community level, usually through the elected community representatives. But other modes of operation exist at the subcommunity level. We see work groups especially in Durango and in Michoacan we often have individually-organized timber production which we are labeling “parcelized” since forest stands are parcelized either on a temporary basis for purposes of an annual harvest or more or less permanently based on association with an individual over time. Work groups are a phenomenon mainly of the Agrarian Reform of 1992. Article 105 allows the creation of subcommunity groups for production. An important point is that there is little systematic variation across vertical integration groups, so you may encounter any variety of internal organizational mode for any given end product sold. Finally, these subcommunity level forms of internal production organization are correlated with reports of “bad administration” in the past by the community administrators responsible for managing or overseeing the forestry operations. With regard to accountability in common property resource arrangement, how did communities choose to handle these situations and are the outcomes “better” or “worse” when management is at a community level?

### Sanctioning managers for *maldesempeño*

Sanction	Hypothetical	Actual	Total
No response	9	1	10
Renounce post	8	10	18
Fine	1	2	3
Renounce and fine	0	3	3
State/federal	2	0	2
Other	1	3	4
Renounce + other	0	1	1
Total	21	20	41

When asked what measures were taken in these cases of *maldesempeno*, or what measures would be taken if there were to be such a case, most said they had the individual renounce their post. Fines were also used. Only the ones who were talking hypothetically said they'd go to state/federal level to sanction, suggesting this may be just lip service to external courts. The "other" responses included withholding *repartos* until the debt was paid, or for a period of time, don't give the person work, or a verbal reprimand. One specifically said the division was a way to address the problem.

### Reasons given for institutional change

Work groups:

- bad administration
- lack of confidence in administration
- conflict
- too costly as-is

Parcels:

- already parceled for resin production
- conflicts
- make more profits

- bad administration

Hypothesis: Division seen as a way to create more transparency and accountability among community managers and leaders.

Responses in the subject-specific survey modules on work groups and individualized forestry also largely supported the conjecture that many of these subcommunity types of organization are a response to internal dissatisfaction with community-level management. They are community mechanisms of accountability given the constraints of the agrarian system and dual mandates. Peter Taylor's work also backs up this argument with case study research. Review of the data also reveals that:

- Discontent with community administration motivates many to change organizational mode for forestry
- Half have chosen to manage forest on parcelized system based on historical patterns of usage.
- Five out of eight parceled that way since before 1992 for forestry purposes.
- If choose to break up, more likely to choose parcel system if had parcels in past. Otherwise, choose work groups. Work group more of a choice if break up by reasons of maladministration.

We draw on Fama and Jensen's (1983) article on the separation of ownership and control to make a more formal statement that the reorganization was an internal institutional response to making community managers more responsive to the community members. Splitting into subcommunity-level groups is a way to create accountability or transparency. For those communities, it makes the flow of funds more transparent by taking it out of the community authorities' hands, and putting commercial exchanges and production more directly into community members' hands.

Table 3: Statistically Significant Differences

Decision	By internal org?	By VI level?
Profit allocation	Yes	Yes
Trade price	Yes	No
Wage/reparto advance	Yes	No
Harvest volume	No	No
Choice of buyer	Yes	No

*Source:* Survey data.

### 3 Decisionmaking processes

#### Structure and process

Does allocation of authority correspond to the internal timber production organizations?

Variations explored:

- Across internal production organizational modes (as above)
- Within organizational models - who makes decisions, size of coalitions, (e.g. General Assembly, CBC, Jefe de Vigilancia, group leaders, individuals, foresters, other)

But these community institutions represent a nexus of highly complex internal and external social dynamics. So what do the internal organization modes which we have labeled “community, “work group” and “parcel” really mean in terms of who makes the decisions?

#### Decisionmaking by internal organization and VI

We followed the decisionmaking authority for a set of important decisions related to forestry operations made in each community. In many cases our internal organization modes correspond to a distinct decisionmaking pattern, although there are mixtures. The patterns do not correspond to vertical integration level except for the profit distribution decision. Again,

Table 4: Who is authorized to make decision?

Production level	Who decides	Percent of responses
Community	General Assembly	62%
	CBC	33%
Work groups	General Assembly	60%
	WG leader	40%
	WG assembly	40%
Parcels	CBC	50%
	Parcel holder	50%
	General Assembly	25%

Source: Survey data.

vertical integration typologies mask great internal variation in organization and management. Only the harvest decision lack correlation with internal organization and vertical integration, being mainly a technical decision laid out by the *prestador de servicios tecnicos* (PST).

