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Meng Zhang

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# Financing Market-Oriented Reforestation: Securitization of Timberlands and Shareholding Practices in Southwest China, 1750–1900\*

Meng Zhang, Loyola Marymount University

## *Introduction*

Timber produced in southwest China, especially Guizhou and Hunan provinces, became increasingly important in meeting the burgeoning demand in the Lower Yangzi Delta beginning in the seventeenth century.<sup>1</sup> The process accelerated after the strengthening of civil administration in areas dominated by the Miao ethnic group in the early eighteenth century. The development of the timber industry in western Hunan and southeastern Guizhou was facilitated by improved water transportation, which connected this region directly to the Yangzi River system and promoted economic exchange between the natural resources of the southwest and the handicraft production centers in the east. The Chen Guan Customs Station, sitting on the Yuan River in Chenzhou prefecture, Hunan, levied transit taxes on the timber exported from this

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1. For more detailed discussions on this trend based on quantitative evidence from domestic customs data, see Meng Zhang, “Timber Trade along the Yangzi River,” chap. 1.

area closest to its source. Based on taxation data collected from the First Historical Archives, I estimate the value of timber passing through Chen Guan to be 327,229 taels in 1730, 424,556 taels in 1751, and 803,726 taels in 1801, or 2.5-fold growth in 70 years.<sup>2</sup>

The prosperous timber trade quickly exhausted the natural forests. By the second quarter of the nineteenth century, virgin forests had virtually disappeared along the river valleys, except in a few inaccessible enclosed districts.<sup>3</sup> However, in some areas that were adjacent to timber markets or easily accessible by river transportation, potential profits from timber trade motivated market-oriented tree plantations after the natural vegetation was depleted. The Hunan-Guizhou border area continues to be an important source of timber even today thanks to the widely practiced tree planting.<sup>4</sup>

In his pioneering study on the forest management systems in Chinese history, Nicholas K. Menzies posed the key question of what were the contributing factors for forest management to take place despite general conditions of deforestation.<sup>5</sup> Although his study was conducted at a time when the large numbers of local genealogies and contractual documents that are available to us today had not yet been discovered and published, he was able to propose a set of plausible conditions for durable plantation to take place based on scattered evidence. At the center of these necessary, though not sufficient, conditions are the market demand for forest products and the capacity to enforce the boundaries on access to the resources.<sup>6</sup> While excessive demand for forest resources has always been blamed as a major factor leading to the exhaustion of natural forests, the market's demand for an increasingly scarce resource could also translate into considerable profit to be made from managed forests and motivate long-term investment. Indeed, as early as the twelfth century, the development of plantation forests in the Southern Song dynasty was interlinked with the growing urban markets, which left a market-oriented legacy for forest management in South China.<sup>7</sup> During Ming-Qing times, in the mountainous areas connected to Jingdezhen, wealthy lineages and

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2. Meng Zhang, "Timber Trade along the Yangzi River," 57–65.

3. Daniels, "Seisui ryūiki no Byōzoku ga shokurin," 11.

4. *Dongzu shehui lishi diaocha*, 15.

5. Menzies, *Forest and Land Management*, 2.

6. Menzies, *Forest and Land Management*, 123–37.

7. Miller, "Roots and Branches," chap. 5.

entrepreneurs cultivated fuelwood to supply the imperial kilns.<sup>8</sup> Planting of cunninghamia and camphor was practiced in Fujian to supply the well-established timber marketing system in the Min River system.<sup>9</sup>

While affirming the importance of market demands and regulated access in motivating forest management, the current study goes further to examine how private endeavors at tree cultivation could be practical in the long term. Even when lured by the potential profit from a thriving market, small households could be easily put off by several risks involved in this endeavor. Setting aside potential risks of fire, theft, and harvest failures, the time required for tree growth, normally 30 years before maturing enough to be valuable as timber, was a severe challenge.<sup>10</sup> Timber cultivation could not have become so widely practiced if the liquidity problem associated with the long-term nature of tree growth was not solved. The central question for this study is what sorts of institutional solutions, either formal or customary, were in place in this private, rural, and small-household-based economy to make long-term tree cultivation plausible, profitable, and sustainable. To put it in more general terms, it was a classical economic problem of financing long-term investments under conditions of capital constraint.

I find the answer in the ownership and tenancy structures of mountain lands. The development of active transactions around entitlements to mountain landholdings and tenancy rights, which were increasingly divided into shareholdings that were independently tradable before the standing crop of trees was harvested, enabled investors to deal with the inherent risk in the timber crop's long duration of growth and to transform expected future proceeds into cash flows to match a household's consumption pattern. After comparing these practices in the southwest to similar forestry practices in the "Old South" (Anhui,

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8. Marks, *China*, 276.

9. Songster, "Cultivating the Nation in Fujian's Forests," 457–58.

10. Rotation lengths for cunninghamia seem to have been longer in earlier periods. The late-Ming gazetteer of Kaihua County recorded a duration of 30–40 years; see *Kaibua xianzhi*, Chongzhen era, 3:4a. Similar rotations were recorded around 1800; see *Kaibua xianzhi*, 1795, *juan* 5, "wuchan," 3a. In the early twentieth century, with the development of silviculture technology, the duration could be reduced to a minimum of 18 years. Rotations are now usually between 15 and 20 years. In the most intensively managed plantations of cunninghamia today, the rotations can be as short as 8 to 12 years. Menzies, "Forestry," 578; Menzies, *Forest and Land Management*, 97; *Dongzu shehui lishi diaocha*, 85.

Zhejiang, Fujian, and Jiangxi), I will argue that there existed a common set of shareholding and tenure practices in South China despite varying local conditions. The South China market-oriented reforestation practices entailed the following key features: private, instead of state, ownership of mountain lands; rotational planting of timber trees for sale in the market; claims of profits from timberlands based on shares; construction of divisible and tradable shares based on landownership and labor input; and transfers of shares using written contracts. These similarities, especially the remarkable resemblance in the specific terms used in the written contracts, suggest the possibility of technology transfer associated with the massive westward migration during the late imperial period. However, the analysis of additional case studies will be required to pin down the mechanisms of such transfers.<sup>11</sup>

The broader implications of these findings can be appreciated from two perspectives. The first is how private entrepreneurs in early modern societies financed long-term investments. In a sense, tree planting had the dual characteristics of agricultural cultivation and commercial enterprise. As a cultivation industry relying largely on the two factors of labor and land input, it drew comfortably from the set of rhetoric, concepts, and contractual instruments developed from grain production: land tenure, specification of boundaries, witness of mediators, and contract templates for the transfer of various kinds of rights defined on the land. However, these similarities also disguised some important differences in their economic nature, namely the efficient scale and term of production. Take for example wet-field rice cultivation, from which the most complex contractual land-tenure system arose. Cultivators could expect at least one, or even two or three, harvests per year. The efficient unit of production was small. In the late imperial period, the high productivity of rice production was achieved precisely through labor-intensive cultivation on finely divided rice paddies.<sup>12</sup> Tree cultivation was different. Not only was harvest a couple of decades in the future, it also required a certain level of scale. Physical division of tree plantations could not go too far, making it difficult and counterproductive for small cultivators

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11. For patterns of the internal migration to the southwest during the late imperial period, see Tan Qixiang, "Zhongguo neidi yimin shi: Hunan pian;" Ge Jianxiong et al., *Zhongguo yimin shi*, vols. 5 and 6.

12. von Glahn, *The Economic History of China*, 324.

to hold multiple tiny plots of different-aged trees. In these aspects, tree cultivation shared a closer resemblance to commercial enterprises: investment was long-term, and shareholding was invented to enable flexible adjustment of ownership and avoid physical divisions. Instead of seeing agriculture and commerce as detached spheres, my findings from the tree-planting industry urge us to appreciate a core set of contractual shareholding practices that were adapted to deal with different kinds of long-term investments that required a certain level of economy of scale. Such a perspective will help us understand how the Chinese met investment demands through institutions of their own design.

The second perspective is how Chinese reforestation practices compared to those seen in other world regions. From existing literature, one gets the impression that to the extent that purposeful and effective forest management existed in the premodern period, the state played an important role. Between the fourteenth and eighteenth centuries, to deal with the perceived threats of timber shortages and fuel crises, the Venetian Republic acquired mainland forest holdings and developed specialized bureaucracies to manage the most useful forests as state assets.<sup>13</sup> In early modern East Asia, the overwhelmingly privatized forestland in China ran contrary to the experience of both Japan and Korea, where the state exerted much heavier control over access to forests.<sup>14</sup> In response to the severe timber shortage as a result of nationwide population growth and a building boom during the century from 1570 to 1670, the Tokugawa government issued and enforced a series of edicts to regulate the management, distribution, and consumption of timber. Eighteenth-century Japan saw the development of plantation forestry, where the state played a direct role either by organizing the labor force in government afforestation projects or rewarding (or compelling) entrepreneurial endeavors.<sup>15</sup>

By contrast, the general trend in late imperial Chinese forestry was privatization. It seems that the greatest state interventions into direct forest management occurred during the last decades of Northern Song at the turn of the twelfth century. Even then, the state's presence was limited and abortive. By the mid-1400s, state forest programs were virtually

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13. Appuhn, *A Forest on the Sea*.

