A commodity chain analysis on Commercial timber profits in southern collective forest region in China

(First Draft)

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April 2006

Abstract

This article analyses the profit distribution of commercial timber by using commodity chain analysis method, tracing the vertical and horizontal distribution of profit along the commodity chain of commercial timber among different actors based on a typical county in southern Chinese collective forest region. Before the commodity chain analysis, the article describes harvest quota policy as a chain of events, analysing its equity and impact of the policy on the distribution of commercial timber profit. It is concluded that the forest property reform in southern Chinese collective forest region will not be sufficient to fully ensure rural households benefit from commercial timber marketing. As a general policy recommendation, it is suggested that, in order to stimulate rural household's activity for forest resource management, companying with current reform, it is very important for government to formulate a certain mechanism to ensure rural households to fully access to forest resource and market.

Introduction

South collective forest region, taking up 22.6% of China territory, involves 10 provinces (Zhang *et al* 1992). Forestland and forest stand volume account for 37% and 18% of its national total respectively (SFA 1994-1998). It is a traditional commercial forest region, but also playing an important role in local household livelihood. (Zhang *et al* 1992) To motivate local household to well manage forest, in the early of 1980's, the property reform taken by central government allows allocating both existing forest and barren forestland to each household for management of 50-70 years. The policy puts approximately 70% forest currently under household's management, while remaining 30% under collective management, mainly, under administrative village committee (village, hereinafter) in this region (SFA 1949-1986). Current forest is mainly managed in the forms of collective forest farm under village control, share-holding forest farm, individual forest farm, community-company partnership and households (Jian hong, Liu pingkang 1997).

Timber trade is active historically in the region. From 1949 to 1985, under planned economy system, timber trade was strictly controlled by governments. Only state-owned Timber Company was officially permitted to purchase timber according to fixed price and annual timber production plan set up by government, then directly transporting timber to end user. Fixed price is even lower than practical forestation cost. Therefore, in 1985, central government liberalized timber market in the region with a view to adjusting distorted timber price based on market demand and benefiting local households so that local household's enthusiasms are expected to be improved to well manage forest and to speed up forest rehabilitation. However, beyond the expectation, illegal logging was rampant following the policy, leading to quick close-up of the opened door in 1987 by central government and to strict control by implementing forest harvest quota. State-owned Timber Company under county forestry bureau was re-empowered to purchase timber from households. The policy has not been officially ended by now. However, with establishment of market-oriented economic system in China, timber market in collective forest region has been gradually liberalized after middle of 1990's (Zeng jingrui 1999).

Aiming at further mobilizing rural households to actively manage collective forest, a new round reform ensuring forest property security is under discussion by central forestry sector. To analyze profit distribution of commercial timber along its commodity chain will depict who really benefits from commercial timber, the main income source for local rural households in collective forest region. The analysis in this study will probably provide a unique view on current forestry policies being implemented in the region and also recommendations for adjusting current policies are put forward at the end of the study.

Study Methodology and objectives

This study employs commodity chain method to analyses whole marketing process of commercial timber from rural households to end users. Commodity chain is an empirical analysis method, through which, a commodity, such as timber passes, from harvesting through production to end user. It is a tool for understanding who benefits from natural resources, how benefits and how those patterns of benefit distribution might be changed (Jesse Ribot 1998).

This case study takes commercial timber in a specific site in southern collective forest region as a commodity in question. Data are collected from three typical collective provinces, including Zhejing, Anhui, Guangxi, Jiangxi, Fujiang, through literature review, interviews and questionnaire in the field. The analysis in this study is mostly based on the data from Zhejiang province, but the data collected from other southern provinces also are taken in this study as a comparison.

Since the middle of 1980's, forest harvest quota has been practiced in China, the case study firstly analyzes the process of establishing and allocating the quota, trying to find its distributional equity in the processes and then moving to the analysis of the commodity chain of commercial timber by identifying the actors involved in the chain, evaluating income and profit among groups of actors along the chain and mapping the mechanisms by which access to benefit is maintained and controlled by actors. These analyses finally serve as a general assessment of current forestry policies, namely, harvest quota, forest property reform and market liberalization in collective forest region.

