

Tenure, tourism and timber in Quintana Roo, Mexico: land tenure changes in forest ejidos after agrarian reforms¹

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Abstract: We present and apply an analytical framework for understanding land tenure change in the wake of radical land policy modifications in Mexico's communal tenure system. We posit that the changes in land tenure vary as a result of a complex interplay of drivers external and internal to the land tenure unit. Using interview and socio-economic data, we apply this framework to six ejidos in Quintana Roo, Mexico in order to understand the extent to which these ejidos have shifted towards private individual property as promoted in the 1992 amendment of Article 27 of the Mexican Constitution. In our case study ejidos, we conclude that external factors, including community forestry, tourism, and urbanization, have synergized with factors internal to the ejido (including governance, existing resource base, ethnicity, livelihood strategies, migration, and attitudes about property), leading to different trajectories in land tenure arrangements.

¹ Title inspired by the book *Timber, Tourists, and Temples* (Primack et al. 1998).

Keywords: Community forestry, common property, land tenure, Mexico, tourism

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I. Introduction

In the early 1990s, neo-liberal land policies gained prominence in Latin America and highlighted the market as the prime mechanism to improve efficiency within the agrarian sector (de Janvry et al. 2001). Throughout Latin America there has been increasing emphasis on making land more marketable through titling and land administration projects. During the period 1996–2006 over one billion US\$ was invested in such programs in the Latin America and Caribbean region (Barnes et al. 2007). While some attention has been paid to communal titling of indigenous territories, the emphasis has been on promoting private, individual property.

This general shift to neo-liberal land policies is exemplified by the case of Mexico, which in 1992 reformed the property clause (Article 27) of its Constitution and passed a new Agrarian Law. These changes altered the fundamental tenure rules of the communally held land² that covered over half the country's area (Assies 2008) by, *inter alia*, removing various restrictions over the transfer of land and making it possible to convert ejidos into private property. While many viewed the reforms as a catalyst necessary for rural economic growth, reform opponents speculated that such changes would lead to widespread parcelization (the division of common land into individual parcels) and subsequent conversion of these parcels into private property, resulting in the gradual disappearance of the ejido as a form of communal property (The World Bank 2001; Pous and Villanueva 2005). While privatization and dissolution of ejidos has occurred in some parts of Mexico following these legal reforms, fewer than 10% of ejidos have converted to private property nationwide (Registro Agrario Nacional 2007). This evidence suggests that the reforms have not been widely adopted.

In this paper, we analyze why ejidos have followed different trajectories by examining the experience of six case study ejidos in south-eastern Mexico. We identify several drivers of change independent of the 1992 legal reforms that have stimulated land tenure changes in our area of analysis. Specifically, we

² Two types of communally held land exist in Mexico: ejidos (lands granted by the post-revolution government) and indigenous communities (repatriated indigenous lands). Our study focuses on ejidos, which are the dominant form of communal tenure.

demonstrate that the outcome of national land policy changes is determined by how these changes synergize with other external factors, such as urbanization, tourism or emergent community forestry programs. Furthermore, we detail how these external drivers are filtered by existing resource base, ethnicity, livelihood strategies, migration, and attitudes about property – factors internal to the ejido – in ways that have accelerated or decelerated land tenure changes in our case study communities.

We begin by presenting an analytical framework to understand how the 1992 Reform has influenced land tenure changes in ejidos. Our framework draws from a diverse set of literature, including common property studies, anthropological research, and land policy, in an attempt to identify the key external and internal factors which mediate the land tenure change observed in the ejidos of the Mayan Zone of Quintana Roo.

2. Analytical framework

In the following sections, we provide background to our area of analysis and explain the theoretical foundation of our analytical model. Our model is based on previous findings in land tenure/property rights literature and contextualizes key external and internal drivers in our case study of Mexican ejidos in Quintana Roo. Determining the trajectory of property rights evolution has been the subject of scholarly debate for several decades. Property rights may be determined by economic factors, such that more individualized rights develop when the benefits of creating more specific and exclusive rights outweigh the associated transaction costs (Demsetz 1967). Such arguments point to the predominance of economic efficiency in determining property rights. Yet common property theorists and others have posited the importance of cultural context (Shipton 1994; Ensminger 1996) and informal institutions (North 1990) in the development of property rights. Ostrom (Ostrom 1990; McKean and Ostrom 1995) and others (McCay and Acheson 1987; Ensminger 1996; Hanna et al. 1996; Richards 1997) have elucidated conditions under which common property may function more efficiently than private property in terms of transaction costs and natural resource management. We use this body of literature to inform our expectations for ejido structural change in Quintana Roo and to develop a model of property rights evolution that may be applicable to other regions.

Our analytical framework conceptualizes the governing body of the ejido as the primary actor of ejido structural change since this decision making body determines changing property rights according to Mexican law and local governance procedures. Thus, we consider the ejido as the unit of analysis for understanding changes in land tenure, and we contend that these changes are mediated by factors internal and external to the ejido (see Figure 1). External drivers, including national policies, laws governing the ejido, and development programs, buffer or accelerate land tenure change. Certain external factors, like community forestry programs, have had the observed effect of consolidating and

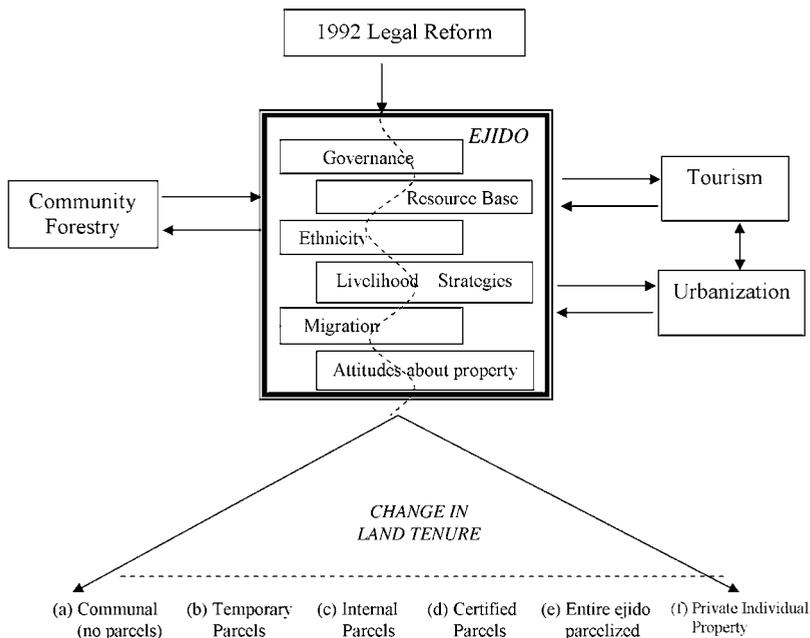


Figure 1: Analytical model of internal and external factors that influence land tenure trajectories.

promoting communal tenure by increasing economic returns from communal activities. Other external factors, such as tourism and urbanization, appear to be driving ejidos towards increased parcelization and individualization by changing real and perceived land and resource values. These external factors invariably influence and are influenced by local governance structures, local concepts about property, livelihood strategies, migration patterns, the communal resource base, and ethnic composition. Thus, the internal variables in our model are not necessarily independent factors; instead reflect the interrelated nature of internal and external drivers.

