

Environment in Asia Series featuring Zhang Meng – Timber and Forestry in Qing China: Sustaining the Market, September 21, 2021

- Say the names of many of our common friends. And let's just give everybody a couple of minutes to log in.

- By the way, it's the mid autumn festival today. So enjoy the holiday, everyone.

- Definitely. Just for curiosity. will you be able to get moving?

- Yes, I don't really like the traditional kind of mooncakes, too sweet for me. I just look for round shaped dessert as a replacement.

- Good, same here. I think how about since you have to go teach soon let's just begin and so I'm gonna spend three minutes to do the introduction and then will turn to you. Good afternoon, everybody. I hope you hear me okay. Well welcome. Thank you for participating in today's online event. My name is Ling Zhang I'm associate professor in the history department and at Boston College, as associated researcher in the Fairbank Center for Chinese Studies at Harvard University, I convened this research series called Environmental in Asia. That's a series pays attention to all things, environmental in relation to China. And in relation to generally East Asia, be them historical or contemporary. So our series has just entered the ninth year. So for this academic year, the ninth year, we will kick off the series as we are doing right now with the conversation with professor Meng Zhang from Vanderbilt University. So after, apart from today's events, we still have several other exciting events. So if you're interested in joining us in the next several months, please look for our future event on the website of the Fairbank Center for Chinese Studies. You can Google that. So let me just give you hint with what are gonna happen soon. So October 13, we will have a conversation with professor Ruth Mostern from the University of Pittsburgh to talk about her new research on the Yellow River. And on November 5th, we will have a conversation with professor Ying Jia Tan from Wesleyan University to discuss his new book "War and the Reconfiguration of China's Energy Geography." On December 2nd, we will have a conversation with a panel of four scholars, which included a professor Ashley Ansary from University of Alberta, professor Mary Alice Haddad from Wesleyan University, professor Stephen Harrow from University of Washington, and professor Joanne Lewis from Georgetown University. So these four scholars, or we'll get together to talk about their newly published book called "Greening East Asia: The Rise of the Eco-Developmental State." Very important. So anyhow, check out these events, the website of the Fairbank Center for Chinese Studies, please pay attention that our events are scheduled for different days, but also at the same time, it's four different timing. So please pay attention to the time differences between these events. So without further, do you let me turn to our speaker today, professor Meng Zhang and I'm just as what

she just mentioned. And this is a very special day, is that zhong qiu jie, the mid-autumn festival for all of us. So on behalf of my colleague at Fairbank Center. So zhong qiu jie kuai le to Zhang Meng and to everybody here listening to our conversation, the past two years has been so difficult. We lost many families, we, many of us lost loved ones and many overseas Chinese like me and the professor Meng Zhang, We haven't been able to visit our family for a long time. So it has been a very, very, very hard time. So we appreciate your participation. You gave us a sense of community of companionship, and I particularly want to mention, I really thank professor Meng Zhang for being with us today on this holiday day and also a heavy teaching day for her. So without further ado and let me quickly mention, no, introduce professor Meng Zhang. She is an associate professor of history at the University of Vanderbilt. She is a historian of late imperial and modern China with a particular interest in economic and environmental transformation, political economy, and transnational connections in the rise of a global capitalism. So recently professor Zhang published her new book called "Timber and Forestry in Qing China: Sustaining the Market," from the University of Washington Press. So if you're interested, please check out this book and I have my digital copy here. So it's a fabulous read. I really enjoyed it, generated so many thoughts and questions. And I want to also quickly mention professor Zhang currently working on a very interesting project, which is about the social life of edible bird's nests, yang wo. So if you are interested in similar related issue, please reach out to her. So for our online audience, you must have noticed there's a note to you are through chat. So if you have questions about this at talk, feel free to type out your question in that by using the Q&A function. So without further ado let me turn to professor Zhang for your talk today.

- Thank you, Ling for having me here and for this very kind introduction. It's really a great honor because I have been such a big fan of the Environment in Asia series, and I'm very excited to have this opportunity to introduce some findings from the book. I look forward to your comments and questions, Ling, and I'm sure the audience will have wonderful questions for further discussions. So I would try to keep the presentation within 30 minutes. Timber as you would know is really the premodern equivalent of reinforced concrete. It's really the building blocks of Chinese cities. If we think about the iconic architecture in the urban landscape of early modern China and early modern East Asia in general, the theaters, the chambers, temples, ancestral halls, or even brothels restaurants and teahouses. So all of these were built with timber logs. So the cover design of the book came from a section of this 18th century painting called "Prosperous Suzhou." And as the title suggests, it depicts the lively, urban scenes with people from all walks of life in this affluent Lower Yangzi Metropole, this particular section shows timber rafts flow into the city, supplementing the material basis of this prosperous era. So if we sort of look at this photo from the early 20th century, it shows