Case description and history

This case study selects He Cun (village) timber market, previously called timber and bamboo market of western Zhejiang province, as a specific study site. He Cun timber market, formally named in May, 2005, is located He Cun, a famous town in Jiangshan county of Zhejiang province. The location of He Cun is an important juncture of three provinces, namely, Zhejiang, Jiangxi and Fujian. Both highway and railway are very convenient, making He cun a traditional timber distribution center. Since 1950's, two state-owned timber companies, called Fujian timber storage yard and Jiangshan timber company, were set up in He Cun by government. Timbers coming from northern and southern Fujian province and neighboring regions are stored in He cun and further transferred to eastern China. The current timber market in He cun, with 630 timbers & bamboo processing companies, more than 7,000 businessmen and temporary job employees as well as more than 1.3 million $M^3$of annual timber trade volume, is the third biggest timber market on national list of same category and the largest one in eastern China. 60% timbers on the market come from northern Fujian and 15% from eastern Jianxi and Hunan province respectively, and the remaining from local and other neighboring regions. When the timbers from these sources are transported into He cun market, most of timbers are processed into intermediary goods or primary wood products such as squared-edged timber, saw wood, veneer etc. All these timber products with logs are further transported into the markets in Hongzhou, capital city of Zhejiang province, Jiansu province and Shanghai municipality via highway and railway.

Key findings

1. Establishment and distribution of harvest quota

In order to protect limited forest resources in China, harvest quota policy has been implemented since1985 in line with the first Forest Law passed by national congress. Following the principle that total forest resource consumption should be lower than its total increment and annual harvest quota should be strictly controlled, Forest Law stipulates, except cutting sparse trees on farmer's owned mountain or around farmer's house, any harvest of commercial timber with DHB≧5CM should apply for harvest quota in advance, and the timber produced under harvest quota should be integrated into national annual timber production plan, which mainly serves as a means for controlling commercial timber transportation. Any transportation of commercial timber from forest area to market, and any processing of the commercial timber in forest area are also required to obtain licenses from forest agencies (Zhang Lei, Wang hongxiang 2000)

A. Establishment of harvest quota. Harvest quota is established at 5 years intervals. The establishment of harvest quota follows administrative procedures from bottom to top. County is the basic authorized or designated unit or the bottom for establishing harvest quota in collective forest region. Following the procedures from bottom to top and national technical regulations for guiding establishment of harvest quota, the amount of quota is initially proposed by county forest bureau on behalf of county government based on calculation of annual increment and allowable cutting volume by technicians. The basis for calculating annual increment and allowable cutting volume is the latest forest resource inventory at county level. After the proposed amount of quota is initially established by county, it is rendered to provincial forestry agency, where the proposed amounts of quota from various counties in the province are pooled and adjusted according to provincial forest resource inventory. And then the adjusted proposed amounts of quota are forwarded to state forestry administration (national) for further adjustment based on national forestry inventory. Finally, the total proposed amount of quota finally adjusted by state forestry administration, the normal adjustment by state forestry administration is to reduce the proposed amount of quota from provincial forestry agencies. The proposed amount of harvest quota adjusted by state forestry administration is further presented to state council for final approval. To make the final approval, the state council normally holds a meeting to further discuss the rationality of the total proposed quota by state forestry administration, provided there is no distinct opposition from participants of the meeting, then state council approvals the total proposed quota. The quota approved by state council will be distributed, from top to bottom, to provinces and then further to counties and other designated entities for establishing quota, based on their respective proposed and adjusted amount of quota, the quota distributed to each designated quota-establishing entity is a statutory figure, requiring strictly follow within the five years without breach.

B. Distribution of harvest quota at county level and the application process for rural households. After harvest quota is distributed to a county, county forestry bureau is responsible for administrating the quota. There is no nationally unified ordains from central governmental forestry agency on how to manage the quota by county forestry bureau, therefore, the way of managing harvest quota is varied at county level. Normally, the quota is further distributed by county forestry bureau to township forestry station. In most of counties in Zhejiang province, except directly holding some quota by county forestry bureau itself for special purpose, most of the quota allocated to county from high level forestry agency is further distributed to township forestry station, based on forest resources status, total stand volume of mature and over-mature forest and total stand volume of different forest type in each township, and then to each administrative village.

Before harvesting commercial timber, rural household needs to fill an application. Household's application should be approved initially by village committee and then rendered to township forestry station, where the amount of quota applied by households will be pooled village by village. Providing the total cutting volume from household's applications in a village is less than $40M^3$[b] and then staffs in township forestry station organize village cadre, village forest guard and households to take an on-site check of the forest stand being applied for harvest. The on-site check involves tree-marking, scaling, filling form of field investigation. Information filled in the form includes exact harvesting site, tree species, total number, standing stock, wood outturns etc, which is recorded on-site. All the paper documents from the process above are rendered by township forest station to county forestry bureau for further verification. The total cutting volume rendered by township forestry station is approved after passing the verification by country forestry bureau and then cutting license is separately issued to each household by township forestry station. After household has obtained the cutting license, households can operate cutting activities under the supervision of village cadre or forest guard in a village. Providing the total cutting volume from household's applications in a village exceeds $40M^3$, the above-mentioned procedures are directly organized by county forest bureau.