2.1. External Drivers

2.1.1. The legal agrarian framework and the 1992 reform

Trends towards individualization of land tenure, or the shift from common to more private land tenure, in recent agrarian reform policies has led to research into the impact and efficacy of such policies. Evidence from experiences in Mexico, Kenya and India point to the heterogeneity of outcomes based on a range of factors, including transaction costs, level of market integration, policy design and implementation, and compatibility of customary and formal tenure systems (Ensminger 1996; Jodha 1996; de Janvry et al. 2001). In this section, we discuss the changes made to Mexico's legal agrarian framework in 1992 and their

implementation in order to contextualize the diverse outcomes observed in our case studies.

In the mid-1980s, after repeated financial crises, the Mexican government introduced structural reforms modelled on the Washington consensus that necessitated stimulating investment in rural areas. Granting communities with commonly owned lands the ability to legally divide, title, sell, and rent land was a central part of the strategy to encourage economic growth. In 1992, President Salinas de Gortari passed the Reform of Article 27 of the Mexican Constitution (hereafter referred to as the 1992 Reform), which allowed for the privatization of common land under certain circumstances.

The 1992 Reform articulated a new land policy in Mexico, one that was designed to “catalyze the formation of a new economic and social dynamic based on free market principles” (Baños Ramirez 1998). In effect, the 1992 Reform weakened the social contract between the state and peasants by decreasing the responsibilities of both parties. The state withdrew its responsibility to provide more land for the creation of ejidos, while simultaneously lifting restrictions on *ejidatarios* (legal members of the ejido) to buy and sell ejido lands and to use those lands as collateral. To implement the Reform, the Mexican government created the Program for Certification of Ejidal Rights (PROCEDE) through which ejidos could delineate individual and communal lands and obtain individual certificates. The stated objectives of PROCEDE were to provide tenure security and certainty to the land rights held by communities (Procuraduría Agraria 2007). This would be done by measuring and certifying communal and individual land rights in communities that elected to enter the program, which in turn would create the legal channels to formalize the transformation of collective holdings to individual titles. The PROCEDE process resulted in the issue of documents which included: (1) certificates to urban lots, (2) individual certificates for common use areas defining the percentage share of each *ejidatario*, and if ejidos elected to do so, (3) parcel certificates defining the location, area and holder of each parcel designated with individual usufruct rights. By October 2006, PROCEDE had conducted work in 95% of all ejidos and indigenous communities in the country (Procuraduría Agraria 2007).

Prior to the 1992 Reform, *ejidatarios* could only transfer land by selling their membership rights – which included voting rights, individual usufruct rights to agricultural parcels, and a share in the common land – to other *ejidatarios* or to ejido residents (*avecindados* – residents without voting rights) (Government of Mexico 1992). Under the new agrarian law, *ejidatarios* may legally sell membership rights to anyone, even without a PROCEDE certificate (Government of Mexico 1992). In order to sell individual parcels without selling the entire membership right, the land must first be formalized via a PROCEDE certificate. This must be authorized by the ejido in one of two ways: either a two thirds majority vote of the *ejidal* assembly to convert the entire ejido to private property (*dominio pleno*); or a two-thirds majority vote to allow an individual *ejidatario* to convert only his land to private property (also *dominio pleno*, although on an individual basis)

(Government of Mexico 1992). Thus, there are four potential avenues for the sale of *ejidal* land: (1) selling the full membership right, (2) selling private property through conversion of the entire ejido to *dominio pleno*, (3) selling private property through individual *dominio pleno*, or (4) extra-legally, which usually involves signatures in the presence of a notary and is not recognized as a legal transaction by the state. One important restriction was made in the 1992 Reform: according to the law, forested *ejidal* lands may not be subdivided and sold. While widespread ejido-level *dominio pleno* was expected upon the initiation of the 1992 Reform, only 4% of ejidos in southern Mexico have undertaken the legal process to convert to *dominio pleno*, and the large majority of land sales occur under one of the other three mechanisms.

Since their inception, the 1992 Reform has generated extensive research, debate and speculation regarding its impact on Mexican society and the environment, especially in the years immediately following its introduction. The World Bank recognized that the future land tenure status of ejidos, and the pros and cons of private versus communal ownership, would be “burning questions” for Mexico (World Bank 1995). Many early studies predicted dire consequences for forests, communal governance, and land concentration in Mexico’s rural sector (Bray 1996; Goldring 1996; Harvey 1996; Stephen 1998).

Recent studies have assessed changes in land tenure arrangements since 1992 (Zepeda 2000; Muñoz-Piña et al. 2003; Nuijten 2003; Haenn 2006). This research has found that the reforms have not had the anticipated widespread effect on the tenure structure of the ejido system (Goldring 1998; Craib 2004; Haenn 2006). Nor have the reforms succeeded in revitalizing the rural sector across Mexico by increasing land sales and improving agricultural productivity (Nuijten 2003). Therefore, in general the literature does not point to the widespread effects predicted fifteen years ago. However, given that land tenure change is occurring to some extent across the country, we expect that other factors, when present, may contribute to predicted tenure changes.

2.1.2. Community forestry

We posit that one important factor in maintaining existing common tenure arrangements in our study region is community forestry (see Figure 1). Community forestry programs in Mexico developed in response to state sponsored commercial logging in the region from the 1950s through the 1970s, during which rural people received few tangible benefits from forest products and had limited rights and control over forest resources that they ostensibly owned. Logging of high-value timber species in Quintana Roo, mostly mahogany (*Swietenia macrophylla* King) and Spanish-cedar (*Cedrela odorata* L.), was handled by outside contractors who paid a minimal stumpage fee to communities. This situation changed drastically with the advent of community forestry in the early 1980s which devolved control over forest resources to the ejidos and helped create local governance structures to manage and distribute economic benefits from timber sales (Taylor and Zabin 2000).