the real life situation of timber blocs, blocking the waterways in the city of Hangzhou the nearby city in the Lower Yangzi area. So in response to such blooming demand, an inter-regional timber trade structure developed over the course of several centuries and expanded to cover thousands of miles. By the late 18th century, by my own estimate, this inter-regional timber market was bringing at least of 5 million timber logs annually to the Lower Yangzi region. And if we start from these Lower Yangzi metropolises like Suzhou and Hangzhou and we trace backward, the staffs traveled by these timber logs. Then we would encounter these much bigger rafts riding the waves of the Yangzi River. We would see, the rafters, the itinerant merchants, sawmills and then lumber jacks and the very hard, difficult terrains that they had to overcome in the logging process as this 16th century publication illustrates, hardships of logging, and finally to the forest lands that were claimed, managed, planted and transacted by the local dwellers with written contracts like this one from Guizhou in the early 19th century. So the scope of the whole book is this entire supply chain that connected the basin of the Yangzi River which connected the consumption centers from the Lower Yangzi area to the forested mountains and the valleys of the Gan, the Xiang, the Yuan, and the Han Rivers. So all these are the tributaries of the Yangzi River. So this was a system that was sustained by a complex setup. These institutions in production, harvesting, transportation, investment, transaction, and taxation. So on this map in particular, you can see the little red triangles that indicate the taxed stations along the water transportation routes. So the temporary durability and the geographic scope of the timber trading system immediately generate two questions for me, two questions of sustainability, just to add some qualification I'm aware of that sustainable is a bad word, and it has come to be criticized for its limitations as a policy objective and as a theoretical framework. So the book itself talked a little bit more about these issues, but for this study, I use sustainability in the weak sense of sustained yield and social economic relationships. And for that purpose, I think it is still an appropriate term for me. So the first question is how to sustain a reliable supply of timber, whether they're effective institutions for forest management, if so, what did they look like? And the second question is how to sustain a reliable. The second question is how to sustain a business network that spanned more than a thousand miles, whether they're effective institutions for market activities. These would be institutions to enable transactions between strangers. So the first question brings this project into the literature of forest history, common pool resource management, environmental governance, the second question, brings in the literature on institutional economics, the so-called new institutional economics, trade diaspora and commercial capitalism. Both lines of literature have largely being informed by Euro American historical experiences and become a very strong assumptions about what good practices or good institutions should look like. And against that benchmark, the Chinese experience would look weird at first glance, especially if one is to look only at some aspect of it and not

consider the whole picture. So my work not only seek to delineate the actual mechanisms through what seemed to be pretty peculiar Chinese practices worked in reality, but also to view the intertwined connections between these two aspects, to highlight the interdependence and co-evolution between the regime of resource production on the one hand and the regime of resource circulation on the other hand. So this is a point that so far has received little attention in the existing literature. The central argument that I tried to convey in the book can be summarized by this triangular dynamic between the state, the market and the forest. So to portray this big picture, I'm using these terms here as a short hand, while in reality, each denotes not internally coherent entities, but as the book shows, the state, the forest, the market are each very complicated. They represent very complicated idiosyncrasies. But as a summary, I think they're useful. So first the state, the presence of the state was rather removed for both the market and the forest. Laissez-faire is a loaded word, I know, but I think in this case, it quite accurately captures the situation by the 18th century. The imperial state had retreated from direct forestry and logging. It had come to depend on market procurement to meet its own timber demand for the construction palaces, for the construction of imperial mausoleums and so forth. It had also withdrawn from direct regulation of marketplaces and turn to depend on brokers and merchant organizations for both administrative and economic intermediation. Furthermore, the quota of timber tribute demanded by the central state from the territories within the Great Wall annually was in total a little bit more than 7,000 logs, which was minimal compared to the annual market capacity of 5 million and more logs, and more remarkably, most of that came not from natural forests, but from privately managed plantations. And this is a tree planting by small holders. Now the type of huge plantations in the context of US history. So this state both allowed for private claims of forested land and free market exchanges of timber and the state depended on private forestry and markets for its own need. Both of these aspects were in great contrast to the model of European slash modern state forestry. Now moving onto the second node, the most remarkable feature, during the late imperial period and other wonderful works that have been published recently, has shown this, in Miller's book, which covers the period before the Qing. So we now have good information that during the longer late imperial period, there emerged a complicated system of market-oriented re-plantation of timber across the broad regions to the south of the Yangzi River. This development was a very important countercurrent to the overall trend of deforestation in the face of tripling population growth, during the Qing Dynasty. So I will share, to get into it. I'll just share this anecdote. The early 20th century, Robert Dollar was a San Francisco based lumber magnate who specialized in the transpacific trade of lumber from the Pacific Northwest to East Asia. He was conducting some business trips in China around the Yangzi River. He encountered the big timber rafts floating down the Yangzi River, and he made some remarks about China's domestic timber supply and what it means for his