14. Totman, *The Green Archipelago*; Lee, "Protect the Pines."

15. Totman, *The Green Archipelago*, chaps. 4 and 6.

nonexistent and few taxes were levied on forests. Conversely, in the Old South, lineages gradually took hold of extensive forest lands and invested heavily in plantation forestry by the fifteenth and sixteenth centuries.<sup>16</sup> In the southwest, similar practices of private plantation forestry developed during the eighteenth and nineteenth centuries despite the lack of high-order lineages similar to those in the Old South. Although the Qing dynasty maintained reserves of forests under direct state control in Manchuria for both strategic and symbolic reasons, privately managed forests and, to a much lesser extent, community commons were the dominant forms in much of China proper.<sup>17</sup> The effective forest management carried out in a private context as demonstrated in this study not only enriches our understanding of the repertoire of successful early modern practices, it also challenges us to go beyond the abstract debate on the merit of state or private ownership to examine in detail the specific incentives provided by a particular property rights framework.

These two implications will be further elaborated in the conclusion. Before we get to that, it should also be noted that by focusing on the economic question of share structures and their development, I have refrained from addressing other issues of interest, most prominently the Miao context. The development of timber trade and forestry in this frontier region raises important questions about the interactions between Miao locals and Han migrants regarding resources, the prevalence of Miao adoption of contractual practices, the level of state control, as well as mechanisms of contract enforcement and how they might be different from Han-dominated regions. The contracts used in this study do not easily lend themselves to such inquiries, because the actors' ethnic identity is not always clear from the document. Although the appearance of typical Miao surnames such as Long or Shi surely indicate the Miao people's participation in this industry, we do not have a reliable basis to estimate with confidence the prevalence of such phenomena nor the Miao participants' relative economic status. However, other types of documents found in this region, such as copies of court cases and stele records,

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16. For the ups and downs of state involvement in forestry during the Song to Ming period, see Miller, "Roots and Branches," chap. 5. This issue is dealt with in more detail in his forthcoming monograph.

17. For imperial foraging in Manchuria, see Bello, *Across Forest, Steppe, and Mountain*, chap. 2.

provide more insights into the frontier social context and power relations in the local markets, which are examined elsewhere.<sup>18</sup>

### *Sources and Methodology*

This article focuses on the Qingshui River Valley in southeastern Guizhou, where tree planting and the tenancy of mountain land came into common practice from the second half of the eighteenth century. The local custom of tree planting and the use of Chinese-style contracts to transact property rights over timberlands can be seen in the large number of documents that have been preserved in the Lower Qingshui Valley communities. Known as the “Qingshui River documents” (*Qingshui jiang wenshu*), they have become increasingly accessible in recent years thanks to several extensive projects of compilation and publication. These documents, dating from the mid-eighteenth to the early twentieth century, feature mostly contracts of timberland transactions, tenancy contracts, and agreements on the divisions of shares and profits. Other materials include household division agreements, copies of court cases, village compacts, records of the resolution of disputes, and so forth.

The documents found in the Lower Qingshui area are organized and published according to the original villages and households in which they were found initially. The current sample includes all the documents included in the two compilations of *Guizhou Wendou Zhai Miao zu qiye falü wenshu huibian: Jiang Yuanze jiacang qiye wenshu* (hereafter JYZ) and *Kishū Byōzoku ringyō keiyaku bunsho kaihen* (hereafter GZM), which center on the two villages of Wendou and Ping’ao. If a household’s documents are published, they are published as a whole; there is no selection among them. If, in future studies, the sample can be expanded to cover all the villages, idiosyncratic factors that were particular to a village or a household, which could have influenced the temporal distribution of the number of contracts, can be evened out. Collaborative efforts are necessary for the digitalization and coding of three dozen volumes of the *Qingshui jiang wenshu* and *Tianzhu wenshu* series, more of which is still being published. Hopefully, the categories and database structure used in this study can inform the design of variables in large coding projects in the future.

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18. Meng Zhang, “Timber Trade along the Yangzi River,” 201–12.

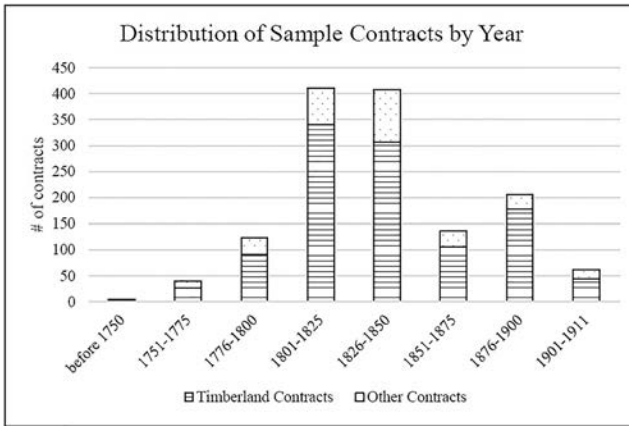


Figure 1. Distribution of Sample Contracts by Year

For this study, the most important transformation in the local society was the adoption of Chinese-style contracts in the tree-planting industry. A Qing-era genealogy mentioned the local people's practice of *cunninghamia* planting in the late Ming, although there is the possibility that the Qing-era people projected their recent memories to an earlier time.<sup>19</sup> In any case, tree planting had already become commonly practiced in the Lower Qingshui area by the mid-eighteenth century. Moreover, this activity seemed to have spread from the Lower Qingshui communities to the middle and upper ranges of the river valley. By the late-eighteenth century, the "Black Miao" residents in the sub-prefecture of Qingjiang, which was among the least acculturated regions in the Miao frontier, had begun to emulate the Lower Qingshui communities' investment in *cunninghamia* planting for sale in the market.<sup>20</sup> Some officials also actively promoted the planting of timber and fruit trees among the Miao.<sup>21</sup> As for the use of Chinese-style contracts, observations in the 1750s stated that even the more acculturated Miao seldom used written contracts; instead, they carved marks on wooden plaques as evidence of agreements.<sup>22</sup> By the late-eighteenth century, contracts had

19. Zhang Yingqiang, *Mucai zhi liudong*, 200–202.

20. Aibida, *Qiannan shilue*, 13: 11b.

21. Aibida, *Qiannan shilue*, 9: 9b–10a.

22. Aibida, *Qiannan shilue*, 13: 6a; 23: 14b.

become routinely produced by the Miao people in the Lower Qingshui communities with concepts and styles similar to those found in other parts of China. The first half of the nineteenth century saw the rapid development of contracted transactions of ownership and tenancy rights on timberlands (Figure 1).

Previous studies by Chinese and Japanese scholars on the Lower Qingshui Valley and its vicinities, based on both historical documents and anthropological field work, have generated thick descriptions of the local society, ethnicity, silvicultural technologies, contractual practices, marketplaces, local authorities, and state involvement, from which I have benefited enormously.<sup>23</sup> For the tree-planting industry, the works of Zhang Yingqiang and Aihara Yoshiyuki are especially helpful at delineating the division of shares and the intricate relations involved in contractual transactions. My contribution to this literature, and more generally to the study of contracts and land tenure, derives from a new methodological approach. The following analysis showcases the possible benefit from a combination of interdisciplinary methodologies: deep textual analysis of historical materials as well as systematic statistical analysis of a large amount of homogeneous data. In this case, research methodologies in the disciplines of history and economics are not only put into tandem but also inform each other.

Because the titles of the contracts, either the curt original titles or the titles/categories given by the compilers of the published materials, are often be misleading, irrelevant, or even wrong, the understanding of the complex economic relationships involved in these contracts requires careful textual analysis and categorization. It is this categorization, which has already required the author to analyze a large portion of the sample collection, that informs the design of a database, according to which all sample contracts are examined again and coded. The construction of a database with variables that are not predetermined but finalized through the trials and errors of text-based analysis enables me to show effectively the supporting statistics for changing patterns over time, albeit very basic

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23. Zhang Yingqiang, *Mucui zhi liudong*; Cheng Zeshi, *Qingshui jiang wenshu zhi fayi chutan*; Liang Cong, *Qingdai Qingshui jiang xiayou cunzhai shehui*; *Dongzu shehui lishi diaocha*; Aihara, “Seisui Kō ryūiki niokeru ringyō keiei no ichi sokumen”; Daniels, “Seisui ryūiki no Byōzoku ga shokurin”; Kishimoto Mio, “Kishū no sanrin keiyaku bunsho”; Takeuchi Fusaji, “Narukami to meikan no aida.”

ones. I would particularly caution against rushing into data collection without carefully analyzing individual documents, an omission that usually leads to statistical results that are either misleading or historically inconsequential. Textual analysis reveals the internal logic of the contracts and informs the kinds of variables we should trace, while statistical analysis allows us to go beyond descriptions of examples and demonstrate temporal and spatial patterns of change.

The point that I want to stress here is the feasibility and benefit of attempting both categorical and statistical analysis in the same study, an endeavor that has become increasingly rare in the field of economic history with the growing separation between the two disciplines of history and economics. My methodological approach provides a possibility to systematically study land contracts, a genre of historical material that is abundant in Chinese history yet proves challenging for systematic analysis. Enormous amounts of local documents have recently been discovered, collected, and published by academic institutions in China, of which the Qingshui River material used in my study is just one example. A model of historically informed database construction and scholarly collaboration is crucial for the digitalization, sharing, and more efficient utilization of this large pool of materials.

### *The Technology of Tree Planting and Its Challenges*

In this section, I will discuss the silvicultural technologies used in the cultivation of *cunninghamia*. From early on, people practiced intercropping during the first few years of the trees' growth to generate additional annual or perennial income. After the tree canopy closed up, however, intercropping was no longer a viable option. Therefore, despite these and other silvicultural innovations that improved efficiency, the unfavorable temporal structure of the payoff from tree cultivation remained a serious challenge that could not be resolved by cultivation technology alone but called for institutional innovations.