The introduction of community forestry as a sustainable development strategy has been an important external factor in determining ejido structural change in many communities in the region. Ostrom and others have established that forest resources are often more efficiently and effectively managed as common property (Runge 1986; Schlager and Ostrom 1992; McKean and Ostrom 1995). Community forestry may be more successful at maintaining and managing forests due to the benefits derived from economies of scale in managing larger areas rather than smaller individual plots (McKean and Ostrom 1995; Arnold 2001). Because they strengthen communal governance and create economic incentives for the maintenance of common forests, we hypothesize that ejidos with established community forestry programs maintain communal land tenure regimes to a greater extent than other communities in the same region.

2.1.3. Tourism and urbanization

Over the last thirty years, tourism has evolved as a major driver of economic and social change in Quintana Roo, increasing land prices and stimulating migration from rural areas to tourist centres. The tourism sector began to develop in the 1970s as part of a national plan to stimulate economic development, attract foreign capital and generate jobs. National and foreign investment converted Cancun from a sleepy fishing village to a mega-resort, increasing annual visitors from 99,000 in 1975 to three million in 2005 (Fondo Nacional de Fomento al Turismo 2007). Tourism has become the most important economic activity in the state, accounting for some 47% of employment and over 37% of income generated (INEGI 2004), and has created new markets for labour and goods from the rural sector. Urbanization, necessary for the centralization of goods and services, is linked to tourism growth in Quintana Roo. Both tourism and urbanization increase demand for land, increasing its price. Subsequently, higher land prices provide greater incentives for privatization as beneficiaries seek to internalize economic benefits of land, following the theory of the evolution of property rights (Feder et al. 1988; Platteau 1996). Thus, in areas of high tourism potential, we expect that the individualization of land tenure will be more pronounced.

In addition, tourism and urbanization have stimulated rural to urban migration, which affects livelihood strategies and cultural values. Tourism development in centres such as Cancun and Cozumel has not spread economic development to peripheral areas as anticipated (Brenner and Aguila 2002), and thus migration to work in larger tourism centres is necessary for rural residents to capture development benefits. Short-term and permanent migration from ejidos to tourist areas provides an influx of wage income and/or remittances from tourism to ejido members, and initiates a process of change in social relations and cultural meanings within the ejido that may have implications for community cohesion (Juarez 2002). As an external driver of change, tourism impacts not only land prices and livelihood strategies, but also the structure and governance of the ejido through increased out-migration and changing concepts of property rights.

2.2. Internal drivers

In this section, we focus on internal drivers of ejido structural change, beginning with an introduction of the study region, and continuing on to discuss our expectations as to how six internal factors (identified in Figure 1) may influence ejido structural change. The central part of the state of Quintana Roo, also known as the Mayan Zone, is characterized by relative isolation from the rest of the country and a high percentage of indigenous people. In 2005, 87% of the area's inhabitants were considered to be indigenous and 67% of the area's population over the age of five spoke Maya as a first language, with 8% of the population speaking only Maya (INEGI 2005).³ This relatively high level of indigenous speakers may in part be due to the Mayan Zone's historical isolation from the rest of Mexico. As a result of insurgent rebellions by Mayan inhabitants and lack of infrastructure links to the rest of the country, this area was a *de facto* independent Maya nation until the early 20th century, and was only officially incorporated into the Mexican territory in the 1930s (Reed 2001). This history of conflict and isolation created a tradition of independent community governance and distrust of external government actors that is still evident in some ejidos today.

Ejidos in the study region are characterized by two distinct periods of establishment, which also correspond to the size, ethnicity and resource base of ejidos. The first ejidos in the area were formed during the wave of agrarian reform implemented under President Lázaro Cárdenas (1934–1940). These were large ejidos dedicated to the extraction of natural gum from *Manilkara zapote* trees, and more recently, timber extraction. Decades later, in the 1960s and 1970s, smaller *ejidos* were established to accommodate migrants from other states. In contrast to the first wave of forestry ejidos that were characterized by large common use areas and forest extraction, the second wave migrant ejidos were largely focused on agricultural production, due to their smaller size and biophysical endowments. This historical distinction is an important factor that determines many of the differences in internal drivers between our case study ejidos.

Based on published information and preliminary field research (Barsimantov 2009; Barnes 2009) we identified six internal drivers of ejido structural change: governance, existing resource base, ethnicity, livelihood strategies, migration, and attitudes about property. Understanding governance characteristics that contribute to effective commons management has been a central concern of several property rights scholars. Well-defined rules and enforcement mechanisms are important for local governance (Ostrom 1990). Previous studies of ejido privatization found that internal governance structures facilitated high levels of cooperation among ejido members in managing common pool resources, thereby reducing division of the commons (Muñoz-Piña et al. 2003). Informal and formal rules and enforcement mechanisms are part of the local governance structures of

³ Statistics are for the municipality of Felipe Carrillo Puerto, which roughly coincides with the Mayan Zone.

the ejido, and the degree of their legitimacy depends on trust and social cohesion within each ejido.

A set of shared cultural traits and an ethnically homogenous group of resource users adds strength to informal institutions that may facilitate the management of common pool resources (Ostrom 1990). Such shared belief systems that embody informal institutions have been linked to indigenous traditions (Richards 1997; Alcorn and Toledo 1998). Mayan people traditionally considered forests to be common property, with individual usufruct rights recognized to fallow areas and planted trees (Farriss 1984; Gomez-Pompa 1987). In addition, there is evidence that Mayans utilized cultural symbols and rituals in the collective management of *milpa* agriculture and forest areas (Faust 2001). We hypothesize that the presence of strong internal governance, shared cultural traits, and/or a homogenous and relatively closed set of resource users, as found in traditional Maya communities, will facilitate the maintenance of common property systems.