business. So he said, "For a long time, I thought when they were cutting such small timber, they must be nearing the end of their supply. But on investigation I find that whenever a small tract is cut off it is compulsory to immediately reforest it by planting the ground over with small plants and that in a couple of decades a full crop is again ready for cutting. This is quite an improvement on the American mode of cutting everything down and doing nothing to reproduce. This Chinese model of reproduction will give them an everlasting supply of small timber." And he asked, "Would it not be well before it is too late to take a leaf out of the Chinese book knowledge? Even though we think we know so much more than they." And for his own business, the implication is that the Chinese demand for the Oregon pine exclusively call for the huge hives. So for the smaller varieties, China had depended on its domestic supply. So this reforestation practice so admired, by Dollar was certainly not universally practiced in China, but it was indeed true that in some places, especially in Southern China, re-plantation was routinely practiced and a close examination of this reforestation regime serves to question the validity of a very simplified linear mode of change, you have urbanization, commercialization, and the demand for timber, and then deforestation. And then you have to have the state stepping in to have some preservation policies with the state forestry. So there is a very linear mode of change that this study serves to challenge so that we can get at a more finely grained history. We could draw valuable insights from these instances of more or less successful attempts at mitigating the often conflicting demands of environmental stewardship and economic prosperity. Although this is not a perfect solution, but I think we have the opportunity to draw some valuable insights from this historic experience. So I find a common set of forestry practices across the broader regions to the south of the Yangzi River, despite very different, sometimes very different local conditions. They included, these key features, the first they had private instead of state ownership of mountain lands. Secondly they had a rotational planting of timber trees for sale in the market. And lastly, and most importantly, we find the use of a shareholding structure to mitigate the challenges of longterm investment, because the most common species of timber trees used in the plantations, which was China fir, shan mu usually demanded three to four decades to mature. And this compared to other timber species, this is already a very fast growing tree, but even China fir would demand at least three decades. So the shareholding structure really helped the small holders to meet this challenge of long-term investment. I guess it wouldn't really shock any scholar who knows something about late imperial Chinese land tenure, that the same contractual formats for rice paddies were also used for timberlands as well. But out of these familiar contractual terms, abstract shares were created based on both land and labor input. And the people use the shares to claim future profits from the growing trees, which were to be cut in a couple of decades. And the shares were tradable and further divisible as liquid financial instruments using written contracts like this one that we have seen

before from the Southwestern province of Guizhou in 1819. So let's look at how it worked in more detail. So the bond of rights over a mountain land property can be first divided into sub soil, meaning the legal title of the land and the trees standing on the land. And then the standing trees could be further divided between the land owners shares and the tenant planters shares. Usually it's a 40% 60% divide. 60% for the land owning side, 40% for the tenant planters. Once the labor intensive planting stage came to a successful conclusion. Usually, that is by the fifth year, a contract was signed between the tenant and the land owner to confirm that initial agreed upon division, it will confirm that the tenants had successfully completed their tasks. Therefore they do have the legal claim to that 40%. After this confirmation, these shares then became very liquid assets, they're tradable in total or in further divided portions, the holder of the sub soil, the legal title of the land. So that person may or may not be the same person who eventually held the land owners' shares. Because all of these shares could be traded multiple times before it's time for the cutting of the trees, but eventually the holder of the sub soil rights then get back the land after the standing trees were cut and he could then contract new labor to plant new trees for the next cycle. So let's just look on this contract that we saw earlier, as an example, here is what it says. So the seller was Jiang Yingde. And the property in question was the Baoge mountain. Of the standing trees on this mountain. The tenant's share was 40%. The landowner's share was 60%. And this 60% owners share was further divided into four smaller shares. And the seller Jiang Yingde own one and a half shares. So now these one and a half shares were sold to four buyers who then divided the shares equally among themselves. So eventually each of the four buyers then got a little more than 5.6% of the standing trees. So if we look at the trend over time that the number of different types of timberland transactions over over time. So from the mid 18th century to the end of the dynasty, we can see that the bottom layer, which represents transactions of land owners and planters shares over time became the dominant mode of property transaction, much more prevalent than the transactions of whole property transactions is the top layer, which became almost neglectable by the end of the 19th century and the accumulation of such transactions over decades then created very complicated shareholding structures. So this is the shareholding structure of one property at the time of tree felling. We don't have to go into the details here, but we can simply get an idea of how many people came to get a slice of the cake in the end. And if the shareholder structure on one single property could get this complicated, we can imagine the social network that a person could get involved in through such transactions of shares over his lifetime. I can talk more about the social network of a particular landlord in the local communities during the Q&A, if people are interested in that aspect. So now we have seen how small holder market oriented timber plantation could be possible in the long run, thanks to the creation of abstract shares. Now we imagined this triangle plantation forestry gradually became the