*Cunninghamia sinensis* (or *C. lanceolata*) is the most important conifer planted for timber in South China. It can eventually attain a height of up to 50 meters, often free of branches for the first 18 to 20 meters, and has a firm and straight trunk as much as two meters in perimeter. The durable qualities of the *cunninghamia* timber make it the most useful general-

purpose tree in China, widely utilized for construction, shipbuilding, furniture, coffins, roofing, and other purposes.<sup>24</sup>

The technology of cunninghamia planting was quite flexible. Cunninghamia sprouts readily from its stump after cutting or a fire, which makes propagation relatively easy. It could be established from seed propagation, coppicing, and sprouts cut from the stump. According to sporadic evidence from agricultural handbooks published at different times, the method of planting a cutting using offshoots seemed to be the mainstream practice in China from the thirteenth to the sixteenth centuries; thereafter, sprouts cut from the stumps seemed to have replaced offshoots because of their faster growth and higher success rates.<sup>25</sup> The seventeenth-century encyclopedia of agronomy by Xu Guangqi, *Nongzheng quanshu* (*The Complete Book of Agriculture Administration*), explains in detail the procedure of planting cunninghamia from sprouts cut from stumps as seen in southern Anhui. The handbook instructs readers first to plough the land and plant sesame for a year or more, which helps fertilize the soil. Then at the beginning of the second month, cut fresh sprouts from the stumps one foot and one or two inches in length, plant them to half their lengths, and press the soil down firmly. Weed and hoe every year; or conduct intercropping by planting millet in the summer and wheat in the winter.<sup>26</sup>

Another method used in the Qingshui River area was seed propagation. Seeds were collected in the ninth month from thriving trees and planted in seedbed. In the sixth month, when the seedlings reached about one meter, they would be transplanted in rows. Compared to planting a cutting, the seed propagation method was more labor-consuming, but the resulting trees were of higher quality and produced better sprouts after cutting. In practice, the two methods were often rotated.<sup>27</sup>

During the early years, crops with differing tolerance to shade were interplanted to suit the changing levels of light as the tree canopy gradually closed overhead. Annual crops included wheat, millet, maize, sweet potatoes, and cassava. Sometimes annual crops were followed by

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24. Menzies, "Forestry," 574–78.

25. Daniels, "Seisui ryūiki no Byōzoku ga shokurin," 27–28.

26. Xu Guangqi, *Nongzheng quanshu*, *juan* 37, translated in Menzies, *Forest and Land Management*, 96.

27. Aibida, *Qiannan shilue*, 21:8b; Daniels, "Seisui ryūiki no Byōzoku ga shokurin," 29–30.

perennials, commonly oil-bearing trees such as tung oil (*Aleurites fordii* Hemsl. and *Aleurites montana* Wils.) and tea oil (*Camellia oleosa*), which could be harvested for several years. The tree canopy closed after three to five years, preventing further agricultural use; the land would then be used solely for the timber crop until the cycle was repeated following the harvest of timber.<sup>28</sup> As Nicholas Menzies has pointed out, this kind of successional intercropping system of forest management, known as “Taungya” and previously thought to have originated in Burma during the British Colonial period, has been used for at least three centuries in China by the Han population and other ethnic groups.<sup>29</sup>

Despite the annual products generated by the intercropping system in the first few years, once the canopy closed up, there was a long wait of decades with hardly any income from the land before the timber crop could be harvested for sale. Compared to other timber trees, *Cunninghamia* is very fast-growing, which contributes to its overwhelming popularity among cultivators. But it still requires a minimum of 30 years to attain the size of general-purpose timber. In the premodern, household-based rural economy, the long duration of the trees’ growth meant serious difficulty in transforming expected future profits into ready cash to meet spikes in a household’s consumption needs. If the planting of a few trees was meant to be a source of supplementary income or insurance in addition to a household’s regular income from agriculture, the timing could be carefully planned in anticipation of significant expenses for marriages and funerals. For example, records from as early as the thirteenth century speak of the practice in southern Anhui where people would plant a few *Cunninghamia* trees upon the birth of a child, so that the revenue could be realized in time to pay for his or her marriage expenses.<sup>30</sup> However, if tree planting was to be the mainstay of the household economy, as was the case in the Lower Qingshui area, the challenge of its long rotation period had to be solved effectively.

To deal with the unfavorable temporal structure of the payoff from tree cultivation, an individual timberland owner could plant mixed-age stands of trees on his own plot to secure a more regular and reliable income. But this way, the scale is small and efficiency is compromised.

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28. Menzies, *Forest and Land Management*, 96.

29. Menzies, “Three Hundred Years of Taungya.”

30. See Luo Yuan, *Chunxi Xin’an zhi*, 1:5a.

A better option would be if there was an active market to trade one's claims on the future revenue at any time during the growth of the tree crop. Individuals could diversify their holdings by acquiring shares on a number of plots planted with different-aged trees and easily cash out by selling off their shares. As the following discussions on timberland contracts will demonstrate, diversified investment in securitized shares of timberlands was indeed the mainstream strategy adopted in the Lower Qingshui Valley. This system, resembling a prototype of a forward-contract market, provided more flexibility and enabled an economy of scale in the production of timber, especially at the moment of felling.

### *Categories of Mountain Land Transactions*

The creation, division, and transfer of shares on growing forests were through written contracts. This and the following section examine in detail the style and clauses of the timberland contracts used in the Lower Qingshui area. In these timberland contracts, we see the familiar format, language, clauses, and special provisions that were commonly used in transactions of agricultural land all over China, which had been developed over many centuries.<sup>31</sup> These familiar components, however, were innovatively assembled to fit the economic rationale of timber planting and enabled the definition and transfer of timber shares.

Contracts concerning the forested mountains can be roughly put into three categories: formation of tenancy relations between landowners and planters, sales of rights connected to a mountain plot property, and agreements among co-owners. Each category can be further divided into sub-categories as shown in Figure 2. It should be noted here that while the sub-categories of tenancy contracts and co-owner's agreements corresponded with the terms used by the agents themselves, the further division of the sale contracts required breaking down the very general terms used in the contracts' titles such as "sale of mountain land" (*mai shanchang*), "sale of timber trees" (*mai mu*), and "sale of mountain land and trees" (*mai shanchang shanmu*) with the more detailed information specified in the body part of the contracts in order to provide a clearer appreciation of the variety of rights involving the properties being

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31. For a sampling of such contracts over a millennium, see Zhang Chuanxi, *Zhongguo lidai qiye huibian kaoshi*.

transacted. The trees being traded in these contracts invariably still required years of growth before they were ready for the market. We rarely see sale contracts for trees that were ready to be felled, most probably because such transactions featured on-the-spot payment and did not require contracts or long-term holding of the contracts.<sup>32</sup> We know about the sale of mature trees usually from the profit division contracts among co-owners.

	Categories	Description	Indicators	Quantity	Percentage
<b>Tenancy Relations</b>					
T	Tenancy contract	establish tenancy relations between landowners and planters, usually specify each party's share in the future sales income, which is to be reconfirmed with (D).	"招佃", "承佃", "佃栽"	142	
D	Confirmation of the division of future sales income between landowners and planters	confirmation of the division of future income between landowners and planters, usually in the fifth year of the tenancy tenure.	"主佃分成合同"	36	
				<b>844</b>	<b>100%</b>
<b>Sales of Rights over Timberlands</b>					
W	Whole property	sale of the whole property of a plot.	"賣山場/杉木" no other specifications	158	18.7%
S	Share of whole property	sale of some share of the whole property of a plot.	"賣山場/杉木", shares specified	270	32.0%
U & US	Usufruct right (U) or some portions of it (US)	sale of the standing trees on a plot. Land should be returned to the seller after the felling.	"木植長大, 發賣砍盡, 地歸原主"	30 US (10, 33%)	3.6%
<u>Landowners'/Planters' shares:</u>				386	45.7%
L & LS	Landowners' share (L) or some portions of it (LS)	sale of landowners' share of future revenue, as defined in (T) and (D)	"地股" or "土股"	163 LS (127, 78%)	
P & PS	Planters' share (P) or some portions of it (PS)	sale of planters' share of future revenue, as defined in (T) and (D)	"栽手股"	169 PS (50, 30%)	
LPS	Portions of both landowners' and planters' shares (LPS)	sale of some portion of landowners' share and planters' share of a plot.		54	
<b>Agreement among Co-Owners</b>					
A	Agreement among co-owners to clarify shares and divide profits	clarification of ownership/tenant shares of a property; division of the profit from the final sale of the tree stand among co-owners; also include household division documents that specify equal shares should be inherited by each son.	"分山", "分木", "分闢", "賣木分銀"	124	
<b>Total</b>				<b>1146</b>	

Figure 2. Categories of Timberland Contracts

32. In a rare contract of the sale of ready-to-fell trees, besides the total price, price per tree and number of trees were specified, which was different from sales of trees in growth. See JYZ 102.

Sales of whole property right (W) over a mountain plot become increasingly rare over time (Figure 3). The practice of two-tiered landownership similar to the structure in rice paddies, whereby the landowner sells the usufruct rights while retaining the legal ownership of a plot, was well established. Sale of usufruct rights (U & US) was for the tenure of one crop of trees. By “usufruct right” I refer to the ownership over the standing trees on the plot in question. When the trees became mature, the buyer harvested the trees and returned the land to the original owner, who could not share the profit from the trees. In those cases where the usufruct right of a barren plot was sold, the buyer had the right to plant trees by himself and then return the land after the felling of that stand of trees. In such cases, buyers of usufruct rights might also sub-lease the land to tenant planters, with whom they would divide the profits.