Attitudes regarding property are the varying understandings of property rights that are embedded in cultural norms and behaviour. Such attitudes are shaped by individual experiences in conjunction with broader cultural, political and economic contexts (Nuitjen 2003; Mackenzie 2005). A deeper look into the attitudes and meanings associated with property is necessary to understand the dynamics of property rights (McCay and Jentoft 1998). We expect that the interaction of attitudes regarding property with other internal and external factors will accelerate or buffer ejido structural change. As seen in Mexico and elsewhere, cultural norms, political ideologies and even spiritual beliefs underlying land tenure regimes shape property rights changes that may run counter to rational choice behavioural models (Cornelius 1998; Atran et al. 2002). Among forestry communities in Quintana Roo, ejidatarios have been protesting and organizing around access to resources since the 1950s (Bray 1995), resulting in a politicized discourse of land rights infused with symbolic reference to the Maya's tradition of collective resource management. Additionally, new livelihood strategies of community forestry in Quintana Roo may bolster traditional concepts of collective management. In contrast, short-term and long-term migration from rural ejidos to the tourism sector has been associated with changing meanings of traditional agriculture, and subsequently may create differentiation in values and beliefs that make commons management more difficult (Lu 2001).

Existing livelihood strategies will also affect the extent to which ejidatarios are interested in converting to a private property regime. While certain livelihood strategies, such as community forestry, benefit from commons management due to greater economic efficiency and effective management over large areas, other livelihood activities, such as cattle ranching and intensive agriculture, may be hindered by collective management (Schlager and Ostrom 1992; McKean and Ostrom 1995; Arnold 2001). *Milpa* agriculture, the traditional form of slash and burn agriculture dating from the ancient Mayans, is still prevalent in the region (Hostettler 1996). More recently, however, community forestry, tourism, cattle

ranching, and mechanized agriculture have presented new livelihood alternatives, with varying responses from Maya and mixed migrant ejidos. We expect that where dominant land uses include cattle ranching and intensive agriculture, ejidos may have a greater interest in private property. Conversely, where ejidatarios share equitably distributed economic benefits from common resources such as forests, these ejidos may have strong incentives for the maintenance of common property management systems (Schlager and Ostrom 1992; Muñoz-Piña et al. 2003). In order to take advantage of these benefits, however, ejidos must possess a strong forest resource base. Therefore we expect that large forested ejidos with significant timber stocks will be in a better position to create common economic benefits and thus maintain communal property rights.

In summary, the economic, institutional and cultural explanations of property rights evolution put forward by property rights theorists, political scientists, and anthropologists, such as Demsetz, Ostrom, McCay and Nuijten have been used to structure our analytical framework. By combining these varied theoretical strands, we broaden our explanation of ejido structural change to include an understanding of the interacting factors involved in an ejido's decision to maintain common property or convert to private property.

3. Case selection and methodology

We apply the analytical framework described earlier in the paper (see Figure 1) to six ejidos in the Mayan Zone of Quintana Roo in order to understand the process of ejido structural change following the 1992 Reforms. We focus on Quintana Roo because of the claimed success of community forestry in the region (e.g. Primack et al. 1998), the burgeoning tourism industry as a driver of market integration, and existence of ethnically homogeneous and heterogeneous ejidos, all of which we hypothesize play a key role in the evolution of property rights at the community level. The map below shows the location of the six study communities in Quintana Roo (Figure 2). Using the help of local government and non-government contacts we selected two communities with high tourism potential (Tulum and Buena Vista), two communities with existing forest management programs (Noh Bec and Naranjal Poniente), and two 'control' communities with neither tourism potential nor forest management programs (Chunhuhub and Cuauhtemoc). We selected these types of communities in order to focus on our hypothesized primary external drivers of change/stability in the region: tourism and community forestry.

Within each pair, one ejido has a higher percentage of Mayan inhabitants than the other (see Table 1) and, consistent with the historical reasons cited above, one is significantly larger (in population and surface area) than the other. All six ejidos had roughly similar education levels. The importance of these and other differences between case study ejidos will be addressed in the results section.

Fieldwork was conducted during two visits to the municipalities of Felipe Carrio Puerto and Othon P. Blanco in August 2006 and January 2007. Research

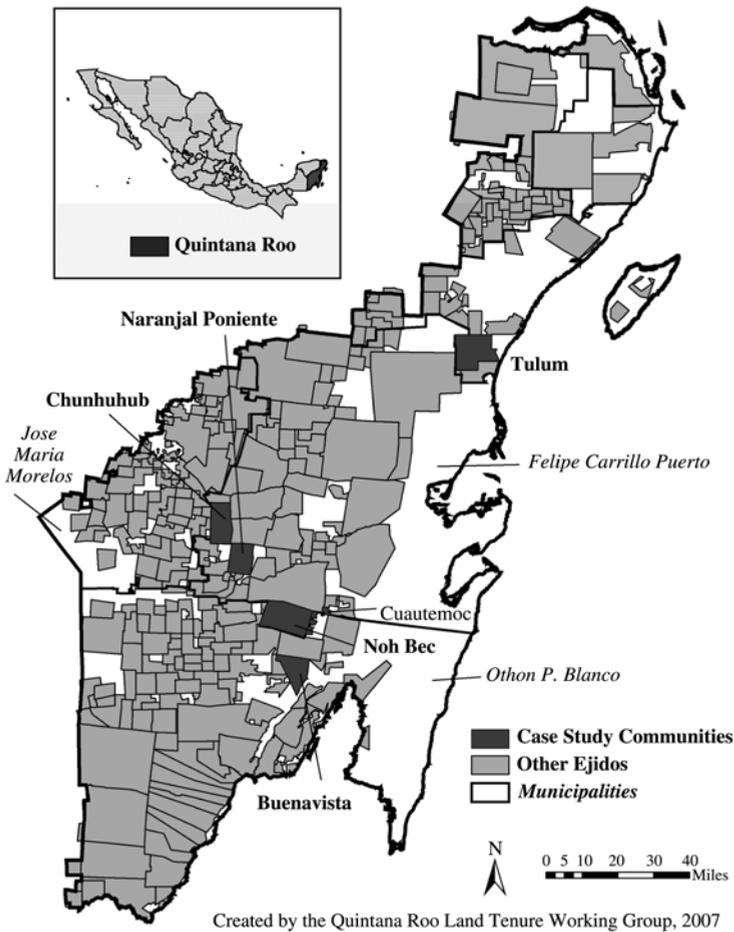


Figure 2: Map of case study ejidos, Quintana Roo, Mexico.

on related topics was conducted before and during this period in the Mexican states of Quintana Roo, Mexico State, Oaxaca, and Michoacan, providing long-term engagement with the region and land tenure changes throughout the country. In each community, open-ended interviews were conducted with ejido authorities and community members. In addition, interviews were conducted with government officials from land registry and environmental offices, NGO staff, representatives from community forestry unions, and private foresters. These interviews were open-ended, focusing on individuals' knowledge of the six study communities, their interactions in general with communities, and their opinions of changes in land tenure in the region. Finally, secondary data from government agencies on demographics, parcelization of ejidos, and forestry permits was obtained.