dominant source of timber for both the stage and the market. It flourished under the property norms of local communities, and it responded flexible to market prices. Lastly, the market was sort of inter-regionally integrated and it is also decentralized, satisfying the demands of the state and the private sector and channeling funds into forestry. What I want to stress is that if forestry was important to satisfy the market, the market was equally important for that particular form of product forestry, as practiced in Southern China, because profit along the supply chain translated through multiple layers, into incentives on the ground for reforestation. When this trend of exchange and profit was challenged or even cut off as was increasingly the case in the early 20th century with domestic turmoil and foreign invasion, we don't see natural forest growing back, thanks to supply and demand for timber but rather the abandonment of timber replantation in favor of other kinds of cash crops or subsistence farming like growing maize and potatoes and so forth. Which could lead to serious environmental problems on the hillside. So if resource sustaining institutions by here, I'm by this, I mean the replanted forestry, if that had been important for forestry, then this general framework, market sustaining institutions were equally important to make sure that money eventually goes into forestry to keep the people on the ground going and continue to invest in this industry. So the timber business was along this bulk trade that run on short-term credit. So like other trade of this nature, a long distance and credit dependent, it was haunted by the risks of default and information asymmetry. So in such a business among strangers, it could be difficult to, for example, determine if a potential customer is financially solvent. If this is a reliable person to whom you could then allow him to make a purchase on credits and believing that in four months, this person will deliver the money owed to you on time. So that's a risky matter. In combating that risks and trying to enforce contracts, the complementarity between formal and informal institutions played a very big part. So first we have merchant organizations in this case, it's mostly timber trade associations. Most of them would start as a native place association for timber merchants, from a particular localities. Timber merchants from the Lingjiang prefecture of Jiangxi, they properly form association of their folks. It is likely that over the course of the 19th century, some of these very localized associations would expand their membership to include more people, maybe from nearby counties, or from the same province. So we see that integration, that expansion happening in the 19th century. This organization has regulated business norms and used reputation mechanisms and internal information sharing to punish the breaching party. And then chambers of commerce was a later addition to the set. It came into the picture from the first decade of the 20th century, the chambers of commerce enhanced cross regional communications with its national network, because it is a semiformal institution. And it served to formalize the communication between merchant organizations and the court system, which such communications had long existed. But through the chambers of commerce,

it became a more formalized platform. And then a core system recognized and enforced the business customs, and they enlisted the support of these other two adjudicating commercial disputes. In the interest of time I won't go into details for each of these institutions. Instead, I want to share a simple dispute case to just illustrate how they worked together. I'd be happy to talk more if you are interested during the Q&A. So this is a fraudulent bankruptcy case that involved players in Shanghai and in Yongjia County of Zhejiang. The two places are about 300 miles apart. So it's just a five-hour drive today. But at the time it took more than a week for timber transportation along the river. So please just pay attention to the flow of information rather than the specifics. It could get a little bit complicated, but I use the green lines to represent timber, the red dash to represent if someone owes money to another person. And the concrete red line represents the flow of money. And the black line represents if there's an initiation of a communication request to sending a pretty third direction. So it started with a transaction that happened in Yongjia. Liu Zhenfeng bought timber from Lin Zhenfeng on credit. So timber flows from Liu to Lin well, Lin is in debt to you, but really this is a fraudulent case. Meaning Lin had no intention to repay the debt from the beginning, rather with these and many other unpaid debts, he announced a bankruptcy and he absconded with the timber to Shanghai and he sold the timber to two Shanghai stores, Yin Ji and Sheng Dalong. So the two Shanghai stores are now in debt to Lin after the grace period, which at this time the customer, a grace period was four months. Then in Yongjia County a deal brought the complaint to the Yongji Timber Trade Association, which then forwarded the case to Yongjia Chamber of Commerce, which then contacted the Shanghai Chamber of Commerce within contacted the two stores in Shanghai, asking them to withhold their payment to lay after a month. The bankruptcy case was sorted out by the Yongjia Chamber of Commerce and the timber trade association in that city. And all of his creditors, including Liu, came to agree on a proportional compensation so that they won't get their full debt repaid, but only a proportion of it, depending on how much money Lin could muster at this time. So with the bankruptcy case, coming to a resolution, the two Shanghai stores were instructed to forward their payments to the Zhenxun Association, which is their local timber trade association in Shanghai. And then the Zhenxun Association forwarded the money to the Yongjia Chamber of Commerce, which then oversaw the delinquency of these total assets and payments to all of his creditors among them. So this was a relatively simple case and it was resolved successfully without even going to court, but the channels of communication and the kind of measures that were taking this case were quite representative in such cross-regional, translocal distances. The coordinated actions of these organizations was really far more flexible and effective than if they had to rely only on the court system. So in this case, for example by having the two stores in Shanghai hold on to the money payable to Lin until further instruction, the trade associations representing the interest of the creditors effectively froze part of

these assets. So the right to dispose of the frozen money was entrusted to a third party, the Yongjia Chamber of Commerce to make sure that these residual assets would be fairly distributed among all of his creditors, according to their agreements. So they're all plugged by the network of chambers commerce was particularly important, given the lack of political unity and the lack of legal clarity in early years of the republican period and by curbing such fraudulent transactions, this web of complimentary institutions could enhance the use of credit and facilitate the smooth flow of timber. So we have sailing tractions between the markets that forestry, as an intertwined whole, I hope this short presentation could give you an overview of how that interracial dynamic played out. The timber trade system was open profitable to diverse groups of players along the supply chain from the mountain owners and planters to the ruptures onto merchants and to the brokers and retailers. The stage were treated from throughout far as management and market control, but relied on indirect means to procure materials and to monitor market activities. Then the markets sort of merchant organization and layers of form on equal platforms of conduct contract enforcement, then provide the channels to resolve these views and encourage fateful transactions to the extent possible. And I should add that this is not unique to the trade of timber, but widely applicable to long distance trade in China during this period. So the systems quote unquote sustainability in both the sense of sustained timber yield and sustained social coming relations, then dependent on the smooth circulation of trees, people and credit. So obstruction to any segment of this cycle, whether it's a blocked transportation route or it's a financial crisis that eroded the merchants working capital leading into bank runs. So all of these obstructions would ultimately factor into the decision on the ground of whether to cut the trees and whether to replant them for the next cycle. So to call this system, sustainable should not be read as an unabashed call for deregulation prioritize issue. This is not an argument that the legend pure Chinese model private forestry was better than the model of state forestry. Although I, do help to challenge that often assumed sort of superiority of the state far as far as your model, but rather what is really important. And I want to stress is that the label of the ownership or regulation regime, whether we call it public we're collective we're private matters much less than ho how well the specific dimensions work together, if anything, so as I put it here, the key message is one of our systemic coherence. So when one out of the triangle is forcefully changed without thinking about appropriate coordination from the other two, the system then breaks down and so happened in the 20th century. Just to light the rush, to stay forestry in the 90 40th of the mass decade of the Republican period and the 1950s, for example, not only encroached upon the space of private timber merchants, which is the goal of that reform, but I intentionally, it also disturbed the science of timber plantation by stripping the local tree growers of their discretion and bargaining power leading to around roundup, premature cutting. And then between