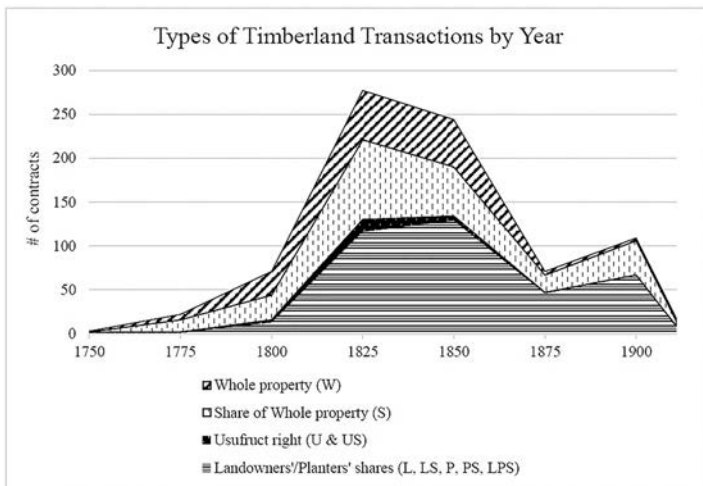


Figure 3. Types of Timberland Transactions by Year

### *Creation of Landowners' and Planters' Shares*

Planters entered into tenancy contracts (T in Figure 2) with the landowners (i.e., holders of the whole property rights) or, on occasions, holders of usufruct rights. The tenant planter's share of the timber crop was usually 40% or, less often, 50%. The average planter's share from

493 tenancy contracts was 42%.<sup>33</sup> The planting of trees and other crops was concentrated in the first five years; the required work thereafter was minimal, mainly looking out for theft and preventing fire. So at the end of the fifth year, the tenant would invite the landowner over to inspect how his mountain plot had been thickly planted, that is, it had “turned into a young forest” (*chenglin*). At that moment, a contract that confirmed the profit division between the landowner and the tenant planter was signed; this contract was called “*fencheng hetong*” (D).

The signing of this contract completed the separation of the usufruct rights of the timberland into landowners’ shares (L) and planters’ shares (P). With this confirmation, the liquidity of tenancy shares increased dramatically. The tenant could easily cash out a lump sum by liquidating his tenancy shares, sometimes to the landowners, who usually claimed preemptive rights to purchase back the tenancy shares.<sup>34</sup> As shown in Figure 3, sales of landowners’ and planters’ shares, either the total or portions of such claims (L, LS, P, PS, LPS), became increasingly common over time. From 1775 to 1875, the proportion of such transactions among all timberland sales increased from 18% to 65%.

Tenancy on timberlands should be seen a device that combined labor and monetary investment, with the relative importance of either aspect varying from case to case. For laborers and new in-migrants, tenancy planting was a good way to accumulate some wealth with a temporal horizon of as short as five years.<sup>35</sup> Tenants were not required to share the harvest from the millet, wheat, and others crops that they grew in the space between tree saplings with the landowners, so they could obtain considerable annual income in the first five years.<sup>36</sup> Once the profit

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33. To my knowledge, the earliest tenancy contract was from 1780, as recorded in *Dongzhu shehui lishi diaocha*, 15.

34. For examples of planters selling back all or some of their shares to the landowner, see GZM B0120, B0136, B0141. It was more common for planters to sell their shares to buyers other than the landowner; for example, see GZM B0140, B0185, and B0203.

35. Transfer or termination of tenancy during the first few years when the planting was not yet completed was not unseen, but very rare, usually due to natural disasters or other personal emergencies.

36. The initial tenancy contracts usually specify that the tenant could “grow millet and plant cunninghamia” (*zhongsu zaishan*). For example, see JYZ 69. In Qingshui Valley, the crop of millet was not shared with the landowner, which was different from the custom in Huizhou, where sometimes the tenants were required to pay additional annual rent from supplementary crops such as grain, sesame, mushrooms, or other plants that they grew on the same mountain land site. See Cheng Zeshi, *Qingshui jiang wenshu zhi fayi chutan*, 69; McDermott, *The Making of a New Rural Order in South China*, 402–403.

division was confirmed by a contract in the fifth year, some planters sold their shares right away. For example, in 1819, Fan Yutang and his nephews sold their tenancy shares to Jiang Yinghui for 76 taels of silver just a month after a contract confirming their share of 40% was signed with the landowners (surnamed Fan).<sup>37</sup> Many planters would move on to another tenancy tenure every five years, while choosing to hold or sell the earned planters' shares depending on their own financial situations.

Tenant planters who stayed with a crop from start to finish were rare. The few tenants who did see the crop through to maturity would likely be some of the biggest beneficiaries from the sale of trees, especially when the landowners' shares had become divided into numerous small portions as they always did through transactions and partible inheritance. The final realization of a planter's profit should be understood as a combination of the return to his initial labor input and the accumulated time value of his waiting.

Confirmed planters' shares were viewed as a purely monetary investment by people with capital. It was very common for the same party to hold portions of both the landowners' and the planters' shares on various plots.<sup>38</sup> Sporadic evidence indicates that merchants from other provinces, particularly Hunan and Jiangxi, also invested in timberland shares, which worked as forwards to secure their timber supply at a future time.<sup>39</sup> The relative profit and power that one could derive from a tree stand depended not on the kind but the number of his shares, blurring the sharp distinctions once thought to obtain between the labels of "landlords" and "tenants." In some contracts, when someone holding a mixture of both kinds of shares was transferring his holdings, he might just state the total number of shares he owned, bypassing the usual section where one should explain the division of ownership and tenancy shares and one's holding of each kind.<sup>40</sup>

Of the 223 contracts that featured sales of planters' shares, 147 contracts (66%) specified the origins of the shares, whether earned by

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37. See JYZ 173, 174b. Another example can be found in JYZ 196–97, where tenancy shares were sold on the very next day after the establishment of a profit division contract.

38. Large landowner Jiang Yinghui, for example, invested in tenancy shares of several plots on which he did not have ownership shares. See JYZ 142, 148, 149, 150, 155.

39. For example, a merchant from Jiangxi purchased tenancy shares; see GZM B0143.

40. In one contract the seller curtly said, "there are a total of eight ownership and tenancy shares, among which I owned four. Two of these shares have been sold previously in 1842." See GZM B0131. See also GZM B0132, B0144, and B0160.

labor or previously purchased from someone else (Figure 4). There were 129 contracts where the sellers of the shares personally planted the trees (*qinzi dianzai*). Among these, 65 (50.4%) contracts showed that the planters sold their shares back to the landowners, sometimes one or more persons among all the co-owners of the land. Eighteen contracts stated explicitly that the planters' shares being sold were previously purchased from someone else.

Total sales of planters' shares (P+PS+LPS)	223
Tenant planters sell their shares	129
— planters' shares sold back to landowners	65 (50.4%)
Reselling of previously acquired planters' shares	18
Details unknown	76

Figure 4. Sales of Planters' Shares

Since the necessity to disclose details could very well vary for different kinds of sales, the percentages drawn from these 147 contracts should be taken only as rough indicators instead of confident estimations. For one thing, it is probable that tenant planters, when selling their shares, tended to use the established phrase of “personally planted the trees” more than someone who was selling previously purchased shares. If this was indeed the case, by an educated guess, it was likely that a larger portion of the remaining 76 contracts where detailed information was lacking featured the reselling of previously acquired planters' shares. Take the extreme case where all 76 contracts were resales. This would mean that, roughly speaking, among all the planters' shares that tenants had sold out, 73% of them were sold for a second time. At the other less likely extreme, suppose all 76 contracts were sales initiated by the planters. This means that 91% of the people who purchased planters' shares from the tenants had kept the shares and only 9% resold them. The actual case would be somewhere in between and more complicated, not the least because planters' shares could be transacted multiple times before the harvest of the crop.<sup>41</sup>

41. For examples of resale of purchased tenancy shares, see GZM B0178, B0201.

Sales of ownership shares entailed the landowner's share of only the current crop of trees, which was separated from the legal ownership of the subsoil. Some sales contracts of landowners' shares made this explicit by adding the phrase "after the trees are cut in the future, the land should be returned to the original owner."<sup>42</sup> When the landowner was selling both his share of the crop and the legal title of the land, both would be specified in the contract.<sup>43</sup> The separation of ownership and tenancy shares became so popular that even when selling property rights over a whole mountain site, some might choose to be explicit that "tenancy shares, ownership shares, and the land are all for sale" instead of the commonly used ambiguous phrase of the "sale of mountain and trees;" those selling usufruct rights might specify that "tenancy shares and ownership shares are all for sale."<sup>44</sup>

Part of the reason for this specification was that the current landowner might have acquired the whole property by purchasing ownership and tenancy shares successively, including the situation where the landowner had redeemed tenancy shares from the planter and was now selling the whole property or usufruct rights.<sup>45</sup> But even in cases where the seller had always possessed the whole property outright and the trees were planted by himself, such a phrase might still be used in the contract for clarification.<sup>46</sup> Such practices testified to the deep perception that rights over mountain land could be separated into those of the subsoil and those of the standing trees, the latter of which was further divided into landowners' shares and planters' shares when a tenancy relation was involved.