Table 1: Demographics and physical features of case study ejidos.

	Communities with Waterfront Land		Forestry Communities		Neither Waterfront Nor Forestry	
	Buнавista	Tulum	Noh Bec**	Naranjal Poniente	Cuauhtemoc**	Chumhuhub
Total Population*	627	14790	1890	685	1890	3992
Number of Ejidatarios	148	240	216	137	53	331
Surface Area (ha)	13331	21000	23100	13620	2938	14134
Area per Ejidatario (ha)	90	87.5	107	99	55	43
Ethnic Composition	Maya	Maya and Mixed Migrant	Mixed Migrant	Maya	Mixed Migrant	Maya
Percentage of Population Speaking Indigenous Language*	56.0%	31.5%	20.6%	98.8%	20.6%	53.2%
Percentage of Population Living Outside the Community*	0.4%	18.3%	1.4%	0.0%	1.4%	1.0%
Percentage of Adults With Incomplete Primary School*	44.0%	36.9%	44.6%	49.6%	44.6%	36.3%

*Data from the 2005 Population Count, INEGI.

**The urban area of Noh Bec contains all ejidatarios from both Noh Bec and Cuauhtemucejidos. As such, figures are inseparable in INEGI census data and are presented as a total.

A multi-case comparative approach, using careful selection of communities, can allow for a strong level of causal inference in social research (King et al. 1994). While quantitative studies with large sample sizes can confirm the existence of relationships with a high level of confidence, qualitative studies are better suited to understanding the mechanisms behind causal relationships, especially when these relationships are determined by multiple, interrelated factors. To strengthen confidence in causal inferences we make, we selected two cases in each category and focused on cases that are similar on certain control variables mentioned above (George and McKeown 1985). Based on interviews with key government and non-government actors, we concluded that these cases represent the general trends of land tenure change in the region.

4. Land tenure changes in case study ejidos

Although none of the ejidos in our sample have entirely converted to private property (*dominio pleno*), there is evidence of drastic shifts towards more individualized land tenure in several. To better map these land tenure changes, in Figure 3 we show the potential trajectory of a hypothetical ejido moving through different stages of individualization.⁴ All ejidos in our sample were either in stage (b) or (c) before the 1992 Reform, and while some have moved towards private property, others have not. Stage (a) is the initial titled form of ejidos, with a residential zone comprised of individually held house lots and communal land shared by the all ejido members. In practice, however, the ejidos create some system to delineate individual usufruct agricultural plots with the

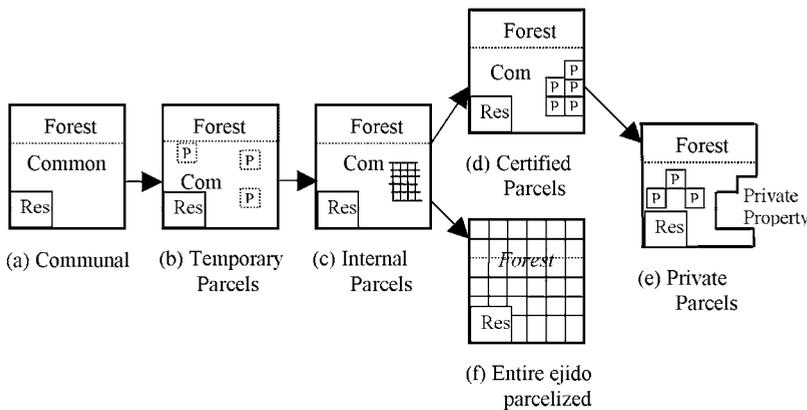


Figure 3: The different stages of individualization of an ejido (Res=Residential, Com=Common, P=Parcels).

⁴ We excluded the conversion to *dominio pleno* and dissolution of the ejido as this had not occurred with any ejidos in the region.

communal area. Initial parcelization occurs with the allocation of temporary use rights to individual ejidatarios (b), which presumably has occurred in nearly all ejidos nationwide. Naranjal Poniente is the community with the strongest common tenure regime, and is stable in stage (b). In this stage, usufruct rights for agricultural parcels are granted to individuals for a specific number of years, but are returned to the community if they fall into disuse. These may develop into more permanent usufruct rights (c) which stay with the ejido member even if the land is left fallow for several years. However, at this stage these rights cannot be sold to outsiders.

The next step in the individualization of land occurs through the process of certification of agrarian rights via PROCEDE (d). As discussed previously, ejidos can choose whether or not they want to certify individual agricultural parcels through PROCEDE. Neither Noh Bec nor Naranjal Poniente elected to have their individual parcels measured by PROCEDE. These two ejidos, which are both community forestry ejidos, have maintained the highest level of communal rights in our sample.

Although these certificates are not private titles, many ejidatarios view them as the equivalent. Legally, they cannot be traded in the open land market without first obtaining *dominio pleno* from the National Agrarian Registry (RAN) and recording these in the Public Registry Office where all private titles and transfer documents (deeds) are recorded. Some *ejidatarios* in our case study communities have attempted to obtain legal titles to facilitate the transfer of land. Buenavista, after selling untitled parcels extra-legally, is now in the process of legalizing these parcels and moving from stage (d) to (e), in which the ejido has legally created private property. This is already the case in Tulum, where high land prices and the demand for land for tourism has led to the ejido privatizing part of the ejido without a decision to shift all individually held land to *dominio pleno*. It is notable that these two ejidos, both with tourism potential, are the only ones that have sold individual parcels to outsiders.

Stage (f) is a different trajectory that was found in Chunhuhub and Cuauhtemoc. These two ejidos have chosen to individualize all common lands, forested and agriculture, without using the process laid out by PROCEDE. This was done internally through the ejido general assembly, and *ejidatarios* in these two communities have no individual titles to their parcels and therefore cannot legally sell individual parcels to outsiders, although they can and do sell their membership rights. Even though the ejido's land base is individualized, the ejido assembly retains its governance responsibilities. Generally, the sale of membership rights is a way to legitimize the sale of internally parcelized land. The sale of membership rights has occurred in both Chunhuhub and Cuauhtemoc. Partial land sales, without a membership right, may also occur, but such sales provide little security to buyers as there is no exchange of legal title or certificate of agrarian rights. Chunhuhub allows partial land sales, while Cuauhtemoc decided to ban partial sales due to their legal and administrative complexity.