the 1950s and 1980s radical and frequent policy changes in the socialist era, then defeated the community's confidence in the security of their holdings, even when sometimes the new policies were in their favor, but they don't have enough confidence in that new policy. So the valley was, and from this history is probably the appreciation that public efforts are better spent coordinating with existing solutions and practices, then trying to invent something new from scratch. In recent years, we see in Southern China, a revival of many of those as practices that had a deep root in the waiting period, period, including flexible responses to market incentives, voluntary self-organization through shareholding systems and some very rapid matters resolve minor conflicts within the local community. So I think with appropriate institutional support, administrative support, maybe some carefully designed subsidies and restrictions, these longstanding practices could prove to be useful agassi's toward our contemporary goal of resource conservation and regeneration. Lastly, I wanna conclude by a remark on regional diversity because I've focused on Southern China. So maybe this Southern China model could be regarded as one archetype, autonomous forest management, but certainly not the only one if, for example, one hopes to find in Chinese history, historical precedents, that resembled ideal type of modern, same forestry or even interests as a preservation is the best candidate. Although not exactly not an exact match, but sort of the best candidate. It wouldn't be the team policies to ward the forest beyond the Great Wall, the Manchuria and Eastern Mongolia. And there'll be some burgers studies in that regard. So comparisons within and beyond China could help us better appreciate how original forestry differences resulted from both material and ideological considerations and diversion forest ecologies. I will stop here and look forward to your comments and questions. Thank you.

- Thank you so much, Zhang Meng. Thank you so much for sharing your research with us and the cases you presented. I think that they're extremely impressive, as you said, they're very complex, very complicated. So I highly encouraged the scholars who participated in this event to go back, to check out your book and go back to the book, to look for those even more complicated, complicated cases. So I would like to remind the attendees over there's an event. The event will end about, I think in about 35 minutes. So we will have a little bit of time for Q&A. So if you have any comments, any thoughts, any questions, please share them with us through the, by using the Q&A function. But before we let's give our audience a little bit, a few minutes to, to formulate their comments, I will actually want to put in a request of first and here, mom. So I'm really grateful that too, you talked a little bit about to what happened in early 20th century and also mid 20th century. So kind of a legacy plus the breakdown of the leading period, this timber economic model, but would you please go back in time actually to break down There's a lengthy latent period a time for us a little bit? I believe in you talked about it some period, and then this economy was matured in the 16th century and then

got into the shaping. And you also wrote about a seems in many times, Taiping rebellion was a huge issue in this, a long street and the end of the chain, the Republican era seems a lot of happened and I just feel like it would be great if we add a little bit more, temporary nuance, that'd be wonderful.

- Yep. Yes, absolutely. The focus of the book really has been the 18th and 19th centuries. I do try to sort of look at the development of these practices and the preceding centuries. So even in the Southern Song we see the development of commercialize of reforestation in hilly areas of the Lower Yangzi region. So that is to supply the Southern Song capital of Yongjia gradually. I think we can sort of have a timeline to trace the spread of such practices from the Lower Yangzi Region in the mountains, the Envoy, and Western Yongjia and then spread to down Yangzi. So that process is certainly discernible by the meet me and then eventually getting to the Southwest. So in Hunan and merchant started to come in the, to these regions for cutting from the extraordinary natural forest in this region, early 17th century. And then after the cutting natural forest started to practice reforestation. So for example, the farthest segment of this practice in the Eastern part of Rachel started to mature by the late 18th century. So I would say this whole process is a coordinate, well, I wouldn't say intentionally coordinated, but you can see how the forests from the expansion of the mainstream I'm higher right into the minority regions in the Southwest, really cleared the way for the interest of commercial capital to extract the natural resources in this region. And then the same merchant capital provided the seed money for the cultivation of the regeneration of these resources in the later decade, this dynamic first happened the Eastern provinces and by the mean in the middle yarns and then by the team in the Southwestern provinces.

- Thank you for sharing. There's a big picture. I think it helps our audience here. So we are looking at several questions here. Meng, would you like to go to the first question I think is raised by professor Chris?-

- Sorry, should I go to the QA right now? The chat box for the Q&A?