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42. For an example, see JYZ 194. In this sale, one-twelfth of ownership shares, which in total accounted for 60% of the standing trees, was sold to Jiang Yinghui; the phrase "after the trees are cut in the future, the land should be returned to the original owner" was included towards the end of the contract. See also JYZ 195, 206.

43. For such an example, see GZM B0159.

44. GZM B0115, B0127, B0202, B0166.

45. For an example that specifically explained that the whole usufruct rights for sale was acquired through two previous purchases of landowner's share and tenant's share, respectively, see GZM B0167.

46. GZM B0115.

### *The Division and Securitization of Timberlands*

This section will address the question of how shares, once created, were divided and transacted based on an individual household's needs. This could involve partitioning household property among heirs, adjusting the household's investment portfolio, or disposing of its shareholdings to meet spikes in consumption expenses. Securitization, that is, the division of rights over a property into independently tradable shares, featured all kinds of rights claimed over a mountain plot (witness S, US, LS, PS, and LPS in Figure 2). Unless otherwise noted, the term "share" refers to the right over a portion of the monetary proceeds to be accrued from the sale of the trees, rather than a part of the physical divisions of a specific plot or a specific number of a plot's standing trees.

Partible inheritance might be the initial mechanism that created shares out of a family's whole ownership of a mountain plot. While agricultural land and real estate were usually physically divided among sons, forested mountains were normally kept intact and divided into equal shares of rights to revenue from future sales. Property division documents commonly said that "the mountain land and trees are not yet divided. In the future, when the trees are felled and sold, the proceeds should be equally allocated among the sons." For example, in the family of Jiang Yinghui, mountain land was not physically divided in the household divisions for three generations in 1819, 1859, and 1896, respectively.<sup>47</sup>

Indeed, to divide up a mountain site with trees in growth would present difficulties in drawing up the demarcation of the land and designating who owned which trees, especially when the family's holding of mountain land was dispersed over a number of plots. In addition to the problem of fair division, tree planting required a certain level of scale to be economically feasible. In this, it was very different from rice paddies, the efficient size of which was inherently small, requiring intensive cultivation, and the physical division of a family's holding usually did not require breaking up individual production units. By contrast, if a forested mountain was divided up into excessively small plots owned by different agents, it required additional risk-sharing mechanisms and coordination to avoid boundary disputes — just imagine the potential disputes if the trees allocated to one son suffered fire, theft, or crop failure while those of

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47. See JYZ 172, 433, 483.

the other son stayed intact; over time, these small plots would be planted with trees of different ages, making large-scale felling and selling at the time of maturity untenable.

In addition to partible inheritance, shares became more finely divided when the seller chose to alienate portions, instead of the total, of his holdings or when several parties purchased together and divided the shares among themselves. For individual investors, the guiding principle was to diversify resources in different plots growing trees of different ages. Even for large mountain landowners, their holdings were shares of scattered sites. Shares transacted in sale contracts might just be one out of dozens or even a hundred total shares.<sup>48</sup>

In cases of complex parcelization, there were two ways to express the shares. The first method, which was more commonly used, specified the multi-tiered division of shares in order to explain the origin of one's holdings and what was being sold, usually using the expression of dividing one "big share" (*dagu*) into a number of "small shares" (*xiaogu*). For example, when Jiang Laogui was selling his shares on two plots in 1844, for the first plot he explained:

This mountain is divided into five shares, among which landowners have three and the planters have two. Among the landowners' three shares, Laogui and Laoping collectively own one. This one share is further divided into two shares, one of which is owned by Laogui. Laogui also owns one of the two planters' shares.<sup>49</sup>

So, in total, Laogui owned one-sixth of the ownership shares and half of the tenancy shares. The benefit of this method was that the route of previous transactions was clear, and the shares of the other co-owners, which are not explicitly mentioned in the contracts, could stay intact in case of disputes.

Another case shows how shares could be further divided among multiple buyers during a transaction. The timberland in Wuqi was equally divided into two big shares, one for the landowners and one for the planters. The landowners' single share was further divided into four

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48. For examples of such cases, see GZM B0133; JYZ 191.

49. JYZ 392. For an example of multiple sources of one person's holding of landowners' shares, see GZM B0161.

smaller shares, and the brothers Wenshang and Wenhan owned two of them. The brothers then sold these two small shares to a group of seven buyers, who divided them in the following way: Zibin, Zixiu, and Laoxian collectively took one share; Yingxian took a half share; and Zhimo and his two brothers took the remaining half share.<sup>50</sup>

The second method, usually used when previous transactions were too numerous to be expressed as big shares and small shares without confusion, was to attach an arbitrary amount of “taels” to the whole property and list the amount of taels owned by the party in question. “Tael” in this case did not refer to the actual monetary value of the land but was merely an arbitrary number used to denote shares. Because the Chinese character for “share,” *gu*, was usually not used for fractions, except for half of a share, this method provided a convenient way to report the total percentage of a property owned by one person. For instance, when Jiang Changtai sold his portion of the landowners’ one-third share of a mountain site in 1810, he put it this way:

This is a mountain of 5 taels; Jiang Danyan and Jiang Tingzhu have 2 taels, Yinghui has 1.5 taels, Jinkui has 0.75 taels, Changhai has 0.75 taels. Now I (Changtai) am selling my share of 0.75 taels of the mountain to Jiang Tingkui. In the presence of both parties and intermediaries, a price of 21.5 taels of silver was agreed upon, which I have received in person.<sup>51</sup>

The shortcoming of this method is that we cannot know if his holdings had different sources. In the previous example for big and small shares, Jiang Laogui held some portion of the landowners’ shares and some portion of the tenants’ shares, resulting in a total of 30% of the property. If he had adopted the second method, of using “taels,” in his contract, the only information revealed to us would be the fact that 30% of the total property was being sold.

Sometimes both methods were used in the same contract for complex cases. For example:

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50. GZM B0005.

51. JYZ 114. See also JYZ 131, 138; GZM B0135, B0138.

This mountain is divided into two big shares, one for the planters, and one for the landowners. The landowners' one share is further divided into two shares, one owned by Jiang Shaolü, the remaining one share is divided as a mountain worth 10 taels: Jiang Ziwei has 2.5 taels, Daxiang has 1.25 taels, Tingchang has 1.25 taels.... Now my own share of 1.25 taels is sold to uncle Jiang Shaolue. In the presence of both parties, a price of 9.2 taels of silver was agreed upon, which I have received in person.<sup>52</sup>

Based on transactions of portions of landowners'/planters' shares in the nineteenth century (LS, PS, LPS, US, S; N=422), the average percentage of owners' share being sold was 26%, the average percentage of planters' share being sold was 51%. Figure 5a shows the trend of the average percentages of owners'/planters' claims being sold, which move in opposite directions from the total frequency of such transactions in each period. Figure 5b indicates that among all the transactions of landowners'/planters' shares, the proportion of the sales of portions, rather than total, of such claims (e.g., 25% of the landowners' share or 50% of the planters' share on a timberland) moved together with the total number of transactions. These two figures suggest a generally positive correlation between the frequency of timberland transactions and the extent of parcelization.

We should note that the sample size is relatively small when divided into five 20-year periods, so this correlation is more suggestive than definite. Nevertheless, it makes sense that higher liquidity of timberland shares was associated with more finely divided property rights. The current picture suggests a decrease in the frequency of timberland transactions in the mid-nineteenth century, which coincided with the local turmoil in the southwest during a Miao rebellion and the shutdown of the interregional timber trade due to the blockage of the Yangzi River during the Taiping Rebellion. It suggests a strong connection between the liquidity of timberland shares on the production sites and the conditions of local and interregional timber trade. More research in this regard awaits an enlarged sample as well as information about changes in the volume and prices of timber entering the trade.

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52. JYZ 169. See also JYZ 120.

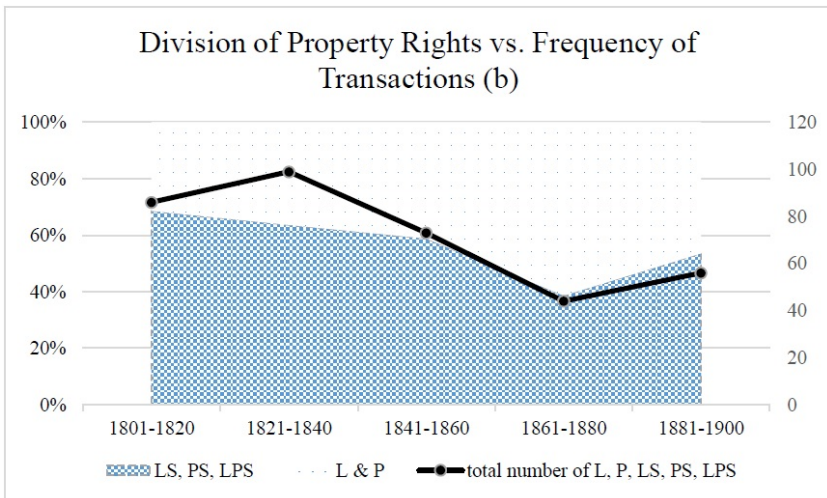
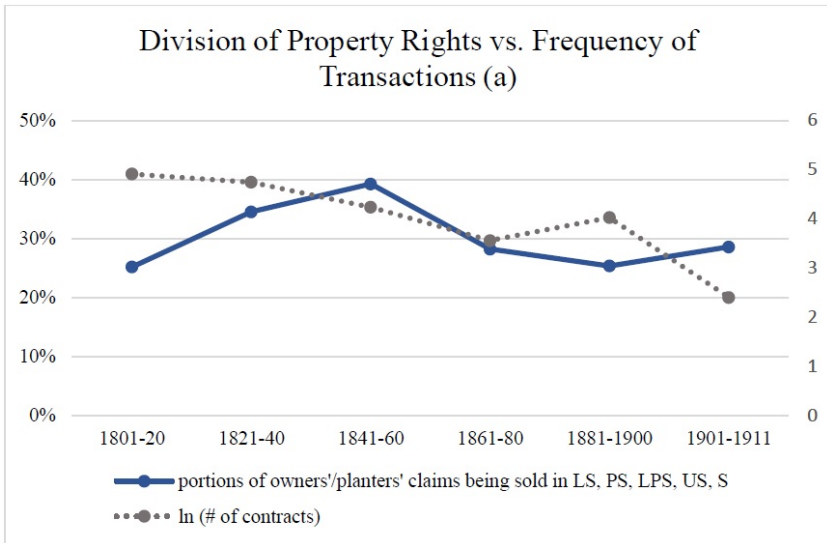