Based on the above description of the procedures of establishment and allocation of harvest quota, the most important actors for establishing and allocating harvest quota at county level involve county forestry bureau, township forestry station and village committee. All the decision-making processes are almost operated by government without genuine participation from local rural households although rural households have been endowed with forest property based on governmental policy. Firstly, establishment of harvest quota is based on governmental needs for controlling forest consumption rather than rural household's needs for livelihoods. The process to establish harvest quota is purely treated as a technical and governmental-oriented works without consulting with local rural households, definitely blocking local household's participation, resulting in lack of household's understanding of governmental intention to implement the policy of harvest quota. Secondly, harvest quota distribution is strictly controlled from central to local. Normally, the harvest quota distributed to a county is much lower than its previously proposed amount of harvest quota. To distribute the harvest quota in a county, county forestry bureau must balance various demands from multiple forest management entities such as collective forest farm under village control, share-holding forest farm, individual forest farm, community-company partnership and households. Compared to other entities applying for the quota, rural household is normally in disadvantage, namely potentially unequal access to harvest quota existing among different groups of applicants**.** Although interviews with county or township forestry agencies in the five provinces indicate the distributional process is quite transparent and fair, many households interviewed usually complain it is difficult for them to obtain cutting license. It seems

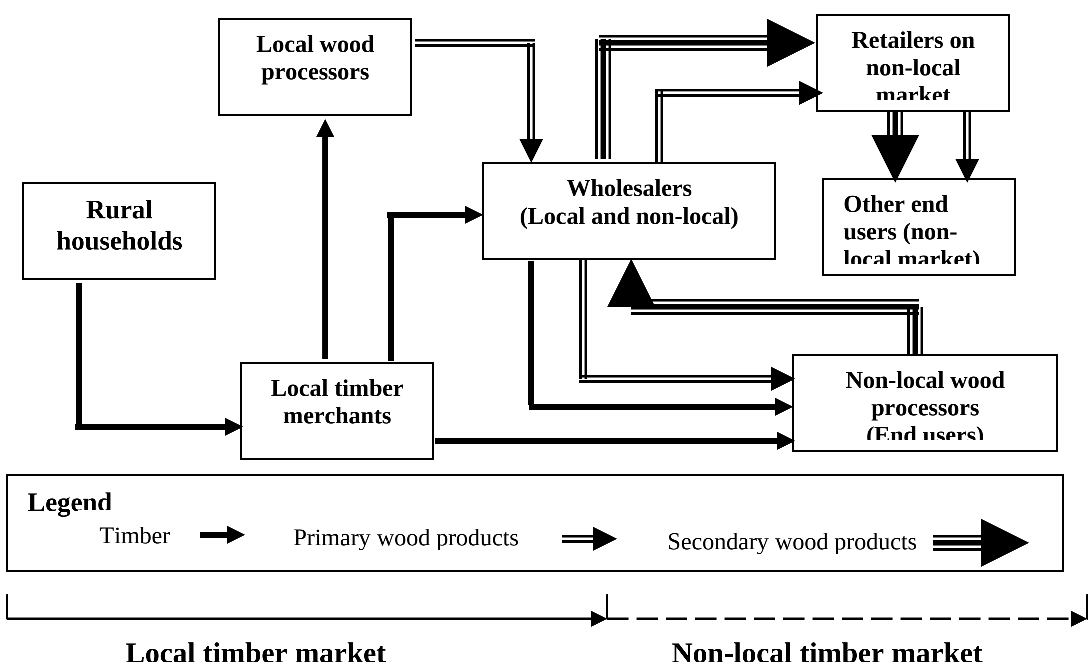
[b] The figure is varied in different counties.

that it is relatively easier for village committee or collective forest farm and other forest management entities as applicants of collectively-managed forest, to obtain cutting license with bigger cutting volume than each household based on field interviews. To quest the answer for the potentially unequal access to harvest quota by different groups of applicants, normal answer from county forestry bureau through interview is forest resource in the village, the collective forest farm or other entities is richer and the actions taken by village committee, collective forest farm or other entities are able to be easily supervised by county forestry agencies. However, data reflecting forest resources status is controlled by county forestry agency, even most of township forestry station and village committee do not know about exact forest stand volume in their specific area. Field investigation further indicates annual maximum quota approved for each household never exceed $10M^3$ even if annual increment of forest resource held by each household is much bigger than $10\ M^3$. The limitation of annual maximum quota to great extent restricts households' access to commercial timber market.