5. Explaining varied responses to the 1992 reform

5.1. Community forestry ejidos: Noh Bec and Naranjal Poniente

Perhaps the most important external driver in these two communities has been the Plan Piloto Forestal (PPF), which created community forestry projects in the mid-1980s. Today both communities have forestry programs certified by the Forest Stewardship Council and have communally managed sawmills. Forestry programs generate important economic benefits for communities, including jobs (roughly 150 in Noh Bec and 30 in Naranjal Poniente) as well as considerable income (\$1,500–\$2,500/year/ejidatario in Naranjal Poniente and \$2,500–\$3,000 in Noh Bec). The institutional logic of these community forestry enterprises, in which permits for timber volumes, technical services, loans and credit are administrated at the ejido level, favour collective action rather than individual specialization. As such, the importance of community forestry as a livelihood strategy provides key incentives for the maintenance of communal land tenure in these communities. A key informant from Naranjal Poniente speculated that without the extensive forest resources on communal lands and the success of the community forestry operation, the ejido most likely would have decided to parcelize.

Why is this not the case in other case study ejidos? It is likely that all study communities at one point had extensive mahogany resources, however by the end of the concession period (mid-1980s) these had been depleted in most ejidos. Nonetheless, most case study communities were involved with the PPF. Only Cuauhtemoc, because of its small forest area and minimal timber volumes, did not enter the PPF. Chunhuhub entered the PPF at the same time as Naranjal Poniente, however they did not maintain their participation. As discussed below, internal conflict has played an important role in the weakness of common property management in Chunhuhub and could have contributed to their exit from the PPF. In addition, both Chunhuhub and Cuauhtemoc have a land-to-ejidatario ratio of roughly 50 ha per ejidatario, while Noh Bec and Naranjal Poniente have roughly 100 ha each (see Table 1), which suggests that timber management is a more viable economic strategy in communities with a higher land-to-ejidatario ratio. Buenavista and Tulum both entered the PPF in the mid-1980s, but today have such minimal income from timber sales that it cannot be considered an important income source for ejidatarios. Even though the land-to-ejidatario ratios in these communities is comparable to that of Noh Bec and Naranjal Poniente, an interviewee reported that timber volumes in Tulum and Buenavista had been depleted by the time the PPF entered these communities.

Internal factors have also been important in the maintenance of communal tenure regimes. Residents of Naranjal Poniente and external actors familiar with the community point to their Mayan heritage as an important cultural factor in maintaining community forestry, which in turn maintains forest cover and communal land tenure. According to the 2005 Population Count (INEGI 2005), in Naranjal Poniente 98.8% of the population speaks Maya, as compared

to roughly 50% in the other Maya case study communities and 20% in mixed-migrant communities. Interviewees indicated that communities in the region with a homogenous indigenous ethnicity and a social fabric less fractured by state-sponsored migration tend to have stronger internal cohesion. However, while indigenous homogeneity may play a role, we cannot conclude that it is a precondition for strong communal governance because Noh Bec, a mixed-migrant community, also has strong internal cohesion and has one of the most successful forestry programs in the region.

In both communities, strong communal governance structures, including frequent community meetings and rules for forest use, were apparent. In Noh Bec, however, there were reports of theft of communal funds by past community leaders. This was surprising because of their high level of income from forest management. However, mechanisms for enforcement exist: an ex-leader that stole funds is now having his timber income withheld in order to repay the money he stole. Therefore, while internal conflict does exist, fines for rule-breaking maintain community cohesion and allow the forestry program to continue. The incentive to maintain communal timber income may have motivated the community to find solutions to governance issues, which highlights the interrelated nature of external and internal drivers of these ejidos' trajectories.

In these two communities greater priority is given to maintaining land under communal tenure. This may be a result of Naranjal Poniente's ethnic homogeneity and cultural heritage, but it is probably also related to long-term interaction with external actors from the PPF, the ejido union to which both communities initially belonged (Organización de Ejidos Productores Forestales de la Zona Maya), and the NGO that now works with Noh Bec. These external actors have enhanced this concept of communal property rights through environmental education as part of forest management activities and other community-oriented programs. This seems to be an important reinforcement to the monetary benefit received from forest management.

As a result of this complex interplay of external and internal factors, the 1992 Reform and the option to divide communal land had no effect on these communities. Job creation in forestry activities and income from timber sales, which in turn raises the economic value of forests and common land, has resulted in unchanged land tenure arrangements. Although migration to tourism centres is more common among young adults, these two communities are able to maintain governance structures centred on forest management.

5.2. Coastal ejidos: Tulum and Buenavista

With the growth of tourism throughout Quintana Roo, case study communities have varying degrees of potential for tourism development on ejido land. The two communities with waterfront land, Tulum on the Caribbean Sea and Buenavista on Lake Bacalar, have seen rapid increases in the price of land in recent years (see Table 2), which has become the major external driving force in ejido structural

Table 2: Structural change in case study ejidos.

	Communities with Waterfront Land		Forestry Communities		Neither Waterfront Nor Forestry	
	Buenavista	Tulum	Noh Bee	Naranjal Poniente	Cauatemoc	Chunhuhub
Percentage of Ejido Parcelized	2%, Legal Titles in Process	38%, Legal Titles	Minimal, Internal for Agriculture	none	100%, Internal	100%, Internal
Percentage Common Forest Area	48%	30%	78%	77%	2%	2% (200/area)
Percentage of Ejidal Rights Sold in Last 10 Years	3% to outsiders	none	3% to locals	none	20% to outsiders	8% to locals
Recent Sale Value of Ejidal Rights/Ha	\$80	n/a	\$203	n/a	\$80	\$94
Recent Sale Value of Parceled Land/Ha	\$600 (1996); \$140,000 (2006)	\$20,000 (2001); \$200,000 (2006)	n/a	n/a	n/a	n/a

change. Tulum is on the southern end of the important tourism corridor known as the Mayan Riviera and has become the one of region's most important tourism centres after Cancun and Playa del Carmen, which has led to expansion of the urban zone and extensive job creation. Buenavista, on the other hand, has seen demand for land for waterfront homes rise sharply in recent years, but full tourism services and accompanying urbanization have not been established there because of its distance from Cancun. Still, there is a steady growth of government-sponsored tourism development surrounding Lake Bacalar, which has led to the parcelization and sale of waterfront land usually for vacation homes and small hotels rather than resorts. The high land prices create a clear incentive to ejidatarios for dividing and titling land, and both communities are in different stages of parcelizing more common land.