Figure 5. Division of Property Rights vs. Frequency of Transactions

### *Co-ownership Structures*

The co-ownership structure that resulted from the complex transactions delineated in the previous section resembled the structure of a shareholding partnership: an individual holder's shares might come from multiple sources of labor input, land ownership, and purchases; the voice one part-owner had in determining the sale of the trees on a plot depended on the number of his shares; corporate entities of investment, called the "*hui*," were also formed and governed by principles of shareholding and behaved like individuals in making investments in timberland shares.

Timberland contracts commonly specify the number of shares being sold and the total number of existing shares. But they only occasionally included the names of other shareholders. Although it was common practice to have one or two other shareholders as intermediaries and witnesses (*zhongzheng*) of transactions, usually not all of the shareholders were involved. After several such private transactions, co-owners felt the need to compose a detailed list of all shareholders and their shares, called "the agreement on mountain division" (*fenshan hetong*).<sup>53</sup> Such lists always included dozens of signatories, and some of them were representatives of a group, making the number of stakeholders even more numerous. Such lists might also be the result of the resolution of disputes among owners, listing the agreed-upon division of shares and announcing any previous contracts proving otherwise to be invalid thereafter.<sup>54</sup> These documents were intended to replace all previous purchase contracts and become the sole legal record of the land and the basis of future allocation of the proceeds from the sales of the trees. Sometimes a mountain division contract was composed right before the trees on the mountain plot in question were ready to be felled, and the new contract was supposed to be the uncontested basis for profit division.<sup>55</sup> Most of the time the

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53. JYZ 554, 555, 559, 566, 583.

54. Agreements on share division after disputes were sometimes called "clarification agreements" (*qingbai zi*), a genre that was also used in the private resolution of other kinds of disputes. For studies on the use of *qingbai zi* in the Qingshui Valley, see Cheng Zeshi, *Qingshui jiang wenshu zhi fayi chutan*, 108–23. For an example of a *qingbai zi* that recorded revised division of shares after a dispute in 1801, see Zhang Yingqiang and Wang Zongxun, *Qingshui jiang wenshu di er ji*, 3: 28.

55. JYZ 554.

portions designated in the lists referred to shares of future revenues, but occasionally it could actually be physical divisions of one tract of mountain land into a few plots to be separately managed, mostly because of a disagreement regarding whether to allow some potential buyers to be co-owners or regarding the time of felling.<sup>56</sup>

The notion of “public mountains” (*gongshan*) sometimes came up in the documents. This term denoted a mountain plot that was divided by shares into the hands of a lot of shareholders, who could trade their shares freely.<sup>57</sup> The character “*gong*” in this term conveyed a sense of “many,” rather than collective ownership. The ownership structure of such “public mountains” resembled more that of a publicly listed corporation, where one’s claims of control and profit corresponded to the number of independently tradable shares held, than a village commons to which every member of the community had equal access and responsibility (see the later example of Randugan timberland in Figure 6).

Distinguished from such “public mountains” controlled by shareholders, there were indeed some community endeavors at regulating the access to, and utilization of, common timberlands, sometimes to protect the beneficial geomancy of a village’s graveyard. For example, the villagers of Zhangshan had collectively contributed the initial endowments to establish a plot of geomantic timberland and prohibited any cutting.<sup>58</sup> In another case, Guigu village inscribed stone steles that specified the enclosed area and the penalties for illegal cutting and burial.<sup>59</sup> Such village management of collectively owned forests and woodlots were also found in other parts of South China.<sup>60</sup> The rich documents of the Lower Qingshui area show that the scale of such collective timberlands there was very small compared to those claimed by private shares and sustained by contracts. This information is not often known for other regions where private, household-level documents have not been preserved as well. In fact, the nature of extant written documents from the late imperial period, such as stone steles and literary works,

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56. For an example of a physical division of a mountain plot, see JYZ 58.

57. Some examples include GZM A0020, A0062, A0069, A0245, C0008. Aihara Yoshiyuki has made the same argument regarding such “public mountains;” see Aihara Yoshiyuki, “Seisui kō ryūiki niokeru ringyō keiei no ichi sokumen,” 141–42.

58. *Jinping xianzhi*, 2:1519.

59. *Jinping xianzhi*, 2:1521–22.

60. Menzies, *Forest and Land Management*, 78–80.

tends to overrepresent the community regulation of commons while underrepresenting private market-oriented plantings. Recent field studies in the Old South provinces of Jiangxi and Fujian indicate that a village community's geomancy forests (*fengshui lin*), which were collectively preserved and banned from cutting, can be easily distinguished by age and height from their market-oriented cunninghamia planting that was privately owned and meant to be cut rotationally.<sup>61</sup> The Lower Qingshui case and these findings from field studies both invite us to reexamine the different forms of timberland ownership in China and their relative popularity, while being mindful of the potential biases from each genre of evidence.

Many villages were dominated by one or two surnames, such as the Fans in Yanwan and the Jiangs in Wendou and Ping'ao. A large tract of timberland that had been acquired by an ancestor early in the eighteenth century would, by the late-nineteenth century, seemingly mimic lineage-owned land thanks to generations of partible inheritance. However, the resemblance is only superficial. Like "public mountains," such timberlands dominated by members of the same lineage were, in effect, shareholding structures, rather than incorporated lineage estates that were most popular in Lingnan and, to a lesser extent, Jiangnan.<sup>62</sup> In the Lower Qingshui area, individuals were left to their own devices to possess rights over timberlands, instead of through their lineages. They could freely alienate their shares, although the norm was that close kinsmen, including both agnates and affines, should have preemptive rights to buy them before outsiders. There was no management board at the top of a lineage organization that made overarching decisions regarding these properties. The final proceeds from the felling and sale of the trees would actually be divided among all the shareholders instead of being retained as lineage fund. In other words, the lineage as a corporate institution that managed a separate set of properties to generate revenues for common activities was *not* a significant phenomenon in the Qingshui Valley.<sup>63</sup>

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61. Coggins et al., "Village Fengshui Forests of Southern China."

62. For a discussion on lineage-owned timberland, see Menzies, *Forest and Land Management*, 76–78. For regional variations in Chinese descent groups' control over properties, see Watson, "Anthropological Overview."

63. Kishimoto Mio has made the same observation that the so-called "public mountains" or "lineage mountains" in the Lower Qingshui area were not collectively owned, see Kishimoto Mio, "Kishū no sanrin keiyaku bunsho," 188.

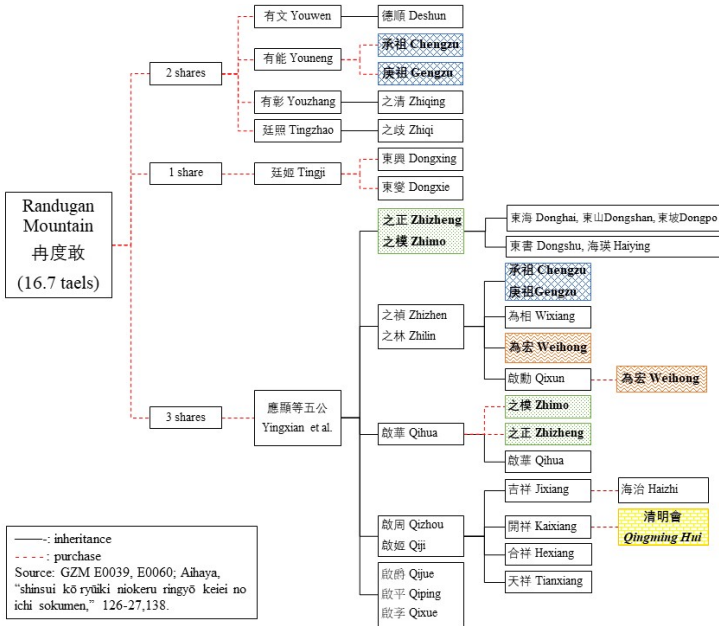


Figure 6. Profit Division of the Randugan Mountain, 1891

As will be discussed in more detail later, this is a big difference between Guizhou and timber-producing areas in the Old South, such as Huizhou, where powerful lineage corporations dominated most timberlands.