### Example: Profit Allocation Decision

If we look at these decisions in detail, we see overlapping decisionmaking authority within each mode as well as across each mode. Let's take the profit allocation decision as an example. Even though differences exist across modes, there is still an element of the GA and CBC present, showing that community-level authority still plays a hierarchical, oversight role in many instances.

### How Explain Assigned Authority

Modeling approach: Variation in how decisions made

- The marginal value of the decision versus the marginal cost of using a particular method of decisionmaking
- "Selection of Collective Choice Rules" (Zusman 1992)
- Cost also entails risk of not being in winning coalition

Table 5: Decisions made in the GA

	(1) Profit decision	(2) Price decision
	Probit	Probit
(Log) forest ha.	0.44+ (1.81)	0.44+ (1.77)
Distance to pop. ctr.	-0.71* (-2.35)	-0.24 (-0.84)
Wealth hetero.	-0.01 (-0.57)	-0.01 (-0.48)
Trust (neg.)	-0.32* (-2.66)	-0.10 (-1.03)
Constant	2.98 (1.01)	-2.15 (-0.71)
N	38	38
Pseudo-R2	.36	.16

t-statistics in parentheses: + p<0.10, \* p<0.05

- Example: GA has lower risk of “not being in winning coalition”, larger costs of reaching a decision.

This data provides an opportunity to test the hypothesis that those decisions with the broadest impact are more likely to be made in decisionmaking forums with the broadest representation (Ostrom 1990; Zusman 1992). Zusman (1992) explicitly describes this idea in a model of collective choice rules using the concept of being in a winning coalition. The risk of not being in the winning coalition - the set of people whose votes are the winning votes - increases when size of winning coalition decreases. Hence, the spread differs when the voting rules are by consensus, majority or sole decisionmaker. For example, in the Mexican communities, the General Assembly is the broadest decisionmaking forum, although women and non-members of the community are often excluded.

The econometrics are completely preliminary at this point and should be considered only as pointing to associations rather than causal chains. That said, there is evidence supporting Zusman’s argument. Factors which raise the value of the decision or risk of not being in the winning coalition should increase the probability of the decision being made in the general Assembly forum. The regressions here show that using the GA is more likely for the profit allocation and the price decision when forests are larger. Communities further away from population centers are less likely to use the GA for allocating profits. The “trust” variable is coded such that lower

numbers represent more trust among community members. So the negative sign means as trust increases, the community is more likely to use the GA forum, possibly meaning that the GA is a less costly way to resolve issues.

## 4 Outcomes

### Implications of institutions and practices

Link governance characteristics with performance measures.

We now turn to linking governance characteristics with performance measures.

### Outcomes considered

- **Local public goods:** school, potable water, municipal buildings, church, fiestas, medical services/supplies, grants, pensions, other
- **Reinvestments in forest:** eqmt, market study, forest ecosystem study, soil study management plan, roads, tractors, trucks, and cranes, secondary processing, diversification, other
- **Conservation practices:** Principal component of timber and NTFP contraband, severity, clearing, fire preparedness.

Outcomes considered are those which reflect multiple objectives often associated with “community forestry” and stated by communities themselves.

Here are some preliminary regression results where subcommunity-level production models did have a negative impact on the performance outcomes. Keep in mind that there are many outcomes where subcommunity models had not apparent effect. But for subcommunity-level operations, there is a narrower \*range\* of investments in public goods (PG) (columns 2 and 3), driven mainly by the individual/parcelized communities and not the work groups. This is only impact related to public goods which