Tourism development is also occurring in non-coastal areas in Quintana Roo, but growth has been slow. The state contains numerous smaller Mayan ruins, lakes, and forests, and Cauatemoc and Noh Bec are both attempting to implement ecotourism programs focusing around small lagoons and forest interpretive trails. Both communities are close to Majahual, a cruise-ship port, and are planning attempts to take advantage of their proximity to attract tourists to their communities. Naranjal Poniente and Chunhuhub have not attempted to create ecotourism programs, perhaps because they are further away from tourism centres and do not have potential tourist attractions in their territory. In none of these four communities has tourism played a major role in decisions about land tenure regimes, demonstrating the primacy of waterfront land in determining how this external driver affects ejido structure.

The decision to parcelize in both Tulum and Buenavista was directly influenced by demand for waterfront land by external buyers; however, the specific responses and the interactions with internal drivers were different in the two communities. In Buenavista, internal conflict was more prevalent, and theft of communal funds by communal authorities had occurred consistently. When one *ejidatario* tried to take control of a large stretch of common lakefront land under the encouragement of a wealthy outsider, the community decided to parcelize all waterfront land to resolve the conflict and make sure each *ejidatario* received an equal share. In Tulum the decision to parcelize was not due to internal conflict. Rather, it was done to pre-empt an impending government decision to expropriate *ejidal* land to accommodate the expansion of the urban zone due to growth in tourism. In this case, parcelization seems independent of internal drivers simply because of the strength of the tourism driver.

While changes in ejido structure in these two communities was clearly driven by demand for land by investors and foreigners, we believe the 1992 Reform facilitated these changes by creating avenues for privatization of ejido lands. Even though initial land sales were made in Buenavista without any formal titling or certification process, they are now in the process of formal titling. Security of land tenure has become an important factor in the price of land and in the interest of potential buyers, and the 1992 Reforms created a legal mechanism to formalize private property. Moreover, regardless of the legal status of land, the mere fact that the Mexican state supports and encourages privatization of land has created an atmosphere of individuality and private property among *ejidatarios* in these communities, which may contribute to decisions such as the one taken by Buenavista to parcelize waterfront land instead of attempting to enforce communal tenure. Unfortunately, few *ejidatarios* in either community benefited from the rapidly rising land prices, as most sold before prices soared. In Buenavista most *ejidatarios* sold their waterfront lots for US\$600/ha and they are currently valued at US\$140,000/ha. We contend that these sales occurred in the midst of a dramatic shift in concepts of property brought about by the 1992 Reform and nearby tourism expansion, thus facilitating ejido structural change in the two ejidos with tourism potential. This pattern has also led to examples of illegal land sales sanctioned by the government in other regions of the country (Barsimantov and Navia Antezana 2008). In other words, the policy change and accompanying changes in attitudes concerning property may have led to increased land sales, rather than the simple implementation of the new policy. A highly problematic example of this is that in both waterfront communities, private surveying companies have measured forested land for which the Mexican government has issued titles (Tulum) or is in the process of issuing titles (Buenavista). This was done in spite of the fact that under the 1992 Agrarian Law forested land cannot be legally divided. The 1992 Reform facilitated the growth of a land market for tourism that was ready to expand rapidly. What might have happened in these communities given strong tourism pressure but no land policy

reform is impossible to determine, however we suggest that the 1992 Reform played a key role in facilitating the process of privatization in these two coastal communities

5.3. Neither waterfront nor community forestry ejidos: Chunhuhub and Cuauhtemoc

There is currently no strong external driver of ejido change such as forestry or tourism in Chunhuhub or Cuauhtemoc. However, previous external drivers have shaped livelihood strategies in both communities and, combined with internal governance issues, have led to nearly complete parcelization of both ejidos. Over the past two decades, various federal and state government agricultural development programs have been implemented in the region with varying effects on case study communities. These have included cattle, citrus orchards, and mechanized agriculture programs. Government sponsored, communally managed cattle programs in the late 1970s and early 1980s were initiated in Chunhuhub and Cuauhtemoc, and this seems to have led to private cattle grazing as one of the dominant economic activities currently in Chunhuhub following the collapse of communal cattle programs. A citrus orchard project and a mechanized agriculture project were also implemented in Chunhuhub, however due to the high cost of inputs and low prices for agricultural goods they have largely been abandoned by community members. In the absence of external support for cooperative marketing of products or technical assistance, the benefits of communal management of these projects are minimal.

Regardless of their failure as originally conceived, these programs have had a lasting impact on livelihood strategies and communal governance in the two communities. As one of the only profitable land use options available, cattle grazing on an individual level has promoted the sale of *ejidal* rights and forest cover change in Chunhuhub. Interviewees reported that nearly all sales of *ejidal* rights have been to wealthier ejidatarios or non-ejidatarios who intend to use the land to graze cattle. Perhaps because of poorer soils or a lack of capital, cattle grazing is not an important livelihood strategy in Cuauhtemoc today. However, the cattle grazing project was a source of conflict in Cuauhtemoc; several years after a small group of community members initiated the project, the rest of the ejidatarios tried to retake common management of the project, and this led to internal disputes and eventual abandonment of cattle grazing. An ejidatario in Cuauhtemoc stated that this conflict was a key factor in their decision to parcelize common land.

The effect of these types of programs is not as apparent in the four other case study communities perhaps because other external drivers have recently taken precedence or because they were never implemented to the extent that they were in Cuauhtemoc and Chunhuhub. Buenavista and Noh Bec have small areas of mechanized agriculture that were initiated by government programs, and a few

ejidatarios continue to work in them. In the remaining communities it is unclear why projects were not implemented. An ejidatario from Naranjal Poniente claimed that communities to the north of them, which included Chuhuhub, received aid for cattle grazing before it was offered to his community. At the time the program should have been offered to Naranjal Poniente, it was discontinued by the government. Other interviewees contended that Mayan communities are distrustful of government aid and therefore are more reluctant to accept government projects than migrant communities.