The division of revenues on the Randugan timberland, which was sometimes referred to as a “public mountain,” serves as a good illustration of the kind of complex ownership structures derived from generations of partible inheritance and transactions of shares.<sup>64</sup> Figure 6 shows the division of final revenue among holders of landowners’ shares after the planters’ share of 40% had been paid off, leaving a total of 16.7 taels of silver in 1891. The division of shares roughly follows the framework of patrilineal inheritance. Each party had the right to freely alienate his shares. The dashed lines in the figure indicate purchases of shares instead of inheritance. The brothers Chengzu and Gengzu, who were from a distant branch, came to invest in this timberland by purchasing shares from two sets of landowners. Existing holders also transferred shares

64. GZM E0039, E0060; Aihara Yoshiyuki, “Shinsui kō ryūiki niokeru ringyō keiei no ichi sokumen,” 126–27, 138.

among themselves (as in the case of Zhizheng and Zhimo acquiring shares from Qihua, and Weihong acquiring shares from Qixun), contributing to some members of the lineage eventually claiming more or less profit than their initial inheritance right entailed.

Despite the lack of a lineage-wide endowment, various kinds of private trusts, called “*hui*,” appeared as investors in the mountain lands during the nineteenth century. Some *hui* were trusts founded by religious institutions or kinship groups to generate revenues for ritual ceremonies and ancestral sacrifices, such as the Qingming *hui* that shows up in Figure 6. Others included “the trust of the Nanyue Hall” (Nanyue Gong *hui*) and “the trust for ancestral worship” (Jisi *hui*).<sup>65</sup> Some seemed to be purely economic associations founded by kin and non-kin members alike for rotating credit and profit-making.<sup>66</sup> Some *hui* might be ad hoc constructions out of existing co-ownership structures. These trusts engaged in purchasing mountain land, tenancing, and money-lending. Shares in private trusts, called “*jiao*,” could be freely inherited, transferred, and collateralized.<sup>67</sup> Just like individual investors, these trusts acquired their mountain land holdings through purchases of shares. Some properties of the trusts might also come from the confiscation of collateral on unpaid loans extended to members and outsiders.<sup>68</sup>

### *Comparison to Timberland Practices in the “Old South”*

The strategies of mountain land management found in the Qingshui River Valley in the eighteenth and nineteenth centuries resembled remarkably the patterns seen since the fifteenth century in the forested mountains of southern Anhui, an area where trade in timber began to be an important source of income from as early as the thirteenth century.<sup>69</sup> Contracts for mountain land tenancy and transactions found in southern Anhui and southeastern Guizhou shared more common features with each other than with contracts for agricultural land in their respective regions. The comparative analysis in this part demonstrates the commonalities in

65. See GZM B0201; JYZ 468.

66. JYZ 360, 365, 486.

67. Cheng Zeshi, *Qingshui jiang wenshu zhi fayi chutan*, 135–46.

68. For an example of land used as collateral for loans from a *hui*, see JYZ 468.

69. For forestry practices in southern Anhui, I rely heavily on Joseph McDermott’s recent work, *The Making of a New Rural Order in South China*, chap. 6.

forestry practices, despite their differences in managing agricultural land, local customs, ethnic composition, and governance policies.

In Huizhou, terms used in mountain land contracts from the early Ming already revealed a distinction between topsoil and subsoil. Granting of “work portions,” that is, tenancy shares, to tenants of forested mountain became clearly evident by the 1450s. Beginning in the latter half of the fifteenth century, when the cities and towns of the Lower Yangzi were entering into an extended period of secular growth, the intensive commercialization of Huizhou’s timber production became widespread, which required constant efforts toward the maintenance and replacement of tree stocks.<sup>70</sup> Practices similar to those in the eighteenth- and nineteenth-century Qingshui River Valley — the sale of shares during a stand of trees’ growth, tenants’ transfer of their shares entailed by cultivation rights, clarification of shares among co-owners — have been evident in Huizhou since the fifteenth century.<sup>71</sup> Contracts from both Huizhou’s and Guizhou’s forested mountains can potentially be analyzed as representative samples of a common economic logic in forestry practices in various parts of China.

An important difference between Huizhou and the Qingshui Valley seems to be the role of lineages.<sup>72</sup> Existing lineage trusts in Huizhou took the opportunity of the Yuan-Ming transition in the fourteenth century to expand the trusts’ landholdings, and endeavored thereafter to prevent alienation of the trusts’ property by their members, though with mixed rates of success. The Doushan trust of the Chengs was illustrative of the agenda of Huizhou lineages. In the early fifteenth century, the Doushan trust possessed clear and uncontested claims of full ownership over its listed properties, acquired during the extensive depopulation and destruction of land records during the Yuan-Ming transition. The trust endeavored to guard its whole property rights over mountain land by barring the members of the trust from privately purchasing work portions from the trust’s tenants and thereby pocketing extra profit for themselves. The trust’s 1547 pact called for the purchase back of all the tenancy shares of the trust’s mountain property. By the end of the sixteenth century, the

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70. McDermott, *The Making of a New Rural Order in South China*, 382–83.

71. McDermott, *The Making of a New Rural Order in South China*, 370–73.

72. For a comparison between the timberland practices in Guizhou and Huizhou, see Kishimoto Mio, “Kishū no sanrin keiyaku bunsho.”

Doushan trust's purchases and holdings leaned even more towards land and tenancy shares, eventually rendering its principle of inalienability of its holdings untenable.<sup>73</sup> By the end of the sixteenth century, even with the stronger presence of lineages in Huizhou, the fragmentation of mountain ownership and tenancy rights into alienable shares compromises past claims of strong lineage control of Huizhou's forested mountains, despite some lineages' rhetorical claims of extensive ownership.<sup>74</sup>

In the lower Qingshui Valley, by contrast, in the eighteenth century the lineages were never active holders of mountain land properties. As mentioned before, some primitive form of lineage trusts existed. Small private trusts were established by groups of kinsmen engaged in mountain land holdings and money-lending, and some used the income for group sacrifices, but they by no means covered the whole lineage. Trusts established by kinsmen for ancestral sacrifice were just one kind of many private trusts founded by kin or non-kin to finance various religious activities or simply to make a profit for shareholders. When these organizational investors came into the game, securitized shares were already the norm in the Qingshui Valley. So, from the beginning, the holdings of private trusts took the form of parcelized shares rather than extensive whole property rights, an arrangement unlike the powerful fifteenth-century lineage trusts in Huizhou.

Other differences between the contracts from Huizhou and the Qingshui Valley reflect the different extent to which state apparatus had penetrated into the local rural society.<sup>75</sup> In Huizhou, from the Song if not earlier, taxation on mountain land was assessed in distinct categories for dry land and for paddy fields.<sup>76</sup> In the first half of the Ming dynasty, mountain land sales increasingly drew on early Ming cadastral surveys for information on the land's location, type, identification number, and boundaries. Many of the contracts found in Huizhou were official contracts with red seals, with the tax quota of the land in question specified in the context.<sup>77</sup> However, reference to official registration and tax payment records played a dubious role in clarifying ownership rights

73. McDermott, *The Making of a New Rural Order in South China*, 374–76.

74. McDermott, *The Making of a New Rural Order in South China*, 418.

75. Kishimoto Mio, "Kishū no sanrin keiyaku bunsho," 181–88.

76. Luo Yuan, *Chunxi Xin'an zhi*, 3: 4b.

77. The pattern can be easily seen in the table of Ming mountain land contracts in *Ming Qing Huizhou shehui jingji ziliao congbian di er ji*, 561–610.

in cases of disputes, as later fish-scale registers failed to update actual transfers of ownership. In effort to offset the confusion from official registers, owners and buyers were prompted to include even more details in their sale contracts as evidenced by the increasing specifications of the type, age, size, purpose, and location of purchased trees in land sale contracts of the sixteenth century.<sup>78</sup> In the Qingshui Valley, although transfers of tax payment responsibilities were occasionally mentioned in the sale contracts of agricultural land, no reference to taxation was founded in mountain land contracts.<sup>79</sup> There is no evidence of land identification numbers generated from cadastral surveys for either mountain land or agricultural land.

While timberland contracts on the scale of Huizhou and the Lower Qingshui collections have not been found in other locations, similar forestry management practices in many timber-producing regions in South China can be glimpsed from the late-Qing and Republican investigations on local customs.<sup>80</sup> Evidence from Zhejiang, Anhui, Fujian, and Hunan suggest that the legal title to the land and to the standing trees were established as separate rights and could be traded in shares independently. Planters' shares could range from 20% to 80%, depending on the conditions of the land and other arrangements, such as whether annual rent would be paid to the landowners. From the few timberland-related court disputes found in the Longquan County Archives of Zhejiang, it is apparent that the use of shares for planted forests was prevalent and that shares were also finely parcelized in this long-established cunninghamia-growing locality.<sup>81</sup>

In terms of lineage powers and the state's presence, it seems that the cases of Huizhou and the Lower Qingshui were at two extremes. When commercialized tree planting started to take off in Huizhou, it happened within the contours of established lineage organizations and the existing taxation frameworks of the state. The Lower Qingshui, on the other hand, quickly developed its timber industry in response to the opening of the market and readily adopted a set of matured contractual practices

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78. McDermott, *The Making of a New Rural Order in South China*, 387–89; Cheng Zeshi, *Qingshui jiang wenshu zhi fayi chutan*, 59–67.

79. For an example of taxation responsibility being transferred together with agricultural land, see JYZ 47.

80. *Minshi xiguan diaocha baogao lu*.