2. Commodity chain of commercial timber

A. Identify the groups of actors along the commodity chain. Investigation shows the groups of actors along the commodity chain on He cun timber market mainly involve households, timber merchants, wood process and wholesalers. The whole picture of the commodity chain of commercial timber on He cun market is shown in diagram 1.

Diagram 1 Commodity chains of commercial timber on He cun timber market



Households obtained harvest quota normally cut forest in the winter of the same year or in the early spring of next year. Taking into consideration of all unfavorable factors such as limited timber cutting volume allowed, insufficient labor force in each household due to doing part time job outside, difficulties for transportation and lack of knowledge on timber market etc, households prefer to sell living forest stand with cutting license to timber merchants. It is rare for households to sell timber directly to other actors due to transportation limitation and unfamiliarity to market information.

Timber merchants are mainly local citizens. Most of merchants are former employees of state-owned timber-purchasing company under county forestry bureau, few are talented rural farmers. There are approximate 2000 merchants on He Cun market. Although there is no institutional limitation on being a merchant, merchants must be quite familiar with local forest resource distribution, road condition, market information and clients. Timber merchants purchase timber from local and neighboring counties in zhejiang province as well as from counties in northern Fujiang province and eastern Jiangxi province etc. When merchants purchase cutting right of living forest stand from households, they employ woodcutters to cut trees. Woodcutters are local farmers, paid 10-15USD per day on average by merchants. Woodcutters cut trees, cutting off branches, making log and carrying to roadside for transportation. There are approximate 400 trucks, especially, for timber transportation on He cun market except railway, most of merchants hire truckers to transport timber to market, but few merchants transport timber by their own trucks. Merchants normally sell timber to local wood-processing mill (wood processor hereafter), wholesalers or bigger wood processors in non-local market. Few merchants also retail timber to local end users, but the amount of timber sold is limited.

Wood processors on He cun timber market are local and non-local citizens. There are total 967 wood processors in Jiang shan county, of which, 630 located in He cun market. There are 100 wood processors with annual income exceeding 5 million RMB on the market. To be a wood processor, wood-processing license and business license are required by county forestry and business management sectors except fixed and circulating capital, which tends to be hurdles for local farmers to run a wood-processing business. Wood processors usually purchase timber from merchants and further manufacture timber into primary wood products, such as squared-edged timber and veneer etc, and then mainly selling wood products to wholesalers. Few wood processors on He cun market also retail primary wood products to local end users, but amount of products sold are also limited.

Wholesalers usually purchase primary wood products or timber on He cun timber market and then transfer these primary wood products or timber into bigger wood processors, retailers on non-local markets. There are approximate 150 wholesalers, either local or non-local citizens, on He cun market.

Pure retailers in He cun timber market are very few. But few timber merchants or local wood processors also act as retailers of timber or primary wood products on He cun market, which means both timber merchants and wood processors can obtain multiple benefits from the commodity chain through vertical integration.

Based on diagram 1, county forestry bureau has not directly participated timbers marketing. County forestry bureau is responsible for managing harvest quota in a county, they also benefits from commercial timber marketing through levying forest rehabilitation fees, service charges for licenses of cutting, timber transportation, processing, quarantine and business management on timber market etc. Fines on illegal timber-cutting and transportation also come into governmental revenue. The income from levying fees for forest rehabilitation is distributed among governmental forestry agencies at county, prefecture and provincial level although governmental forestry agencies at prefecture and provincial level have not involved in the commodity chain. Governmental forestry agencies at prefecture and provincial level normally take up 5-10% and 10-20% of the total forest rehabilitation fee collected by county forestry bureau, but percentage of allocation among the agencies varied in different provinces.

Township forestry station and village committee have not directly participated commercial timber marketing, not directly benefiting from the timber directly harvested by households and relevant marketing. However, township forestry stations in Zhejing province are empowered to issue cutting license on behalf of country forestry bureau providing harvest quota applied from a village is less than $40M^3$, which means township forestry station, to some extent, controls household and merchant's access to forest harvest. Passing village committee is initial step when households apply for harvest quota. Although village committee cannot make final decision on households' application, positive comments from village committee are helpful for households' application to be approved by forestry agencies at township or county level. Therefore, village committee can indirectly influence households or merchant's access to forest. Furthermore, village committee can directly decide merchant's access to the forest directly managed by village committee or collective forest farm. Approximate 20-30% forests in southern collective forest region are directly controlled by village committee.