Agricultural development programs may have been a source of conflict or even a driver of individualization of livelihood strategies in Cuauhtemoc and Chuhuhub, but the conflict within these two communities seems to have emanated from internal sources as well. Invasions of agricultural parcels by ejidatarios in Cuauhtemoc have been a persistent problem. Timber theft by ejidatarios in Chuhuhub has been common for at least two decades. When the community attempted to reinstate community forestry and obtain a timber harvest permit in the late 1990s, continued wood theft led to the cancellation of the program within two years. Interviewees reported that the community had a valuable timber resource base when the PPF was implemented; however, internal conflict seems to have been a key factor in limiting their ability to create significant income from this communal resource.

In both communities, informants repeated that private land is more desirable because the owner has security and can make land use decisions. This concept of individual property rights is a relatively new phenomenon in the region, and we suggest that the 1992 Reform played a role in this shift. An ex-elected leader of Cuauhtemoc claimed that the 1992 Reform allowed them to parcelize their land. However, both Cuauhtemoc and Chuhuhub parcelized their land informally, without the help of PROCEDE and legal certificates. Because forested land was parcelized, it is unlikely that government agencies will legally recognize this parcelization. Although the parcelization of forested land was recognized in Tulum and Buenavista, it is likely that the involvement of private firms and wealthy buyers along with the inflated price of land created the potential for circumventing the law.

Although the 1992 Reform did not directly allow members of Cuauhtemoc to parcelize their land, it did create a shift in attitudes of property rights in the community that in part led to the decision to parcelize. An interviewee in Cuauhtemoc stated that while members of the ejido had considered partitioning and distributing common use lands prior to the reforms due to internal conflict, there was no available model for parcelization in the region. The 1992 reforms provided a tenable model for parcelization that the ejido of Cuauhtemoc adapted, while allowing it to avoid legal complications of formally dividing forested ejido lands. Without the communal benefit from common landholdings, the continued presence of internal conflict, and new models of parcelization provided by the 1992 Reform, Cuauhtemoc and Chuhuhub chose to completely parcelize by means of internally recognized processes.

The low land values make it infeasible to formally title smaller parcels via a private firm, thus making complete parcelization a more desirable option. Complete parcelization in these two communities means that ejidatarios can only sell their *membership* right instead of subdivided parcels as is the case in Tulum and Buena Vista.

6. Conclusions

Our case studies confirm that the 1992 Reforms have not resulted in a massive shift from the ejido's collective structure to individual holdings as predicted. We posit that the transition of the ejido from collective to private land holdings is not an inevitable outcome once legal structures are established. Rather, ejido structural change is mediated by internal factors, including governance, ethnicity, livelihood strategies, migration, concepts about property, and the existing resource base. Thus, our study reveals combinations of factors that may either support the maintenance or dissolution of common property.

Based on the six case studies presented, we have argued that, while the reform certainly facilitated ejido structural change, the varied effects of the reform on ejido structure are largely dependent on other drivers and incentives unrelated to the policy reform. Table 3 summarizes the internal and external factors that have led to changes in land tenure in the six communities.

We found that rising land prices related to tourism expansion in these regions prompted parcelization and increased land sales to outsiders in the two waterfront case study ejidos. The transition to formal individual titles in the ejidos with increasing land values conforms to theoretical expectations that private rights will emerge when a resource becomes scarce and the benefits of exclusive rights outweigh the costs (Demsetz 1967). Unlike the other ejidos in our sample, formal measuring of private parcels in these ejidos is being performed by private firms, which demonstrates that, in these cases, the benefits from potential land sales of titled land are perceived to exceed the transactions costs for titling.

In contrast, the forestry ejidos maintained larger proportions of common lands due to economic benefits to members from community timber management. Our findings resonate with the findings of common property scholars, discussed in the previous section, which point to the conditions under which common property regimes may remain stable or transition into other property types. Successful commons outcomes result when resources may be managed more efficiently as a whole and when resource appropriators share an economic interest in those resources (McKean and Ostrom 1995; Arnold 2001).

Factors internal to the ejido, such as strong governance structures, ethnic homogeneity, and positive attitudes towards common property management, when bolstered by economic incentives and external affirmation of community forest management by NGOs, were also important in buffering ejido structural change, as demonstrated in the forestry ejidos of Naranjal Poniente and Noh Bec.

Table 3: Economic Activities, Resource Base, External and Internal Drivers of Change in Case Study Communities.

	Communities with Waterfront Land		Forestry Communities		Neither Waterfront Nor Forestry	
	Buena Vista	Tulum	Noh Bec	Naranjal Poniente	Cuahtemoc	Chunhuhub
Primary Economic Activities	Agriculture	Tourism Employment	Forestry, Commerce	Forestry, Agriculture	Agriculture, Commerce	Agriculture, Cattle
Legal Yearly Timber Income per Ejidatario	\$60	0	\$2,500–3,000	\$1,500–2,000	0	0
Tourism Potential	High	Very High	Medium	Low	Medium	Low
Internal Drivers	Governance/Conflict, Property Concepts	Migration, Livelihood Strategies, Property Concepts	Governance/Cohesion, Livelihood Strategies, Resource Base	Governance/Cohesion, Ethnicity, Resource Base	Governance/Conflict Property Concepts	Governance/Conflict Livelihood Strategies, Property Concepts
External Drivers	Tourism	Tourism, Urbanization	Community Forestry Development Programs, NGOs	Community Forestry Development Programs, NGOs	1992 Reform, Reform	1992 Reform, Government Agricultural Development Programs

Conversely, where resource appropriators have conflicting interests, as was the case of the 'neither forestry nor tourism' case studies, and when innovative internal institutional arrangements do not emerge to resolve conflicts, the commons may be divided (Baland and Platteau 1998).

As we have argued in this paper, Mexico's reform of tenure laws has not followed a linear path, with ejido structure moving from collective to individual. We have shown cases in which factors internal and external to a land tenure unit interact in the wake of agrarian reform and result in consequences that are multifaceted and complex. We posit that the 1992 reforms created not just formal legal mechanisms for ejido structural change, but also represented a new model of property that, in conjunction with varying external and internal factors, could support the intentions of ejidatarios or stakeholders with tourism development interests to promote structural change within the unique context of individual ejidos, whether that be to resolve internal ejido conflicts or to facilitate land sales in tourist areas (Nuitjen 2003; Haenn 2006).

Mexico's 1992 legal reform is exemplary of a global trend towards neo-liberal economic policies that considerably alter the governance of rights and resources. While such policies are created at national and international scales, they are typically filtered by a diverse set of factors which can result in profoundly localized impacts with distinct outcomes. Recognizing the complex interplay of internal and external facilitators of policy implementation provides a broader framework for understanding the varying impacts on institutions and landscapes.

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