81. Bao Weimin et al. ed., *Longquan sifa dang'an xuanbian*, cases 4, 13, and 17.

before kinship organizations, which were also a new introduction, took control over local economic resources. The Lower Qingshui area enjoyed the second-mover advantage and a space of development free from the shackles of vested interests. Other timber-producing regions in South China seem to have been somewhere in between. In southern Jiangxi, for example, while some lineages claimed common assets through genealogies, their dominance was far less than in Huizhou and private ownership substantiated by contracts was common.<sup>82</sup>

### *Conclusion*

The challenge of long-term investment posed by the rigid nature of tree growth was solved by the flexibility of shareholding. Shares attached to future proceeds from the trees enabled individuals to invest or divest with ease and avoided physical parcelization of forest lands. In late imperial China, a shareholding entity might be devoted to a variety of purposes that required pooling of resources, demanded long-term engagement, or denied fine physical divisions, ranging from rural coalitions for tax payments or fishing rights, to urban trading enterprises, to more capital-intensive industrial entrepreneurs. In rural areas, shareholding coalitions established by contract permeated even the lowest levels of village life. Shares in both kin and non-kin shareholding entities had become dividend-bearing commodities and could be bought and sold.<sup>83</sup> Shareholding partnerships, whereby each partner bore liability that was unlimited but only proportional to his share of investment, was a very common organizational form for multiple-owner trading firms during the Qing, particularly for business partners from different lineages or native places who wanted to pool their capital.<sup>84</sup> Towards the more capital-intensive end, the Zigong salt mining industry featured high capital requirement, long-term commitment, and uncertain success. Vertically integrated salt enterprises developed through shareholding partnerships, which had impressive numbers of shareholding partners, flexible transfer and acquisition of shares, long duration of partnership, and the advent of full-time managers and shareholder meetings.<sup>85</sup> Similarly, the smaller

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82. *Minshi xiguan diaocha baogao lu*, 247.

83. Cohen, "Writs of Passage in Late Imperial China;" Liu Shigu, "Ming mo yijiang Poyang Hu diqu."

84. Zelin, "The Firm in Early Modern China," 625–28.

85. Zelin, *The Merchants of Zigong*.

partnerships in the coal and iron industry in eastern Chongqing often combined capital from unrelated partners, and sometimes incorporated labor shares.<sup>86</sup> While scholarship on early modern Europe tends to draw sharp contrasts between the rural agricultural sector and the urban commercial-industrial sector and credit the latter with technological and institutional innovations that opened the gate to the modern era, the remarkable resemblance of the shareholding practices evident in all these different industries in late imperial China suggests institutional spillover across agricultural, commercial, and industrial sectors and provides important insight into how indigenous practices and conceptualization of *g#* were created and adapted in response to changing demands.

In the Lower Qingshui Valley, the decision in the household division contract not physically to divide up the family's holding of immature trees and the consequent formation of a primitive trust denoted by shares among brothers seemed to be an important initial template that laid the groundwork for more complex shareholding structures. This was similar to cases in which a successful merchant could keep his firm intact by creating a trust and allowing his sons to inherit equal shares in an undivided pool of assets that could likewise be divided among their heirs.<sup>87</sup> Once the shares were commodified and independently transferrable, ownership of a parcel of forest land increasingly became a multi-surname shareholding entity. Contrary to popular belief, the Chinese practice of equitable inheritance was not an obstacle, but most likely a driving force for the conceptualization of *g#* and the development of perpetual shareholding entities. Trusts established by kin and non-kin alike, although always stating as their purpose a charitable or religious cause, could be viewed as a type of shareholding partnership that behaved like individual legal persons in the marketplace and that specialized in portfolio investment. These findings from the economically less-developed part of the country further enhance the perception that trusts were the fundamental Chinese templates for the creation of shareholding corporations that pooled and protected investable assets.

This economic analysis of transactions of timberland properties also provides some perspectives on the issue of environmental stability. In

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86. Zelin, "Eastern Sichuan Coal Mines in the Late Qing."

87. Watson, "Corporate Property and Local Leadership in the Pearl River Delta;" Zelin, "The Rise and Fall of the Fu-Rong Salt-Yard Elite."

core-periphery theory, market integration between the core and periphery led to the exploitation of natural resources in peripheral lands to benefit the center. For forest resources, this could lead to “forest mining” where logging or clearance was not followed by sustainable management to renew the resources. The case of the Lower Qingshui Valley shows that the general depletion of natural forests in Guizhou notwithstanding, in some scenarios strong market demand could also motivate long-term labor and capital input into reforestation. High demand, low transportation cost, proximity to markets, and the unsuitability of the land for the cultivation of higher-value grain or cash crops all provided the necessary conditions for tree farming in the Lower Qingshui Valley. Market integration further encouraged specialization in tree cultivation in the local economy by ensuring access to other consumer goods from the market.

Another line of literature in environmental economics stresses the importance of well-defined property rights to forest lands and forest products, the lack of which leads to exploitation rather than management. In this argument, the importance of a proper property rights regime to sustainable development was seen from the angle of “externalities,” which occur when the negative consequence of an economic activity is not fully reflected in the cost borne by the party that chooses to undertake this activity. In the case of open-access or under-managed common resources, externalities would lead to overexploitation, even depletion, of the resource, as theorized in the classic work of Garrett Hardin on “the tragedy of the commons.”<sup>88</sup> The solution to the “tragedy,” as the theory has it, lies in clearly delineated private ownership and/or effective enclosure by state or community.<sup>89</sup> It could be argued that the well-defined private property created by written contracts in the Lower Qingshui Valley helped restrain over-exploitation of forest resources.

Still, the delineation and protection of property rights alone was not enough to foster the planting of timber trees. Large-scale tree cultivation would not be feasible if individual cultivators had to deal with the 30-year waiting time before harvesting. This leads to an aspect of property rights—related environmental practice that has yet to be fully examined. The key was a property rights framework that was compatible with the

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88. Hardin, “The Tragedy of the Commons.”

89. Ostrom, *Governing the Commons*.

long-term commitment required by tree cultivation. As this study shows, the liquidity problem associated with the long-term nature of tree growth was solved through the division and securitization of landownership and tenancy rights in the Lower Qingshui Valley. Such practices proved successful in promoting commercialized reforestation in a rural household-based economy.

The invention of scientific forestry in late eighteenth-century Prussia and Saxony established the central role of the state in modern forestry management and brought bureaucratic administration of forests to a new level. With the goal of delivering the greatest possible constant volume of wood, forests were abstracted into elaborate tables and transformed from the diverse old-growth to monocultural, even-age, rigorously gridded plantations.<sup>90</sup> The practice later became the basis of forest management in France, England, British India, the United States, and throughout the Third World.<sup>91</sup> Several sacred assumptions lie at the center of this body of scientific forestry thought and practice: that agencies of experts are better suited to design and direct the development of the landscape than untrained, self-interested peasants; that coordinated public planning is essential to solve the haphazard and exploitative practices common in the *laissez-faire* approach; and that scientific methods must become the foundation on which environmental plans should be built.<sup>92</sup>

As this article has shown, what is surprising by the theories of modern environmental thinking is that replantation of considerable scale was achieved by self-interested households following silvicultural technologies transmitted intergenerationally in the context of a *laissez-faire* private property regime. Interestingly, in those parts of South China where local residents depended on replantation forestry for their livelihood, the most destructive deforestation happened when such private enterprises became state-owned or community-owned common land without effective enclosure in the 1950s and when a responsibility system was instituted to contract out collectively owned forests while failing to promise tenure security during the 1980s.<sup>93</sup> At the center of the issue is not simply whether state, collective, or private ownership is best

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90. Scott, *Seeing Like a State*, 11–22.

91. Sivaramakrishnan, *Modern Forests*; Rajan, *Modernizing Nature*; Barton, “Empire Forestry and American Environmentalism.”

92. Worster, *American Environmentalism*, 2.

93. Marks, *China*, 280–89.

for preservation or afforestation — history has shown us that any could work or fail. The key is whether the specific dimensions of a particular property rights regime could coordinate to make sure the interests of the people with direct access to the forests aligned with the more general interest of maintaining forest coverage.

The development of state forestry in some countries during the early modern period has been praised for laying the groundwork for the smooth adoption of the modern conservationist, scientific state forestry. However, we should be mindful that these early modern states were motivated to take hold of forest lands less for the conservationist ideal, but more for the utilitarian purpose of securing sustainable timber supply for construction and military uses, either for fear of the over-exploitation of forests by local residents or for the lack of reliable market supply of good-quality timber. For example, after acquiring the forested territories in the fifteenth century, the Venetians initially relied on timber supply from the market and only started to implement direct state control over the forests when the market alone failed to guarantee stable supply. To some extent, the private economy and market development in late imperial China eased these concerns for the Chinese state. Replantation in the south was motivated by its economic profit without coercion from the state, and the integration of a nationwide timber market consistently supplied most of the central and local states' need for timber. I would suggest that the late imperial Chinese state did not develop an extensive state forestry program not for the lack of capacity but for the lack of necessity; the domestic market was both expansive and efficient.

## GLOSSARY

chenglin	成林
dagu	大股
fencheng hetong	分成合同
fenshan hetong	分山合同
fengshui lin	風水林
gongshan	公山
gu	股
Guigu	歸故
hui	會
jiao	腳
Jinping	錦屏
jisi hui	祭祀會
mai mu	賣木
mai shanchang	賣山場
mai shanchang shanmu	賣山場杉木
Nanyue Gong hui	南嶽宮會
<i>Nongzheng quanshu</i>	農政全書
qingbai zi	清白字
Qingming hui	清明會
<i>Qingshui jiang wenshu</i>	清水江文書
qinzi dianzai	親自佃栽
Randugan	再度敢
<i>Tianzhu wenshu</i>	天柱文書
xiaogu	小股
Xu Guangqi	徐光啟
Zhangshan	章山
zhongsu zaishan	種粟栽杉
zhongzheng	中證

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