He cun market is a center for transferring timber and wood products in eastern China. Based on diagram 1, although there are several commodity chain related to commercial timber on the market, timber is the biggest portion transferred on the market. Therefore, this study focuses on analysis of the commodity chain along household, merchant, wholesaler, non-local wood processor with timber as an unchanged commodity.

B. Profits distribution along commodity chain of commercial timber. To analyze price, expenses and volume purchased and sold by different groups of actors can depict profits distribution among different actors along the commodity chain.

----Vertical distribution. Taking Chinese fir (name of the timber) with medium DHB (16-18cm) as an example for analysis, author has collected, through literature review and field survey, price and expense on the timber of Chinese fir in 1990 and 2005, shown in diagram 2.

Analysis of the data in diagram 2 shows expenses paid by households in 1990 accounts for 55.5% governmental-fixed price of 450 RMB.[c] The expenses paid by merchants in 1990 accounts for 74.5% of the profit space (800RMB-450RMB).Total expense paid by households and merchants in 1990 accounts for 63.8% of the selling price of 800 RMB. As a result, although the price from household to merchant and the price from timber merchant to wood processor are higher than those in 2005, the profits for both households and merchants are 200 RMB and 89 RMB respectively, much lower than those in 2005. Literature review indicates expenses paid by households and merchants in 1990 mainly come into governmental revenue in the forms of taxes and fees. The data in 2005 shows no expenses directly paid by households even if the price from households to merchants is lower than that in 1990, resulting in 50% increase of household's profit in 2005. Simultaneously, merchant profit is increased by 147% in 2005. The increased profits mainly result from reduction or exemption of taxes and most of fees levied on commercial timber, which probably explains increasing household's

[c] Exchange rate between RMB and USD: 1USD＝5.22RMB (1990); 1USD＝8.7RMB (2005);

zest in collective forest region in recent years. However, it should be noted the profit obtained by household in 1990 and 2005 doest not consider forest rehabilitation and management cost paid by household. Actual net profit for household should be lower than the figure shown in diagram 2.

Diagram 2. Price structure of commercial timber (Chinese fir with medium DHB)

Items	Price/expense/profit (1990） (RMB)	Price/expense/profit (2005） (RMB)
Price		
Households to merchants	450	300
Merchants to Wholesalers	800	750
Wholesalers to end user (non-local wood processors)	900	810
Expense		
Households	250	0
Merchants	261	230
Wholesalers	20	10
Profit		
Households	200[d]	300
Merchants	89	220
Wholesalers	80	50

Note: Date in 1990 are cited from paper written by Wang xianen, 1990, reflection on maintaining economic benefit for rural forest farmer, Journal of forestry work research, 1990, No.2, page38-40 (Chinese)

Following diagram 3, based on data in 2005, presents vertical distribution of income and profit among different actors on He cun market. Field survey shows there are approximate 2,000 timber merchants and 150 wholesalers on the market. Timber sold by timber merchant on the market is rough 900 thousands M^3 annually; most of the timber are purchased by merchants from local and neighboring counties in zhejiang province as well as from counties in northern Fujiang province and eastern Jiangxi province etc. Timber transferred to non-local wood processor by wholesalers is around 400 thousands annually. As shown in diagram 3, the average net profit from timber marketing for per person comes from net income minus minimum subsistence cost. The groups making the greatest individual profits are wholesalers.

----***Horizontal distribution.*** The analysis of horizontal distribution of profit is based on questionnaire in He cun timber market. As shown in diagram 3, profit distribution both among merchants and wholesalers are skewed. Some merchants make enormous profit and some even lost money in the business. For wholesalers, about 30% of wholesalers almost control 60% of timber wholesale on the market and most of wholesalers are small operators. The factors possibly result in uneven profit distribution

[d] Marketing of commercial timber in 1990 was monopolized by state-owned timber-purchasing company under county forestry bureau, but the monopoly has been gradually broken since later of 1990's. Households in 1990 were allocated with forest, but households in most of collective forest region were not empowered to harvest commercial timber. Actual merchant and household in 1990 are state-owned timber-purchasing company and village, which means, actually, the portion of profit finally received by each household should be less than 200 RMB.

among either merchants or wholesalers will be further analyzed in following section. For households, since annual maximum harvest quota obtained by each household never exceeds $10M^3$ on average, the amount of harvest quota is distributed evenly among households in a village; therefore, profit from commercial timber is evenly distributed among households in general. Only few households profit 50-100% higher than the normal through over-cutting.