- So professor at words, ask, says, "Thank you for this fascinating lecture. I'm looking forward to reading the book. I'm wondering how this picture fits with the predominant picture of extreme deforestation painted by most notably camp Pomeranz is this picture of a deforestation more relevant to North China? If so, can you tell us why that sharp divergence between north and south came to exist? Is this picture of deforestation, just a wrong, if so, how did that mistaken view happen?"

- This is a great question and a very complicated question. Thank you very much for that. I wouldn't say the deforestation picture is wrong

and it's actually still a corrected a correct depiction of the big picture. We see far as coverage, whether that forest is natural or manmade in the tunnel far as coverage in China during that United States did Frank. A lot of that is the readout of reclaiming forest into agriculture that the demand for timber played a role in it. But I would say it's a secondary role compared to the demand for agricultural land, from the booming population. Well, as I said, I also want to emphasize the growing of trees is really for timber. Like, so for the type of large construction materials to be transported over long distance. So for example, in compartments work, when he talk about deforestation. Deforestation had created a few shortages. So that is a key area in which we could detect that the forest in this area had been gone and people don't have enough like branches for few, but even when manmade reforestation could supply for could meet the demand for timber, it never became worth well to transport, fuel to transport food, to be used as few over long distance. It's just simply, two costs not cost efficient enough to use that valuable product of 30 years, but in time to be used as fuel. So even with the Southern China, so even with the commercial plantation in Southern China flourishing, it couldn't really mitigate the fuel shortage problem in far away places. So north China, do you still have a problem with few and because it's deforested, it's not resolved North China is not as dependent on timber as a construction material as Southern China. So bricks were used more widely in the world. Timber was used to for more sort of high scale building words for the main structure of the building. So that's where deforestation and the sharp difference between north and south. And so really by my period, the north had long been deforested, I guess the same could be said for the Lower Yangzi region as well. So I guess this is not entirely a north, the south, probably more a contrast between the centers of population and cities in the east, if it is the more the later developed Western regions.

- Thank you, Meng. And if you allow me to interrupt you here, this reminds me of last time, last bit of your conversation. You got talk talking about the spacial movement of the timber industry and movement of the merchants organization. So in a sense, if we're gonna talk about a deforestation, we need to add a mobility into the motion into the conversation too. So there was nothing static. So great. Thank you. Let's move on to the next question from our audience Danzhou. What were the impact of the commercial forestry on rural communities who used to have access to natural forests for firewood, for food, for hurting ground, et cetera.

- That's a great question. So the private only applied to the timber trees. So the village community will still have their exclusive common access to the forest land for collecting branches for fuel or a collecting mushroom and herding their animals. So these features of common pool access to the land is still shared by the village community, no matter who actually owned the trees.

- If you don't mind to insert a sentence again here. I'm a very impressed by the ways in which you talk about the measurement, the development of the knowledge in regards to timber. So how do you define timber? How big a lump of a word it can be defined as timber. So volume plays a great role in the development of specific measurement. So in the sense that I think into this question and to your answer, very important thing is we need to talk out to differentiation different varieties of different categories of how human consider as a wood. So firewood and a timber, they are drastically different to think in terms of their scale, in terms of purpose, how they use. I think this is relevant to your answer to this question. So everybody please pay attention to this part of the book is really fascinating. Let's move on to professor Jean Anderson's question here from UC Riverside, "Loved your book, and I'm so happy to see you in person now, how much self-conscious or scientific management over the type Joseph McDermott," who happened to be my advisor many years ago describes the four Song was around in Ching dynasty.

- I struggled with this question a little bit, because I feel like my depiction of this system is really sort of trying to extract a structure from all of the contracts. To sort of rationalize what would they are trying to do in the local documents, especially the documents who family division. We do see that the awareness of how planting trees and how dealing with the shareholding system could solve the problem you hear, and in the sort of part of what you hired as a mall, all the sons. So that, because the growing cycle of the trees and the economy of scale of growing trees could run counter to the logic of equal division over every generation. So we see some elements that, and their recognition of this whole system practice solving those questions. But then I have difficulty sort of determining whether we could, or whether the thought of such a system as distinctively scientific were as sort of distinctive from other practices for agriculture, like for other crops that they own and manage at the same time, whether it's rice by race or maize plantation, or tall oak trees that they mentioned. You're interested in at this moment. So short answer, I'm not sure.

- Correct, were also a lot more research to do in the future, maybe for other scholars. So great. Let's move on to the next question from our audience. Annemiek, "How high is the capital requirement for replanting priests relative to the revenue potential of the ground trees. I'm wondering how expensive that is as a share revenues sustainable in your narrow definition, and did replanting require outside capital or were recycled the profits sufficient?"

- I would say recycled profits were sufficient. The restraint is not so much. So you planting trees, the restraint is so much in terms of monitoring capital investment in initial stage, it's really the

waiting period, So that is also, I think the reason why, even though the labor period, the intensive labor period for this practice is very short compared to the duration and for growth. They still resorted to the tenant system. So it's a profit sharing system between the land owners only side and the side providing labor. If we can sort of hypothesize imagine a different situation, that if there is really abandoned capital in the planning stage, it might be more profitable for the land owning side to higher wage labor instead of promising the 10 labor that you could share in the final profit. So I think financial cap capital is less of a restraint than the need for some intensive labor in it in the initial years, plus that very long waiting period, which is the time value of money.