Table 6: Impact of subcommunity organization

	(1) PG- Range OLS	(2) PG- range OLS	(3) Schools Probit	(4) Range- rein. OLS	(5) Diversify Probit	(6) Diversify Probit	(7) CP OLS
Sub-c div.	-0.14* (-2.71)		-0.45 (-0.55)	-0.12 (-1.07)	-1.15+ (-1.95)		-0.37 (-1.42)
Distance	-0.02 (-0.68)	-0.01 (-0.63)	-0.23 (-0.56)	-0.08 (-1.55)	-0.76+ (-1.71)	-0.78+ (-1.76)	0.05 (0.41)
Fuelwood depend.	0.21+ (1.85)	0.22+ (1.90)	6.92* (2.52)	1.37* (5.37)	0.42 (0.37)	0.43 (0.36)	2.01* (3.63)
Member density	0.00 (0.01)	0.19 (0.44)	- (-1.79)	0.18 (0.19)	4.19 (1.01)	6.94 (1.47)	
Parcel		-0.17* (-2.98)				-1.88* (-2.12)	
Pop. density			10.84+ (-1.79)				-0.31 (-1.45)
Constant	0.10 (0.86)	0.08 (0.73)	-3.99+ (-1.95)	-0.29 (-1.19)	-0.26 (-0.24)	-0.39 (-0.35)	-1.37* (-2.63)
N	35	35	35	35	35	35	28
Adj. R-sq	0.23	0.26		0.56			0.60
Pseudo R-sq			0.66		0.20	0.26	

t-statistics in parentheses: +  $p < 0.10$ , \*  $p < 0.05$

we found so far, including testing for each separate PGs (e.g. schools, churches) (e.g. column 3). There was no impact on range of reinvestments in forestry (column 4), but subcommunity groups are less likely to diversify forest uses, a result also driven by the parcelized groups (columns 5 and 6). No impact on conservation practices was found (column 7).

We want to check the distinctions among organizational modes by looking at decisionmakers, so we do not fall into trap of applying cookie-cutter labels to these different approaches. By using a dummy variable for whether the GA is the primary decisionmaking forum for the profit allocation decision, we see that where the dummy is positive, schools are more likely to be allocated forest profits and that the range of reinvestments in forestry production and management is broader. The GA dummy is positive but borderline significant for conservation practices.

## 5 Conclusions

### Summary and conclusions

- Decisionmaking responsibilities follow not VI pattern but internal governance.

Table 7: Impact of using GA for  $\pi$ -distribution

	(1) Schools Probit	(2) Range-rein. OLS	(3) Cons. prac. OLS
GA forum	1.29* (2.74)	0.22+ (1.92)	0.44 (1.68)
Distance		-0.06 (-1.22)	0.12 (0.99)
Fuelwood		1.11* (5.12)	1.99* (3.87)
Member density		-0.37+ (-1.87)	-1.05* (-2.61)
Constant	-0.10 (-0.41)	-0.20 (-1.25)	-1.76* (-4.71)
N	41	36	28
Adj. R-sq		0.61	0.65
Pseudo R-sq	0.16		

t-statistics in parentheses: +  $p < 0.10$ , \*  $p < 0.05$

- Shows variations possible within each VI type.
- The institutions themselves may represent an optimal choice given constraints of the situation.
- Even if break-up, there are often lines of authority entailing community-level institutions.
- Outcomes by internal organization and decisionmaking forums mixed.
- If divide: less diversification and less range of public goods investment (future: check for reverse causality due to pre-existing preferences)
- Applying “best practice” models would be problematic given variability and local norms of accountability

The results so far echo de la Pena’s point of not making a fetish out of culture. These institutions are evolving as needs change and are not frozen in history. In thinking about how to build capacity, we need to consider how and why certain decisionmaking forums are chosen before introduce “best practice” ideas which may try to standardize a common property management system.

### Further questions

- What are constraints to accountability mechanisms?
- Are communities and decisionmakers autonomous from external forces?

- Other ways to support exchange in “agrarian forestry” sector at community level?

Further questions for research include an analysis of existing constraints and possibilities that shape the evolution of communal institutional responses to create accountability. For those who work with local communities, we need to ask what incentives hold leaders accountable within the full scope of community leadership responsibilities?

### **Inclusion and Exclusion**

- Forest rights as means to fulfill citizenship: access to economic resources, political leverage and livelihood strategies.
- Internal institutional changes evident but are there persistent means of exclusion at level of the state?
- Who defines what is forest? Forest reverts to state if community privatizes under the modernization policies; forests object of environmental policy.
- Environmental policy decisionmaking: policy often not decided at community level.

A few words about how this relates to inclusionary and exclusionary policies in this conference. The research suggests we need to look at these groups - the agrarian forestry sector in Mexico and native groups in US - as representing institutions which currently affect the allocation of resources and have been shaped historically as a class by the broader political system to achieve economic and political ends. If more accountability mechanisms are not emerging, why not? Are forest services equipped to address community needs? Political constraints, institutional path dependency, and other factors may exist to give pause before applying conventional notions of accountability to these local institutions.