Diagram 3. Vertical distribution of income from timber marketing on He Cun market

Groups directly involved in timber market	**Group size**	**Average net income per person (RMB)**	**Average net profit per person (RMB)**	**Distribution within group (RMB)**
Merchant	2000	99,000	88,364	Skewed
Wholesaler	150	133,333	122,697	Skewed
Comparison				
Annual GDP per capita		6225		
Legal minimum wage		6720		
Minimum living cost				
----Urban		10636		
----Rural		4659		

Note：Data presented in diagram 3 are based on interviews with county forestry bureau, local farmers, businessman and staff on He Cun timber market

Before abolishing or reducing taxes and fees levied by government on commercial timber, county forestry agency, township government and village committee benefit from commercial timber via various taxes, fees and fines. The profits are unevenly distributed among county, prefecture, provincial forestry agencies, township government and village committee. County forest takes up biggest portion and township government obtain the smallest. While most of the taxes and fees previously levied on commercial timber are reduced or abolished based central government policy taken in 2004, county forestry bureau still levies fees for forest rehabilitation and various service charges. The income of county forestry bureau through levying taxes and fees is also unevenly distributed among county, prefecture, provincial forestry agencies, township government, but township forestry station and village committee have not directly benefit from commercial timber harvested by households and the income obtained by county forestry bureau through levying taxes and fees in the process of commercial timber marketing.

C. Means of access control and maintenance. Access to benefits from commercial timber is controlled and maintained through different mechanisms at each level of the market. Households, timber merchants, wholesalers and governments are all obtaining profits by different means of access maintenance and control.

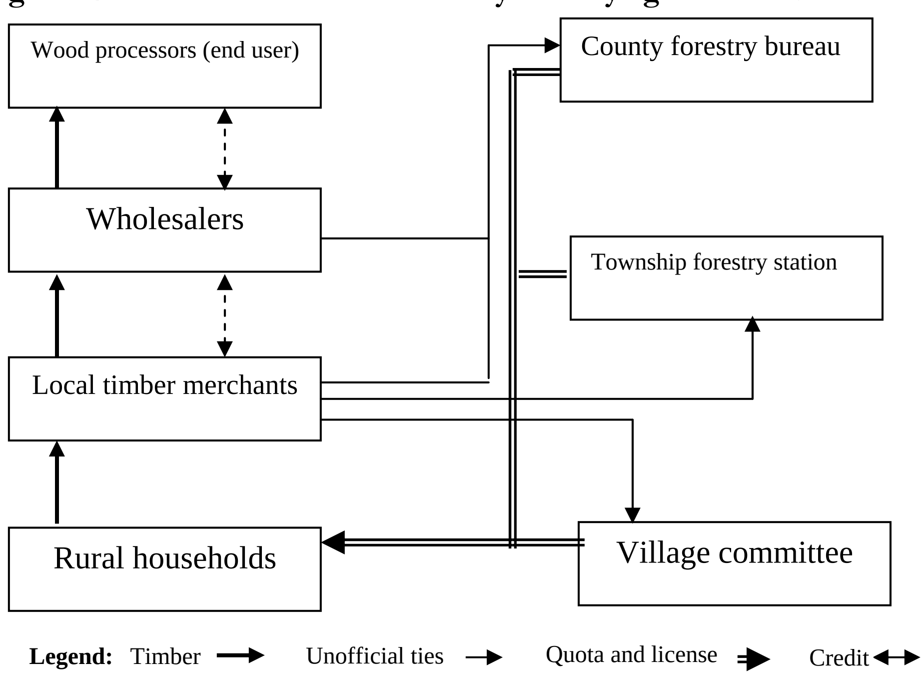
----Households. Households obtain direct income from commercial timber through control cutting license. Based on forest resource management regulation, harvest quota or cutting license must be applied in the name of households when forest allocated to households is harvested. Some local villagers employed by timber merchant to cut forest can earn extra income. Over-logging is taken by few households as a means to gain extra income but facing risks.