- Meng you mind not interrupt a here a little bit just to insert a few lines. One thing, when I was reading your book, one thing I was really, I found extremely interesting, which in, you mentioned twice here and earlier in your talk, that is how to bring different temporality into our understanding how human society or a natural environment to actually functions. And I think this is extremely important and lesson, for those of us who conducted environmental history, we are looking at a variety of temporality dictated by for instance, in this case for trees, it takes 30 years to mature. The establishment of your, the regulation institution, money lending, maybe money laundering, or the process have to be dictated to some extend or even, or maybe lesser conditioned by the distinctive temporality, the forest it creates. So I think this is such a wonderful dimension that your book actually brings about. I think we all need to pay greater attention to the CSU. So I really thank you for mentioning the mat matter the time and here. Wonderful, let's move on to another question from our audience, a David Mailmen in further reference to how the development over the visa timber practices and institutions occurred over a very, very long period of time. Time again, that is from the Southern Song and word, as you mentioned, how did catastrophic events like the Taiping rebellion as was briefly touched on the destructive nature of a dynastic transitions, et cetera, affect their emergence. Given our understanding that such events like some and remain transitions, extensively setback, commercial development, how did forestry fit or not a fit into that understanding in case it is apparent, which is not so thank you for asking. It's very important question, please forgive my lack of understanding or knowledge on the subject.

- Well, this is a very, there's a great question. I know less about the earlier period. I think I will refer you to in Mueller's book. And I think he does a very good job of capturing how far has free reacted to the 14th century crisis. So especially the Yuan transition, get a very good treatment in that book, but I can say some more about the Taiping rebellion. The Taiping rebellion itself is especially destructive for the Lower Yangzi areas. So for the timber industry, it meant that this major core of consumption of demand was dismantled. So

for a few years in the 1860s, we see a stall of timber trade that is reflected on the ground in the Kwaito forests, in a sense that people stopped cutting tree trees. They in one particular family division document, they mentioned that, so this tract of trees had already been grown for 35. I cannot remember the exact number, like 35, 36 years. It's time for cutting, but the market is now interrupted because we were about to say, because the rebels, they didn't say which one, but it's apparent that this is during the time rebellions. So the trade routes were cut off between Kwaito and the Lower Yangzi area. So in this family division document that say that we'll just wait for a couple more years before we cut the trees down, So the term is we're waiting for a better market. So I think that is a kind of flexibility that is afforded by the trees, because, you just live them growing. They won't go anywhere. They won't decay. They could, in the short term, they could afford that waiting period that flexibility to wait for the market condition to improve. But if the crisis is long-term, then people will raise them. If do we still want to plant trees? Where do we want to switch to something else? If for a long time, they could not make profit from this. Then we see people turning to other cash crops where grain production, after the typing, being the rebooting of the Lower Yangzi areas, there was about several years in the late sixties. There's a boom in the timber trade. This is actually, I would say the last booming period for China's domestic timber market before the entering of North American longer from the transpacific routes were opened up by the late 19th century. The time the post hyping boom was sort of the last flourishing period for China's domestic teamwork, their production and the team were merchants. So by the early Republican period, they often speak of the post hyping decades as a time of nostalgia.

- This is so fascinating. Even we have time, but I wonder if we're going to have time or not, but if we're going to have time later, Meng. I would like to hear you or hear from you a little bit about the import of a foreign tender competition, but let's leave it to the very last we have a anonymous attendee send in a question said, "I really enjoyed the presentation and look forward to reading the book in that. And if I remember correctly in the meeting period, China article, the traceability of a shares is a stressed, but I'm having a hard time envisioning what this means and how we're planters or land, or when it was a shares were sold networks, well-developed markets to local merchants or merchants involved in the timber trade. Could locals invest in timber shares? What do we know about the market for the sales or for sales or the shares of facts?" Oh yeah. It's not anonymous.

- Thank you for the question. The sail was affairs. So both the Hanen planter's shares and that owner's shares were mostly local. So that is to say the sheriffs still circulate among mostly within the same village, but also sometimes to a lesser extent involved in nearby villages, but it rarely go beyond the same township. Merchants

sometimes want to get their hand into the timber share so that they could secure their supply. But merchants typically, if they do that, it is usually approaching the time of timber harvest already. So there's to say they, they might get in now and the timber is due to be cut in a couple of months or at most within a year. So I don't see the shares as a means for merchant capital to really get involved into the side of timber production planners. Usually there is a provision in the contract that if the planners were to sell their shares, they should ask the landowners if they want to buy it first. The owners of the legal height of the land have the right of first refusal. But beyond that, there is no restriction to who they can still sell those shares to. So some big land owners in the Eastern Yongjia area, there are a couple of big surnames like Ziang and the Long. The Ziang in particular came to have shareholdings in very broad. So across several counties in adjacent counties, they have shareholdings, but still it is not a sort of national or even regional market for the shares is still pretty localized phenomenon.