----Timber merchants. Merchants gain profit by various means. Merchants play an intermediary between households and markets. It is very important for merchants to obtain the cutting and marketing information. The unofficial good relationship with county forestry bureau and township forestry station as well as village committee makes merchants obtain information on cutting, forest resource and harvest quota distribution timely. Some merchants have their own channels to gain extra harvest quota through their special relationships with county forestry bureau, in this way, they can access to more forest and obtain more profit. The relationship also makes merchants easily obtain license for timber transportation, reduced or exempted fines when their truck over-loaded. Therefore, unofficial social relationships with forestry agencies in a county are the most important means to access and maintain income from commercial timber by merchants. When purchasing timber in remote rural area, merchants bargain timber price with households and press households to lower price through controlling transportation and misleading market information. Evading taxes and fees is also a way for some merchants to increase profit from commercial timber（Cao qingjun *et al* 1994）. Merchant also maintain access to profit by establishing relatively stable client's network, which can reduce merchant's expenses for transportation or storage. Furthermore, Merchant's experiences to evaluate yield of living forest stand is a means of accessing profit and also form a barrier for households to enter the business. In short, it is through unofficial ties, control of transportation, lower price, misinformation, evading taxes and fees, client's network and personal experience on forest evaluation that merchants maintain and control over access to income.

----*Wholesalers.* Entry into timber market as wholesalers needs enormous circulating capital, which is an entry hurdle for most of people. Wholesalers can cooperatively control markets in big city, mainly through maintaining stable material supply for bigger wood processors and formulating stable retailer groups. Maintaining credit relationships with local timber merchants and wood processors both in local and non-local wood processor, keeping better relationships with transporters and retailers are means to access commercial timber profits for them.

The channels of access to governmental agencies and the other are shown in Diagram 4.

Diagram 4. Channels of access to county forestry agencies and the other



----*Governmental agencies.* This case study also counts official and unofficial income by government from commercial timber trade as expense paid by different actors along the commodity chain of commercial timber. Before central government takes the policy of reducing or abolishing taxes and fees related to commercial timber, the nation, including forestry agencies and officials at township, county, prefecture and provincial level, also benefits from commercial timber marketing through taxes, fees, fines and payoffs. With the taxes on commercial timber being dramatically reduced or abolished by governments, the nation benefits few from the timber, but forestry agencies at county, prefecture and provincial level are still benefiting from commercial timber via fees and service charges. The effective way for nation, including forestry agencies, to benefit from commercial timber is through controlling harvest quota (cutting license), transportation license and timber-processing license (Li Min *et al* 2002)

The mechanisms employed by groups of actors along commodity chain of commercial timber to access to profits are summarized in diagram 5.

Diagram 5. Access map (mechanism of access maintenance and control)

Households………………	①Forest property (via harvest quota obtained)
	②Over-logging
Merchants………………	①Unofficial relationships with forestry agencies
	②Lower purchasing price
	③Misleading market information
	④Control transportation and clients network
	⑤Evading taxes and fees
	⑥Personal experience of evaluating live forest stand
	⑦Circulating capital
Wholesalers……………	Circulating capital
	②Credit with merchants and non-local wood processors
	③Control price to wood processors on non-local market
	④Social tie with merchants, wood processor, transporters and Retailers
	⑤Market information

Policy analysis and conclusion

Commodity chain is a powerful analysis tool. This study shows timber merchants, wood processors are the groups of actors who are real beneficiary from commercial timber marketing in southern collective forest region. Both institutional and non-institutional mechanisms are means for different actors to maintain and control access to profits along the commodity chain of commercial timber. Rural households, the target group intended to be motivated by governmental policy initially, actually have not really benefit from commercial timber market, providing calculating costs spent in the process of rehabilitating and managing forest. Compared to other actors, the legitimate or institutional means for household to maintain and control access to commercial timber profit is forest property. Providing households cannot obtain harvest quota, they cannot access to profit from commercial timber even if forest property is endowed to households. To access more profit from commercial timber, few households risk to cut forest by exceeding harvest quota obtained. In general, the means for households' access to commercial timber profit is considerably weak. Furthermore, the potential conflicts in institutional factors, such as harvest quota, forest property reform and market liberalization are greatly limiting households' access to commercial timber profit. Meanwhile, unfavorable non-institutional factors, such as lack of unofficial relations with county forestry agencies, lack of social ties and credit agreement, lack of transportation facilities, capital and marketing information further confine households' access to commercial timber profit.

Harvest quota is a policy initially taken by government for controlling over-cutting of forest, but strict control of harvest quota in fact ineffectively achieves its goal in general in southern collective forest regions. For example, it is reported annual harvest quota in Hunan province, a typical southern collective forest region in China, is 12 million M^3 in 1995-1999, but actual annual forest consumption is 21 million M^3 on average, with 9 million M^3 of over-cutting volume annually(Long 2005). Similar reports also show over-logging is still common in southern collective forest region. Combining reported over-logging with this study, it is concluded, to some extent, strict control of harvest quota fail to restrict over-consumption of forest but limit household's harvest of timber by following market. Lack of transparency in the process of forest harvest quota allocation potentially results in unequal opportunity for households to obtain harvest quota among other applicants. However, harvest quota is an effective means for government, especially, forestry agencies in a county to benefits from commercial timber, even a means for some governmental officials to take bribe.

Clearly defined property serves as a basis for property transactions. Complete forest property includes rights to manage, harvest, use and dispose forest resources. To endow households with forest property through reform is an important step to make household benefit from forest. This study also indicates forest property is only legal way for household to access commercial timber market, showing the importance of forest property reform in southern collective forest region. But forest property endowed to household should be complete; otherwise, incomplete forest property results in insecure property, possibly increasing potential transaction cost to an extremely high, making relevant transaction failure. In the end, incomplete property is impossible to motivate property owner's activity. Forest property reform in china southern collective forest region generally intends to encouraging rural household to well manage and rehabilitate forest as well as contribute poverty alleviation in rural area. However, in order to prevent over-cutting of forest by household, forest quota policy is further introduced to prevent households from over-logging. The implementation of the policy in fact denies household's access to forest resource freely. In other words, forest property cannot ensure real gain of benefit from commercial timber by household if there are strict regulations to control forest harvest. Therefore, the distinct different direction of the two policies, namely harvest quota and forest property reform, make the two policies contradictory with each other.

Liberalization of timber market is a policy taken by central government in 1985. The policy is stopped two years later by only allowing state-owned timber-purchasing company to monopoly commercial timber market in southern collective forest region due to frequent over-cutting after commercial timber market liberalized in the region. The policy of liberalizing commercial timber market taken by government actually intends to change commercial timber-pricing mechanism from government dominant pricing mechanism into market-based pricing mechanism. It is expected rural households can benefit from direct access to commercial timber market. However, this study also indicates market liberalization cannot ensure household benefits due to hurdles from institutional and non-institutional factors for households. The non-institutional factors, to great extend, is directly related to the natural conditions, in which households are living. The remote natural condition for household living is hard to change by market liberalization.

Beyond harvest quota, property, market mechanism and non-institutional factors impacting households profit from commercial timber, whether governments are participating profits distribution along commodity chain of commercial timber also impact the household’s access to profit. Although abolishing or reduction of taxes and fees for commercial timber expenses result in increased profits for households and merchants, the study proves that the biggest beneficiary of the policy is timber merchants.

In China, The forest area allocated to each household in most of collective forest region ranges from less than 0.5 to 4 ha, which means forest area directly managed by each household is very limited and all households are actually small landowners(Zhang Minxin *et al* 2003). Even if there are no hurdles both from institutional and non-institutional aspects, it is hard for household to support their daily livelihood by managing forest. However, current existing hurdles further limit households’ access to commercial timber profits. It is no doubt benefit decides household’s activity toward forest management. This study further proves households benefit few from commercial timber should be the main reason of their inactive attitudes to collective forest management.

Recommendations

Southern collective forest region is traditional commercial timber production area. The region also has its ecological importance. In order to avoid the conflicts in current policies, it is necessary to reshape current policies so that local rural households can really benefit from forest management. Chinese forestry administration is implementing classified forest management, which is to define a certain forest as ecological or commercial-oriented, based on its commercial or ecological importance. Harvest of ecological-oriented forest is strictly controlled but harvest in commercial-oriented forest is loosened. With higher expectation of compensation from central government, local governments tend to line out ecological-oriented forest in larger scale. However, central government only allocates limited budget to subside ecological-oriented forest management, which cannot be an incentive for households to well manage the forest.

To make commercial timber benefit household, it is necessary to solve the distinct conflict between forest property reform and harvest quota. The solution is to clearly define ecological-oriented forest by shrinking current scale of ecological-oriented forest, putting the forest with the most important value under strict protection with rigorous control of harvesting activities. The households living in these most important ecological-oriented forest regions should be rationally compensated by comparing household's income from harvesting commercial-oriented forest in similar natural condition. Government also needs to create new market mechanism, such as payment for eco-services, to encourage private enterprises to provide payments for local rural households who protect and manage ecological-oriented forest. For those forest defined as commercial-oriented, it is necessary to loosen harvest quota control, endowing local households with complete forest property. However, even if the conflict between forest property reform and harvest quota can be solved by further classified forest management, non-institutional factors also tends to make local households benefit few from commercial timber market due to remote location and small scale of forest held by local households. To reorganize small landowners in the form of household union or community-company partnership possibly bring about benefits for rural households.

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