- Thank you Meng for answering the question. And actually I would like to piggyback on this question a little bit. So your talk on your book gave us an impression that commercial economy here is, but specifically centering on timber trade, extremely prosperous, and the it trends regional inter-regional trade. Our transportation based on water, water channels are we're extremely robust. So there's a city into our general conventional understanding of the boom of a commercial economy in late period. China became a before all the other bad things that happened. So I have a question though, and related to that, this last of questions of who could participate in this prosperous a trade network who basically fell out of the market. So the whose life, where livelihood was squeezed, for instance, yeah. What are the other people? So who didn't, enjoy it, didn't get rich in this.

- I think in this home network, if I were to name a group of people who lose out in the system, I think the rafters probably had the most difficult time, So these are the people who see to the transportation and the timber logs across this whole network, they would accompany the rafts and at certain transshipment centers like Poyang Lake then they would also, refasten the smaller rafts into bigger ones to survive the Poyang's waves. I think, in a sense, these are the mobile, temporary workers of that time. If you think about migrant workers in contemporary China, other than the rafters, where there corresponding party, then they team in this particular business. So they carried out most of the very difficult work. So logging and transportation, and they spend most of their time on water. They get paid a very minimum wage. They don't get to take a share from the profit. So even compared to the tenant planters, who then could claim a share and have the flexibility of selling their shares to other parties that are interested in this, the sort of the migrant workers seem to have a more difficult time.

- Can I push a little bit here and even, but the more, so you mentioned a Southwestern part of China and the trade extended to traditionally frontier regions. And so what happened there? So this kind of a booming economy benefiting often foreign, not foreign, but outsiders, the merchants brokers. So what happened to local, let's say indigenous minority experience this incoming of a new economy. Did you see anything interesting in there?

- Yeah, well first I would say that I, what I say probably won't apply to the whole minority region the Southwest, because this is only a portion of that. And I'm only looking at forest land and participant in the timber business, but the local so-called meal people right in the Yangzi the local male came to own large tracks of timber plantations. So this is the Zhengzhou River valley. We don't see the phenomenon that we find in other places of the Yongjia region that Hung coming and came to grab the land from now in the timber business. They seem to be very able to hold on to then. And they employed new migrants from Yangzi and Hunan as tenants. So most of the tenants were actually locals, but a small portion of the tenant planters were new migrants from these other provinces. These were Hun and the meal also acted as brokerages for the timber trade in the local timber market. And for a long time, the chins stayed was so the local government provincial government was very worried about the kind of ethnic tensions from high-margin coming in. So they had for a very long time, this policy that only the male could add a symbol brokers in his frontier market. So the Han cannot go beyond a certain point. They would have to trade through the male intermediaries and the male mountain owners also back up this male brokers, when the hunt did try to bring a suit in court and say, we also wanna timber brokerage license, but then eventually the case was just to steal your favor over the mail for them to keep this life.

- This ethnic dimension into this research is a really fascinating, so I wish we could talk more, but that's a leave it future. I will let you remind our audience so we will close in five minutes. So if you have any more thoughts, questions, please rush in. Otherwise I'm going to take advantage over the rest of five minutes, but before they share forming their thoughts, Meng, can I encourage you to share with us a little bit more about how you deal with the materials? All of these are local sources, as you mentioned, documents, the equational documents that Jeremy and also EML it relied on a lot. So can you say something about, yeah. How do you, how do you use the men that challenges them?

- That's a good question because we, so with these local documents, whether it's from Zhenxun River or from, we have a lot more cordial and also other parts of the Lower Yangzi region. And especially now in China, there are institutional effort at digitalizing them and putting the key variables from the contracts into a database. I initially

thought it would be easy because I could just rely on the database provided by these publishing institutions. So that will tell me, who is the seller? Who is buyer? What is the price? Where is it location and the title. So the type of the contract that we can get from the title. But then I came to realize that the title really, so the first sentence of the contract really don't tell us about the exact nature of that transaction. So after going through 60, 70, I decided that they say a simple term, like this is a contract for the sale of mountain land, but then you really have to go into the details to see that, "Oh, this is not the sale of a whole mountain land "but this person is selling a fraction of the shares "that he had inherited from his grandfather "or something like that." So just I think it's important even in this digital age where, when we can rely on a lot of the database, it is still very important for us to actually read deeply into the text and come up with it with our own categories. That make sense for the research.

- What a great lesson. And thank you for sharing. I think I experienced that too. So wonderful. You have to do that painstaking hard work right through years. Thank you, Meng. Thank you so much for sharing your work with our, with us. And also, I think your insights benefit everybody. And it's certainly me. So thank you, specially. Or you have to just give the talk between two teaching classes. So really appreciate we look forward to future conversations, seeing other opportunities and to thank you, our audience for being here and please follow us and check out our future events by googling Fairbank Center for Chinese Studies, Harvard University, you can check out all amazing events that there. Thank you for spending time with us. Everybody has a happy Sichuan here.

- Thank you so much. Really enjoy the conversation. And I hope don't hesitate to get in touch with me if you want to talk more. And as an exam, have a great mineral festival. And I look forward to the following events at the Fairbank Center. There's certainly the really wonderful and I look forward to them.

- Great, have a good day, Zheng Meng we'll be in touch.

- [Meng] Thank you Ling.